SIRikt 2016

SIRiktova desetka za učenje

ZBORNIK POVZETKOV • BOOK OF ABSTRACTS

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SIRikt 2016

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Mednarodna konferenca **Splet izobraževanja in raziskovanja z IKT SIRikt 2016**
Kranjska Gora, 6.–7. oktober 2016

International Conference **Enabling Education and Research with ICT SIRikt 2016**
Kranjska Gora, October 6th – 7th 2016

Mednarodna konferenca SIRikt 2016
Zbornik povzetkov

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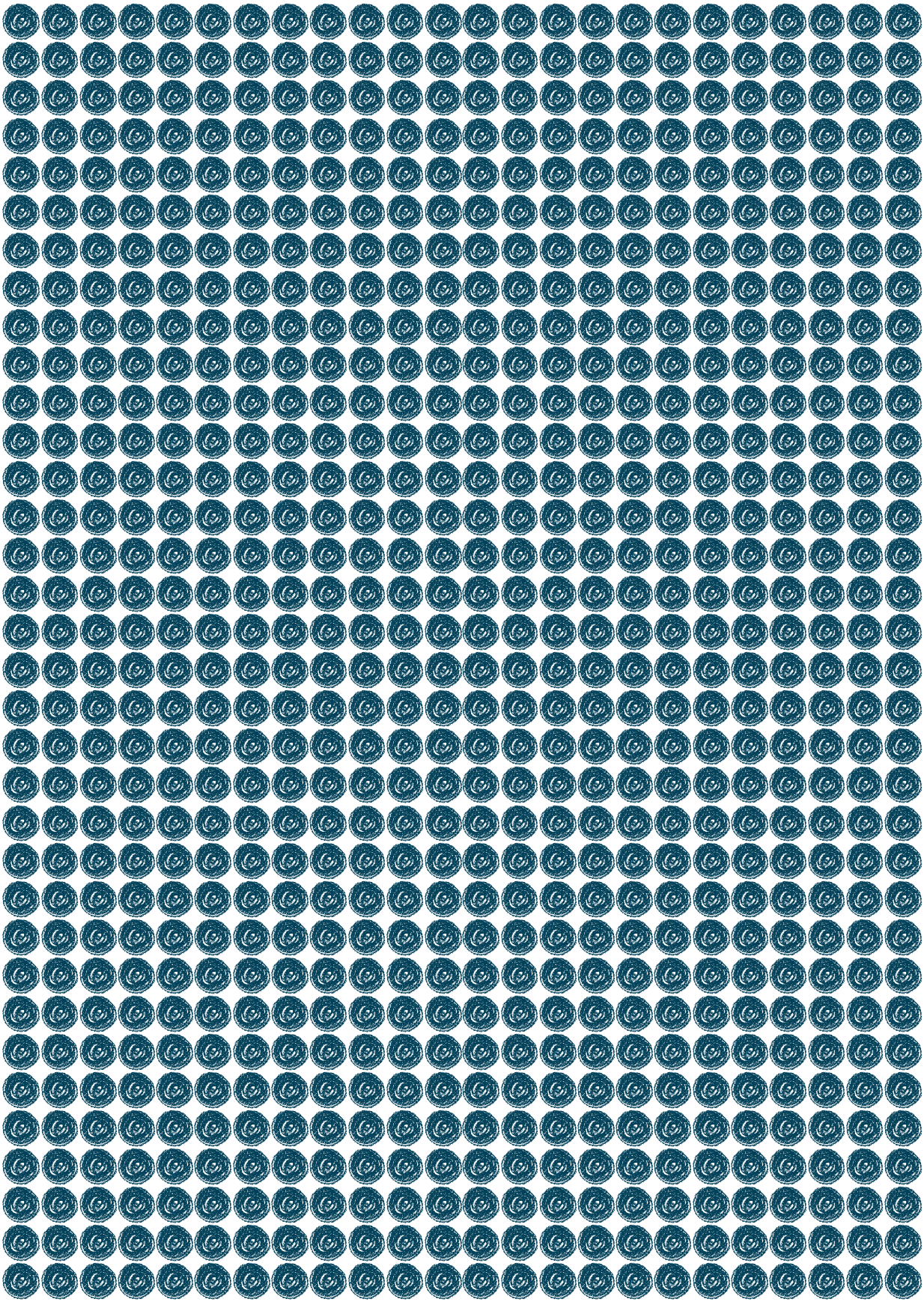

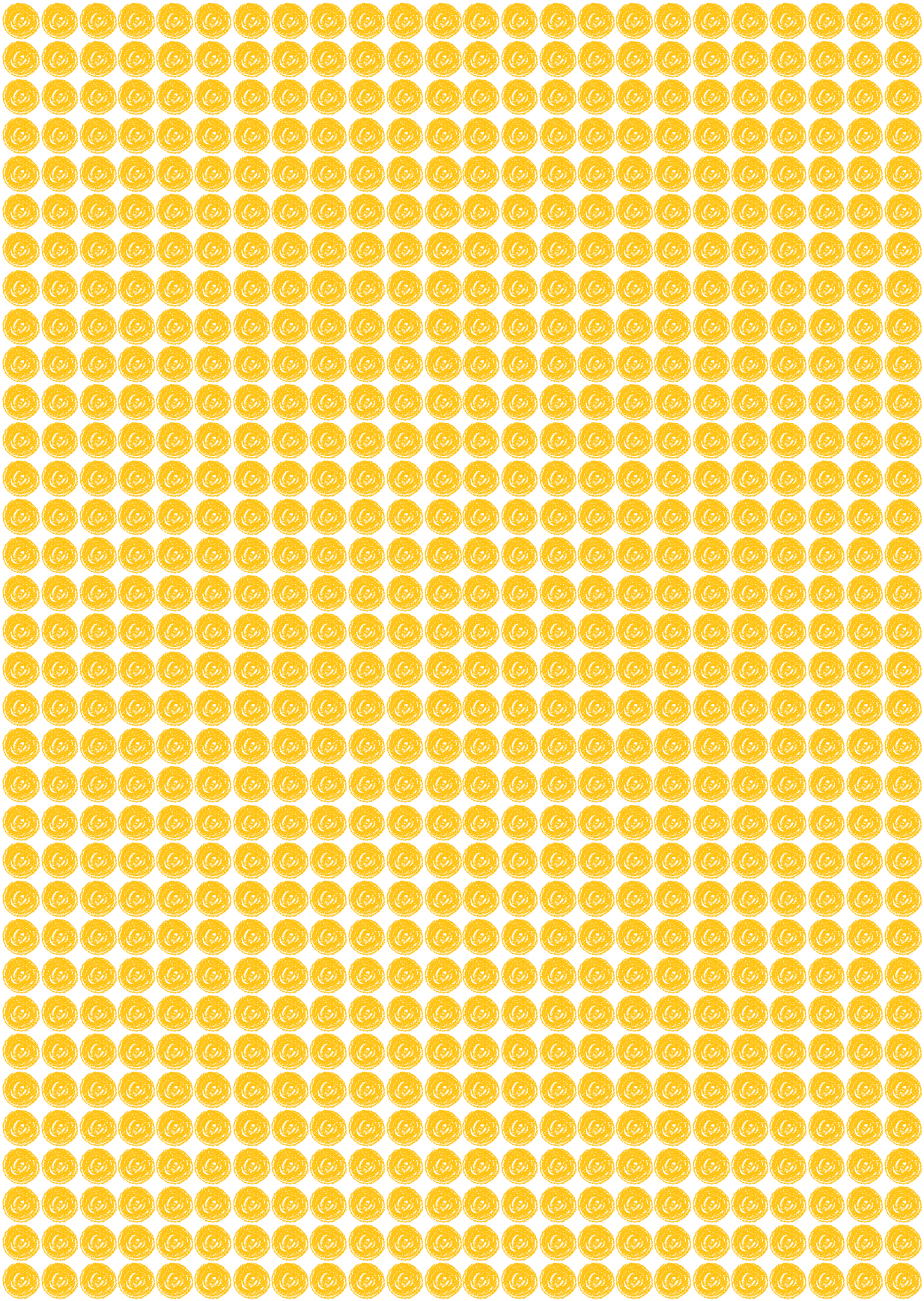

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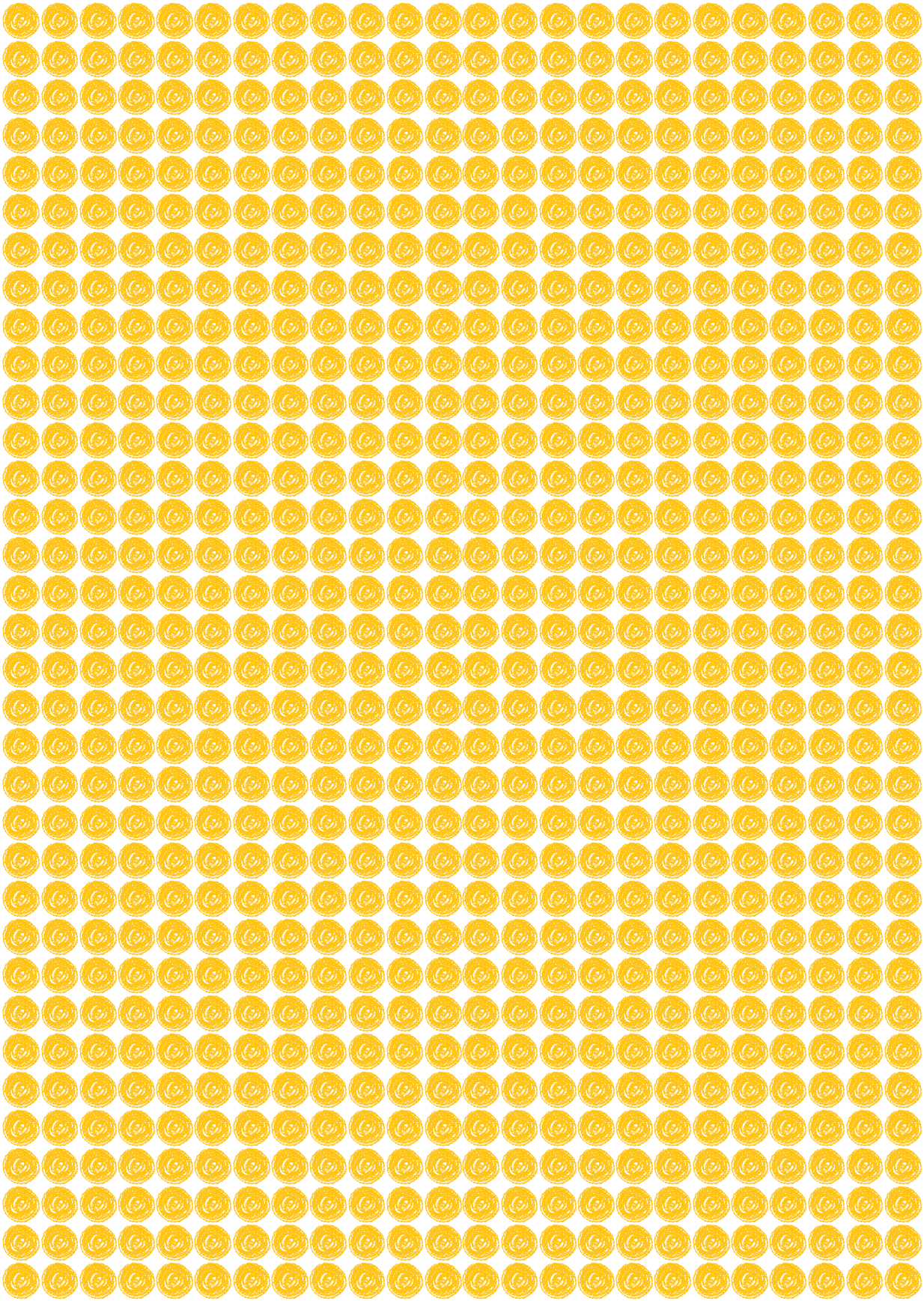


Učenje naj bo!

Konferenca SIRikt (*Splet izobraževanja in raziskovanja z informacijsko in komunikacijsko tehnologijo)* je največji izobraževalni dogodek v Sloveniji, na katerem se srečujejo in delijo svoje izkušnje uporabe IKT vzgojitelji, učitelji, ravnatelji, univerzitetni profesorji, raziskovalci, študenti, učenci in najrazličnejši strokovnjaki s področja izobraževanja ter drugih znanosti. Ima 21-letno tradicijo, zadnjih 10 let pa se imenuje **SIRikt**.

Naslov letošnje konference je **SIRiktova desetka za učenje**. Vodilo vseh programskih sklopov je **učenje** na različne načine ob podpori IKT, zato imajo sklopi tudi različne oblike predstavitev. Naš cilj je uzavestiti, da so zapisani povzetki, ki so objavljeni v Zborniku povzetkov, namenjeni branju, predstavitev na konferenci pa je dogodek v živo, ki poteka v različnih oblikah in se zato zelo razlikuje od zapisane besede. Oblike predstavitev na konferenci so zato tudi naravnane na posamezne teme, ki jih s tem podpirajo.

Tematski sklopi in oblike predstavitev

1. **Učenje učencem v roke:** Kako spodbujamo prevzemanje odgovornosti za lastno učenje, kako učence spremljamo na poti do samostojnega in odgovornega učenja? Kako nam pri tem pomaga tehnologija? Kako pri tem vključujemo »zunanji svet«?
   Oblika predstavitev: Izobraževalni start-up, #podjetnost

2. **Odprto učenje:** Kako organiziramo učenje brez časovnih in prostorskih omejitev, kako vzpostavljamo odprta učna okolja za samostojno učenje, kako načrtujemo odgovorno učenje s pomočjo mentorja in kakšna tehnološka okolja so najprimernejša za to?
   Oblika predstavitev: BeziBeži, #ekosistem

3. **Ustvarjamo za učenje:** Kako uporabljajo učenci obstoječa in ustvarjajo lastna orodja, okolja, aktivnosti, gradiva za učenje?
   Oblika predstavitev: Ustvarjalnica, #ustvari

Parlament

Parlament je novost jubilejnega 10. **SIRikta**. Gre za dogodek debatnega tipa, ki bo še močneje povezal predavatelje in udeležence konference tudi v zvezi s stališči, o katerih se morda ne strinjajo.

Predlog, ki bo dan parlamentu, je uvedba obvezne uporabe mobilnih telefonov pri pouku, zato ima tudi naslov **Prižgimo mobilne telefone!**

Ves čas se tudi oglašamo in povezujemo s pomočjo družabnih omrežij, letos pa se avtorji tematskega sklopa **Učenje učencem v roke** preskušajo v podjetnosti in oglašajo svoje prispevke na **SIRiktovem** Facebooku in Twitterju s ključnikom #sirikt.

Praznujmo in se skupaj učimo na 21. konferenci o uporabi IKT v izobraževanju in hkrati 10. SIRikt-u skupaj!

Programski in organizacijski odbor **SIRikt**

Let there be learning!

SIRikt conference (Enabling Education and Research with ICT) is the biggest educational event in Slovenia, where teachers, school directors, university professors, researchers, students and a number of education professionals as well as profes-sionals from other fields meet and share their experience in applying ICT.

The title of this year's conference is **SIRikt's Ten for Learning.** The motto of all programme sections is **learning** in different ways, supported by ICT, therefore for each section a different presentation form has been chosen. Our aim is to make our audience aware of the fact that the abstracts published in this Book of Abstracts are there to be read, meanwhile the presentations at the conference are live events, presented in a range of forms, being different from the written word. The presentation forms at the conference therefore focus on and support different topics.

Theme sections and presentation forms

1. **Handing over the learning to learners:** how to motivate students to take over the responsibility for their own learning, how to scaffold learners on their way to independent and responsible learning. How can technology support us in this process? How the world around us can be included?
   Presentation form: Educational start-up, #podjetnost

2. **Open Learning:** how to organize learning without time and space limitations, how to build open learning environments for independent learning, how to plan responsible learning supported by a mentor, and what technological environments are suitable for such ways of learning.
   Presentation form: PechaKucha, #ekosistem

3. **Creating for learning:** how students use tools that are already available, and how they design their own tools, environments, activities, learning resources.

Presentation form: Creative space, #ustvari

Parliament

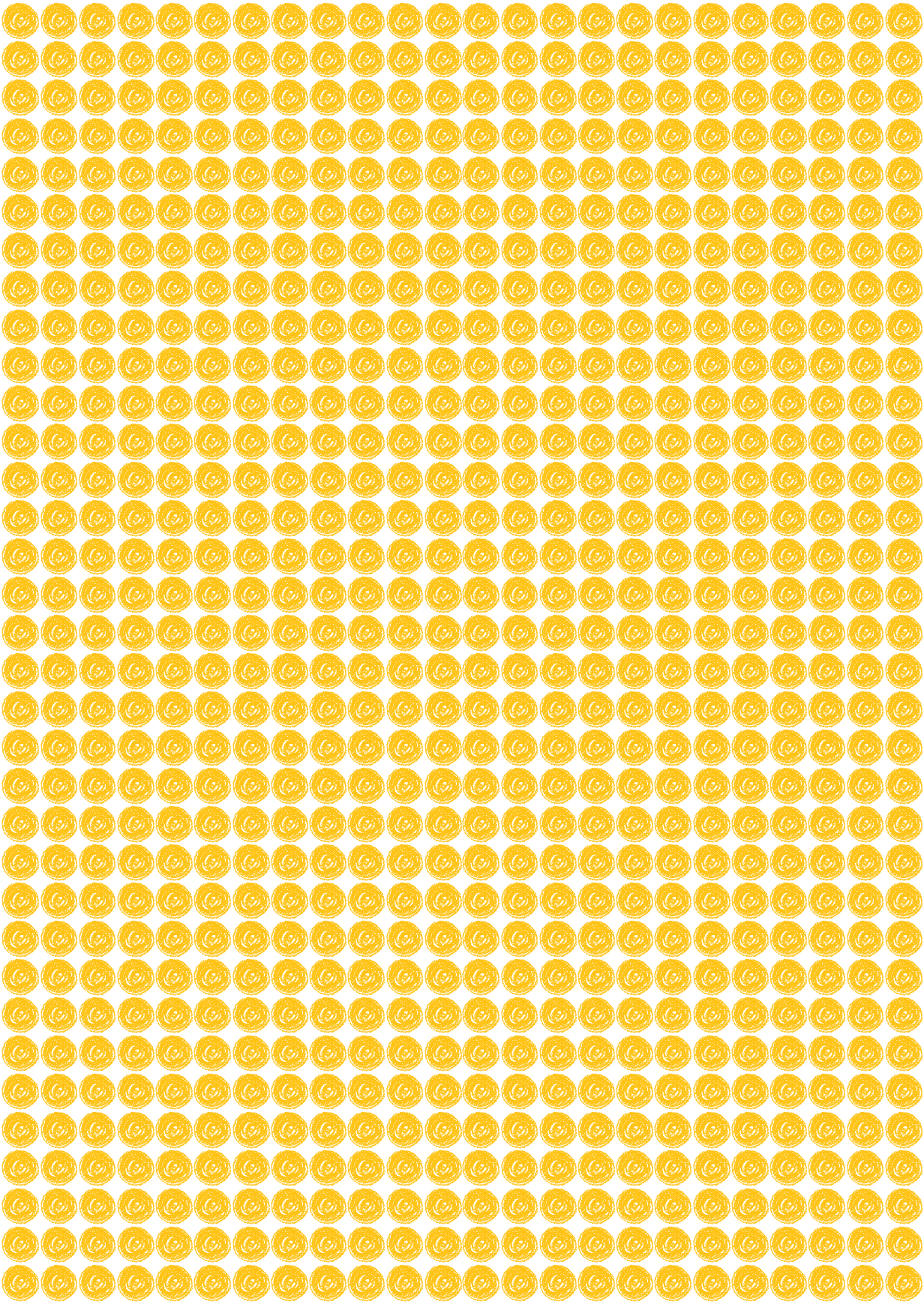
The Parliament is a new section at the 10th **SIRikt** conference. It is an event in the form of a discussion, which will strengthen the connections between the presenters and the participants in their viewpoints, even in those where there has been no agreement before.

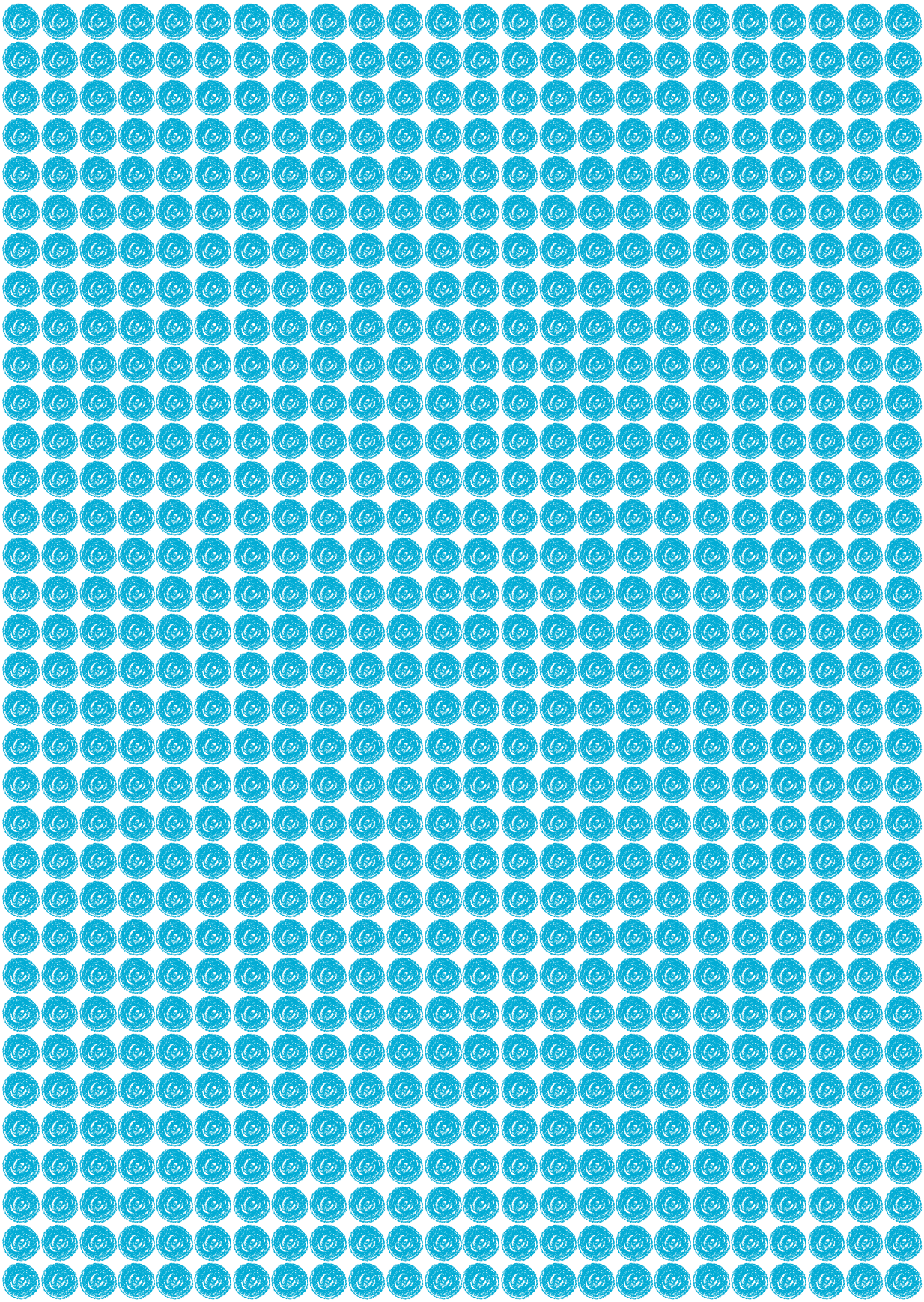
The proposal given to the parliament is compulsory use of mobile phones in lessons, hence the title **Let's turn the mobile phones on**.

During the conference we are making us heard and connected by means of social networks; and the authors of the **Handing over the learning to learners** theme section are trying to be enterprising, so they advertise their presentations on **SIRikt's** Facebook page and on witter using the hashtag #sirikt.

Let's celebrate and learn together at the 10th SIRikt, which is at the same time the 21st conference on using ICT in education!

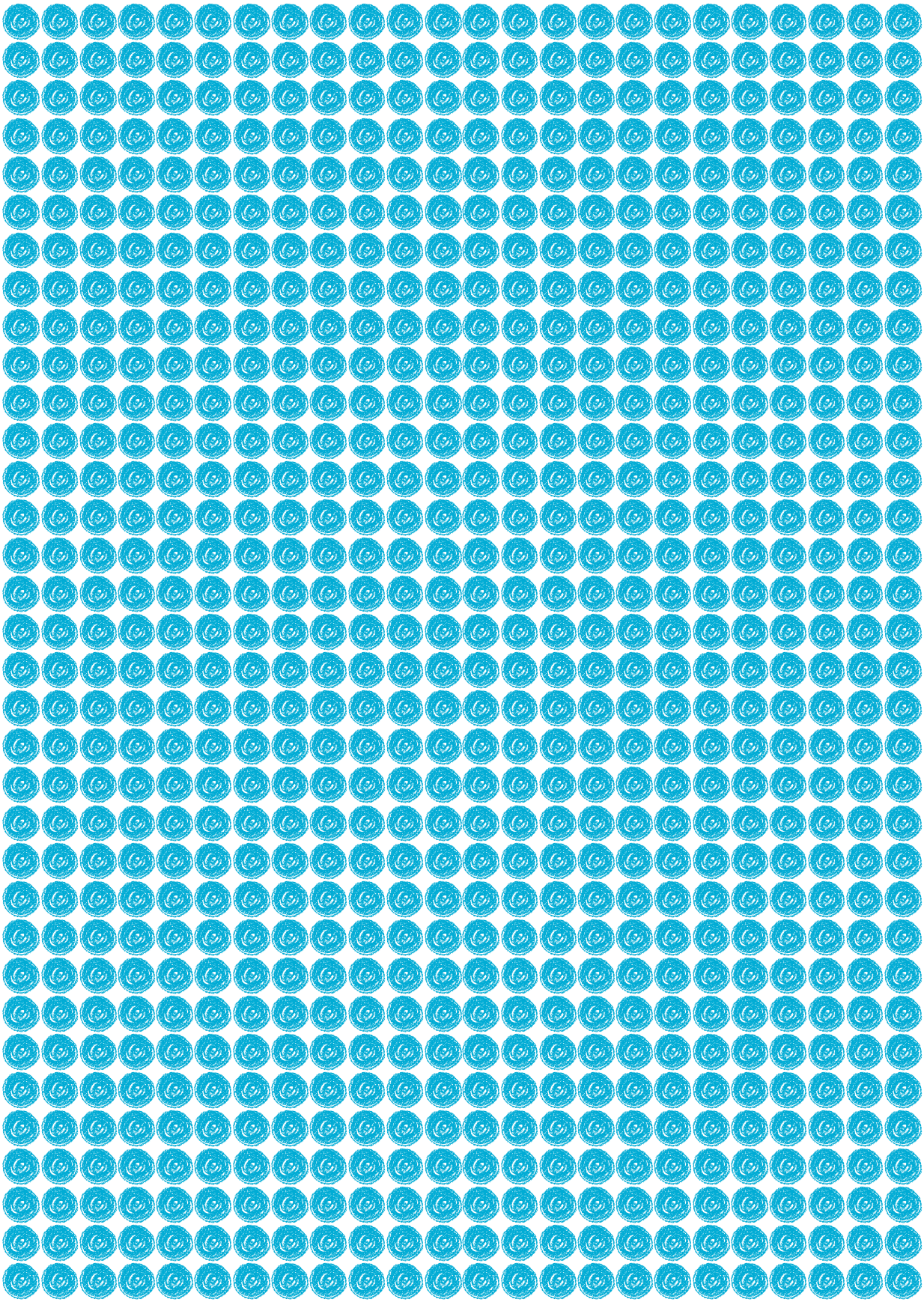
SIRikt programme and organising committee





PLENARNA PREDAVANJA
VABLJENI PREDAVATELJI

PLENARIES
INVITED SPEAKERS



Plenarna predavanja

Plenaries

Če želimo korakati učencu naproti, se moramo sami spremeniti. Plenarni predavatelji na dosedanjih SIRiktih so bili vedno korak pred nami: eni vsebinsko, drugi komunikacijsko, tretji informacijsko. Vedno smo od njih prevzeli najboljše, med predavanji pa se trudili, da smo jih spraševali in usmerjali s komentarji, tviti in glasovanji. Ko smo se vrnili v svoja okolja, smo učno prakso spremenili, obogatili, dopolnili in obrusili na raven odličnosti.

Dosedanji Sirikti se lahko pohvalijo z uglednimi plenarnimi gosti. Tudi letos je tako. Nastopajo z geslom **Učenje naj bo!** Z nami delijo svoje znanje in izkušnje o tem, **kako učenje predati v roke učencem, kaj je odprto učenje, kako ustvarjati učenje in kako narediti učenje ustvarjalno – učenje z boljšim delom, globljim razmislekom in več sodelovanja.**

If we want to come towards our learners, we have to change ourselves. The plenary speakers at SIRikt conferences in the past were always a step ahead of us: some of them in contents, some in communication, and some in information. We have always taken the best from them; during their presentations we asked them questions and directed them with our comments, tweets and votes. When we were back to our environments, we changed, enriched, improved and smoothed our teaching practice to perfection.

The previous SIRikt conferences boast a number of well-known keynote speakers. This year it is no different. They present under the motto **Let there be learning!** They share their knowledge and experiences about **how to hand over the learning to learners, what open learning is, how to create learning and how to make learning creative – learning with better work, deeper insight and more cooperation.**

10 let SIRikta

10 years of SIRikt

Andreja Bačnik, **Nives Kreuh** in **Amela Sambolić Beganović**,
Zavod RS za šolstvo, Slovenija

Povzetek: V jubilejnem 10. letu konference SIR**ikt**, po 10 letih konference MIRK, se je izraz SIR**ikt** že dodobra udomačil in postal prepoznaven. Ob tem so mnogi pozabili na izvor kratice SIR**ikt**. Ta izhaja iz besedne zveze Splet Izobraževanja in Raziskovanja z IKT in pomeni splet, preplet, mrežo in mreženje prispevkov, gradiv, idej, podpore, nasvetov, informacij, priporočil, dobre in obetavne prakse, raziskav, dogodkov ter ne nazadnje odnosov in druženja. Zaščitni znak konference je postal tudi kraj, kjer poteka, Kranjska Gora.

V prispevku 10 let SIR**ikt**-a se bomo z ustvarjalci programov konference in njenimi udeleženci, ob glasovnih tvitih, vsebinsko retrospektivno sprehodili skozi vsa leta konference in se ustavili ob mejnikih, ki so zaznamovali konferenco in s tem tudi IKT-izobraževanje v Sloveniji: vse od začetkov portala SIO, videokonferenc, E-šolstva, predstavitev v obliki NeTičNeMiš (*ang. TeachMeet*), Odprte učilnice, Sejma DajDam itd. pa do tem konference in razvoja prispevkov iz prakse ter uporabe družabnih omrežij, kot sta Twitter in Facebook, za podporo in za razvoj konference SIR**ikt**.

Abstract: In the 10th jubilee year of the SIR**ikt** conference after ten MIRK conferences the name SIR**ikt** has become well established and well known. Many people have forgotten the origin of the abbreviated name, i.e. Enabling research and education with ICT, the meaning that integrates the web, network, connecting, collaboration, networking of presentations, materials, ideas, support, advice, information, consultancy, good and promising practice, research, events and also social networking. The conference trademark has also been Kranjska Gora, the venue of the conference.

In the presentation speakers together with creators of the past conference programmes and participants will contribute “audio-live” Tweets to make us walk through all the years of the conference and stop at different milestones which marked the conference and the development of ICT in education in Slovenia: from the early beginnings of the SIO portal, videoconferencing, E-education project, presentations (TeachMeet, Open spaces, GiveTake fair, etc.), conference themes and the development of presentation from schools, the use of social media (Twitter and Facebook), all in support and for the development of the SIR**ikt** conference.

Besedilni svet na zaslonu

Screening our textual universe

Adriaan van der Weel, Universiteit Leiden, Nizozemska

Povzetek: Premik s papirja na zaslon pomeni tudi premik v paradigmi medčloveške komunikacije. Poglavitne lastnosti zaslonov so zelo drugačne od tistih, ki jih ima tisk na papir. Zato uporaba načinov komuniciranja, ki poteka s pomočjo besedila na zaslonu, bistveno vpliva tudi na izobraževanje. Izbira med papirjem in zaslonom vpliva na odnos učencev do besedila, ki ga obravnavajo, na njihov način, kako ga lahko uporabijo, na njihovo stopnjo zaupanja v verodostojnost besedila ter na to, kako dobro si zapomnijo njegovo vsebino. Zasloni torej predstavljajo drugačen koncept znanja.

Abstract: Moving from paper to screen is causing a paradigm shift in human communication. The salient inherent properties of screens are vastly different from those of print on paper. Therefore the use of screen-based textual communication practices has major repercussions also for education. The choice between paper and screen affects students' relationship with the texts they need to study; the way they can use them; how much they trust them; how well they remember their contents. Ultimately, screens represent a different concept of knowledge.

Sedem šolskih izzivov

Seven school challenges

Birgy Lorenz, Pelgulinna Gymnasium, Estonija

Povzetek: Kar je Finska v izobraževanju, je Estonija v uporabi tehnologije v izobraževanju. Rezultat razvoja estonskega kurikula je, da IKT zadeva vse – od učiteljev razrednega pouka do predmetnih učiteljev. V panelni razpravi boste izvedeli o sedmih izzivih, ki so se jih lotile estonske šole pri vpeljevanju projekta Digitalni preobrat (Digital Turn) (od tehničnega do miselnega preobrata v kurikulu); predstavljene bodo tudi različne vrste odgovornosti, ki jih ima učitelj, ki uporablja in poučuje IKT-kompetence (tudi katere so te kompetence in kakšen je proces evalviranja), izvedeli boste o programih ProgeTiger in Smart Lab, ki običajnemu učitelju zagotavljata možnost ustvarjalne in inovativne uporabe tehnologije, vse do stopnje kodiranja in programiranja.

Abstract: Estonia is considered to be new Finland regarding the use of technology in Education. Estonian curricula development has made ICT everyone's business – from elementary to subject teachers. In the panel seven challenges that Estonian schools have tackled to implement Digital Turn project (technical to mindset to changes in the curricula) will be presented; further you will be informed what the different subject teacher's responsibilities using and teaching ICT competences (also what the competences are and how the evaluation process looks like) are; learn about ProgeTiger and Smart Lab programmes that give ordinary teacher the possibility to use technology in creative and innovative ways, up to coding and programming level.

Arnes v šole, za šole in/ali Kdo sem na spletu?

Arnes in schools, for schools and/or Who am I on the web?

Tomislav Dolenc, Arnes, Slovenija

Povzetek: Povejmo zgodbo, ki v dveh dejanjih govori o dvakrat deset učenja in dvakrat dvajset pričakovanjih ter o digitalni identiteti učečih se, učiteljev in šole. Vsekakor stojimo na zelo zanimivi in v mnogočem prelomni zgodovinski stopnici. Za nami je deset »Siriktovih« in pred tem tudi deset »Mirkovih« let, a so naše oči že uprte v prihodnost, v ne več tako daljno leto 2020. Še preden pogledamo naprej, se moramo vprašati tudi, kje smo danes. Tehnologija nas je morda omrežila hitreje, kot smo pričakovali, in se neustavljivo vključuje v prav vse sfere življenja, a se moramo ob tem vprašati, ali res vedno vemo, kaj bi počeli z njo. V prispevku bomo, tudi skozi zgodbo večpomenske 'SIRiktove desetke za učenje', predstavili raznolike p(l)asti uvajanja informacijsko-komunikacijskih tehnologij v šole, o katerih smo se doslej naučili veliko več kot samo to, da so neločljive: seveda nikoli ne gre brez tehnološke osnove, a ima še posebej velik pomen tudi učenje – za učitelje. Arnes je na šolah prisoten na mnogih področjih, v prihodnje pa utegne v šole vstopiti (in zanje delovati) še bolj. Sam proces pravzaprav deluje obojestransko, saj v njem tudi šole »prihajajo na Arnes«. V preteklem letu so namreč vse osnovne šole tiho vstopile v federacijo ArnesAAI. Skozi razkritje, kaj se je v tem procesu zgodilo in kako s tem odpiramo nove priložnosti za odprto učenje, bomo hkrati povedali tudi zgodbo o spletni identiteti. Sprašujemo se, kaj je njena sedanjost in kakšna je njena prihodnost? Kaj nam spletna identiteta pomeni? Kakšen nadzor imamo nad njo? Ob tem se pojavljajo tudi zelo pomembna vprašanja, ki imajo še veliko širše razsežnosti. Je prav, da tehnološki velikani, kot je Google, vedo za vsak naš korak? Naj sama država res ve, katero knjigo smo si izposodili in katera zdravila uporabljamo? V kolikšni meri je država Arnes? In končno, kaj ima pri vsem tem učitelj? Zastavljena vprašanja niso predvsem niso tehnološka, temveč družbena. Učitelji pa soustvarjate družbo. Vsaj morali bi jo.

Abstract: Let's tell the story that – in two parts – speaks about two times ten of learning and two times ten of expectations and the digital identity of learners, teachers and schools. We have reached an interesting historical milestone. There are ten »Sirikt's«, and before them there were ten »Mirk's« years, but our thoughts are already directed towards the future, into the year 2020, which is quite near. But before looking ahead, we have to ask ourselves where we are today. The technology conquered us faster than we had expected, and it is penetrating into every sphere of our lives. But nevertheless, we have to ask ourselves: do we really know what to do with the technology? The presentation will – also by means of the ambiguous

»Sirikt's ten for learning« – show various pitfalls and layers of introducing ICT into schools, and of which we have already learned more than just the fact that they are inseparable: of course a technological basis is always needed, but learning is also very important – learning for teachers. ARNES is present in schools in various areas, and in the future this will only be strengthened and widened. The process itself is actually bidirectional, because schools also »come to ARNES«. Last year all primary schools joined the ArnesAAI federation. We will not only tell you the story of what happened in that process and how new opportunities emerged through it; we will also tell you the story of the internet identity. We are asking ourselves what its present is like and what its future will be. What does internet identity mean to us? What is our control over it like? Besides, there are other important questions emerging. Is it OK for technological giants like Google to know about our every single step? Is it really essential for the state to know which book we have borrowed from the library and which medicines we take? To what extent the state is ARNES? And finally, what has a teacher got to do with it? All these questions are not only technological questions, they are more social questions. And teachers co-create the society, or at least, they should do so.

Spodbujanje otrok za ustvarjanje skozi izkušnje sodobne raziskovalne umetnosti

Motivating children for creativeness through modern research art experience

Jurij Krpan, Galerija Kapelica, Slovenija

Povzetek: Sodobna raziskovalna umetnost nastaja na presečišču znanosti, tehnologij in družbe. Umetniki s svojimi projekti tematizirajo vplivanja računalnikov, interneta, mehatronike, kibernetike, biotehnologije ... Te dejavnosti korenito spreminjajo družbo, v kateri otroci različne tehnologije dojemajo kot svoje realno okolje, v katerega so se rodili, in ne kot nekaj, kar je človeštvu zunanjega. Glede na to, da tehnologije niso nedolžne – so ideološke, je razumevanje 'črnih škatlic', ki se jih ne da odpreti in pogledati v njihovo drobovje, popolnoma onemogočeno. V delavnicah, ki jih praviloma vodijo umetniki s področja sodobne raziskovalne umetnosti, otroci spoznavajo načela različnih tehnologij in si s tem pridobijo razumevanje vzgibov, ki so pripeljali do natančno takšnih tehnoloških rešitev. Ne glede na to, ali gre za računalništvo ali biotehnologijo, otroci s svojimi rokami (Hands On), naredi sam (DIY), naredimo skupaj (DITO) z razstavljanjem obstoječih in sestavljanjem novih izdelkov dojamejo možnosti tehnologij in jih osmišljajo po svoje (hacking). V procesu spoznavanja in dela z visokimi tehnologijami se otroci osvobodijo strahu pred vsemogočnostjo na eni strani in determiniranostjo, vpisano v tehnološke rešitve na drugi strani.

V okviru Petkove akademije želimo razvijati skupnost otrok, ki bodo med seboj sodelovali in prenašali znanje, ki jim ga posredujejo mentorji. V medvrstniško (peer-to-peer) izmenjavanje znanja smo vgradili tudi igričarski vzvod, ki otrokom omogoča, da prehajajo v vedno zahtevnejše stopnje in si s tem odpirajo možnosti za sodelovanje v nacionalnih in mednarodnih povezavah, natečajih in nagradah. Vloga mentorjev v delavnicah je spodbujanje in lajšanje (facilitiranje) prenosa znanj, nadzor nad uporabo strojev in spodbujanje potencialov, ki jih ima vsak posameznik, saj si otroci sami izbirajo teme oz. izdelke, ki jih želijo usvojiti. Naš cilj je ustvariti skupnost nedisciplinarnih ustvarjalcev, ki lahko s svojim holističnim pristopom povsem nekonvencionalno rešujejo probleme. Družijo jih vrednote souporabe (sharing), kolektivnega ustvarjanja (do it together), odprtega dostopa do znanja (open source), poštene trgovine (fair trade) ipd.

Abstract: Modern research art arises from the cross point between science, technology and society. Artists thematise the influence of computers, internet, mechatronics, cybernetics, biotechnology through various projects. These activities are changing the society in which children comprehend various technologies as their real environment. They were born in it and it is not out of our human domain. Due

to the fact that technologies are not innocent but rather ideological, the understanding of little “black boxes” which we cannot open and look inside, is entirely disabled. In workshops led by artists from modern research art field children learn fundamental principles of various technologies and start to comprehend grounds for given technological solutions. Regardless of whether it is all about computer science or biotechnology, children by hands-on activities, do-it-yourself (DIY), do-it-together (DITO) activities disassemble and assemble products and learn about different technologies. Moreover, they co-create them in their own way (hacking). During the process of learning and working with highly advanced technology children lose fear of ultimate power and also of the determination which is integrated in the given technological solutions.

Petkove akademije (Friday Academies) aim to develop the community of children who will collaborate and share knowledge transferred to them by mentors. We build a gaming initiative in their peer-to-peer exchange of knowledge, which enables children to progress onto higher levels and open up opportunities for collaboration in national and international networking, competitions and rewards. The role of mentors in workshops is encouraging and facilitating knowledge transfer, control over the use of machines and encouraging potentials in each individual since children select themes or products which they wish to conquer. Our aim is to create a community of non-disciplinary creators who solve problems in utterly unconventional ways by using holistic approach. They share common values of sharing, collective co-creation (do it together), open source knowledge, fair trade, etc.

Rojstvo podatkovnih filozofov

The birth of the Data-Philosophers

Damian McBeath, Ark Conway Primary Academy, Velika Britanija

Povzetek: Šole v 21. stoletju so podatkovno bogate; posledica nastanka novih učinkovitejših tehnologij je večja dostopnost in želja po zbiranju in urejanju podatkov. Toda koliko teh podatkov tudi zares uporabljamo? Kako vse te informacije pretvarjamo v novo znanje? In predvsem najpomembnejše: kako lahko te informacije uporabimo za izboljšanje dosežkov naših učencev? Damian McBeath je ravnatelj, ene najuspešnejših britanskih šol Ark Conway, ki jo nekdanja državna sekretarka Nicky Morgan opisuje kot 'motor družbene pravičnosti, ki daje otrokom v Actonu (London) najboljše možnosti za življenje'. Njen predhodnik Michael Gove je zapisal: »ARK Conway je dokazal, kako lahko briljantna šola s kulturo visokih pričakovanj, izjemnim vodstvom in navdihujočimi učitelji postane zares odlična v celoti in za vse v dveh letih.« S praktičnimi primeri in vpogledi bo Damian predstavil, kako sta žeja šol po znanju za vsakega otroka in obsedenost za podrobnosti pripeljali do tega, da njegovo osebje označujejo kot 'podatkovne filozofe', in kako so zbrane informacije pripeljale do tega, da je šola v Londonu že tri dosega najvišje rezultate na nacionalnem nivoju.

Abstract: Schools in the 21st century are data rich; the emergence of new, more efficient technologies have made collecting and collating this data more accessible and more desirable. But how much of this data do we actually use? How do we turn all this information into new knowledge? And most importantly of all: how can we use this information to improve the outcomes for our pupils? Damian McBeath is Headteacher of Ark Conway, one of the most successful UK schools and described by the ex-secretary of state Nicky Morgan as ‘an engine of social justice’ giving children in Acton (London) the best possible start to life.’ Her predecessor Michael Gove: “ARK Conway has demonstrated how a brilliant school, with a culture of high expectations, great leadership and inspiring teachers can be truly excellent across the board within two years.« With practical examples and insights in this talk, Damian will give examples of how the school's thirst for knowledge about every child and obsession for detail has led to his staff being described as ‘data-philosophers’ and how the information gathered has led a school in a London Housing estate to become the highest performing school nationally for the last 3 years.

4 digitalne veščine, ki jih nikoli ne boste dobro učili

4 digital skills you'll never teach your kids right

Tena Šojer, pisateljica DECODE HQ, Hrvaška

Povzetek: Generacija n oz. generacija digitalnih 'domorodcev' in generacija Y – generacije, ki jih trenutno poučujete ali pa jih še boste, bodo imele bistveno drugačno življenje, delo in pogled na svet. Tehnologija in digitalna realnost nista nekaj, česar bi se naučili ali pridobili, pač pa so bili rojeni v tovrstni svet ter pridobili izkušnje na načine, ki jih nismo mogli predvideti. Veščine, kot so komunikacija, sodelovanje, odprtost in obdelava podatkov, imajo zanje drugačen pomen. Predstavitev se bo s pomočjo primerov, kako ti otroci uporabljajo tehnologijo, osredotočila na to, kako zelo se njihove veščine razlikujejo od naših. Vsak del predstavitve bo poudaril prednosti in načine, kako te veščine uporabiti na delovnem mestu, izpostavil pa bo tudi glavni izziv. 1. Komunikacijske tehnologije: Snapchat, Super.me, reddit, tumblr, 7 cups of tea. Prednosti: spodbujanje ustvarjalnosti, ranljivost, odprtost novim uporabnikom ter lažja interakcija. Izzivi: kako ohraniti osebno noto komunikacije prek zaslona. 2. Sodelovalne tehnologije: Googlovi dokumenti, Slack, BAsecamp, Soundcloud, 8tracks, Hitrecord nam omogočajo sodelovanje z drugimi ne glede na meje, tehnologije, oddelke, strokovno področje. Prednosti: inkluzivnost, skupinsko delo in smisel za skupnost. Izziv: kako naučiti otroke, da so ponosni na svoje delo ne glede na to, da nikoli ni v celoti njihovo. 3. Tehnologije odprtosti: pomembno je katero koli orodje, tehnologija, programski jeziki, vsi pa se izjemno hitro spreminjajo. Prednosti: večji pogum pri soočanju z novimi izzivi in sprejemanje različnih izkušenj. 4. Tehnologije obdelave podatkov: Wikiji, družabna omrežja, Twitter, Instagram novice, Vine, podcasti, aplikacije za sporočanje. Prednosti: lahka dostopnost do vseh informacij in znanja, kadar koli, kjer koli, ki se kaže v demokratizaciji znanja. Izzivi: kako pomagati otrokom pri presoji in obdelavi informacij, ko jih ne moremo več zaščititi pred njimi. Kot generacija, ki se je naučila teh veščin, le stežka zmoremo učiti generacijo, ki jih je pridobila – toda še nikoli ni bilo tako pomembno, da se učitelji učijo z otroki in jim pomagajo odkrivati načine, kako se spopadati z izzivi, s katerimi se bodo soočali.

Abstract: N-gen, millennials, generation Y – the generations you are now teaching or are about to teach will have inherently different life, jobs, and worldviews. The technology and digital realities are not something they acquired or learned, but were born into and have shaped their experiences in ways we couldn't have predicted. Skills like communication, collaboration, openness and processing information have quite a different meaning for them. The focus of this talk will be to highlight just how much these skills differ from ours, through examples of how they use technologies. In each section, the talk will highlight the benefits and how these skills

can be used in a workplace, but also state the main challenge. 1. COMMUNICATION Technologies: Snapchat, Super.me, reddit, tumblr, 7 cups of tea Benefits: Boosting creativity, vulnerability, openness to new people and easier interaction. Challenges: How do you keep the conversation personal through a screen? 2. COLLABORATION Technologies: Google docs, Slack, Basecamp, Soundcloud, 8tracks, Hitrecord enable us to work with each other across borders, technologies, departments, areas of expertise. Benefits: Inclusivity, team work and a sense of community. Challenge: How to teach children to take pride in work that is never entirely their own? 3. OPENNESS Technologies: Whatever tools, technologies, programming languages are relevant, and they keep changing rapidly. Benefits: Greater courage in taking on new challenges and accepting different experiences. Challenge: How to not feel like an "impostor" when you never get to perfectly master anything because it changes too quickly? 4. PROCESSING INFORMATION Technologies: Wikis, social media, Twitter, Instagram news, Vine, podcasts, messaging apps Benefits: Easy access to all information and knowledge, any time, any place, resulting in democratizing knowledge. Challenges: How to help kids filter and process information when you can no longer shield them from it? As a generation who learned those skills, we can hardly teach them to those who acquired them – but it's more important than ever for teachers to learn with the children and help them discover the ways to tackle the challenges they will face.

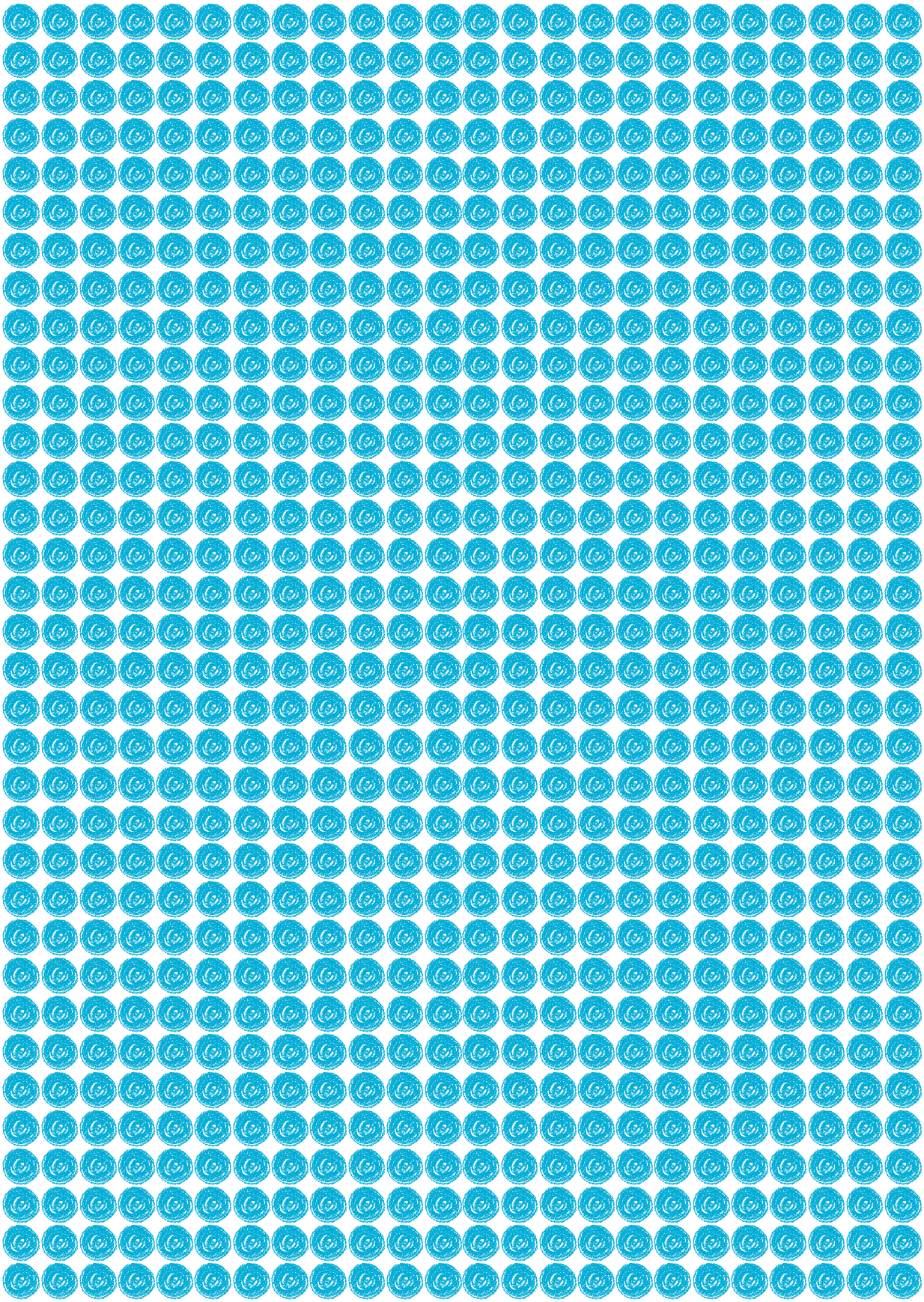
Oblačljivo učenje

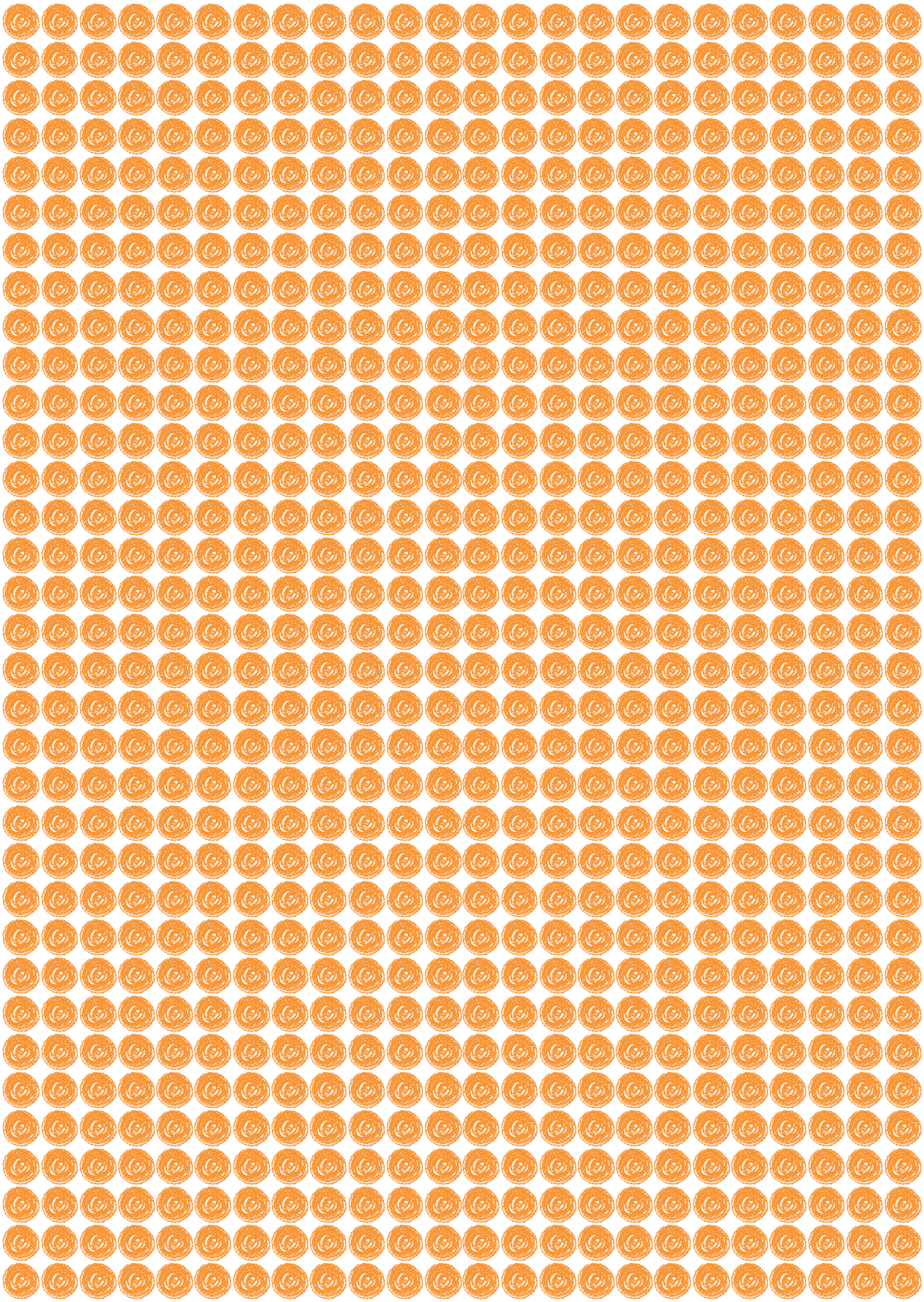
Wearable learning

Saša Divjak, Zaslužni profesor Univerze v Ljubljani, Slovenija

Povzetek: Po vpogledu v to, kaj predstavlja oblačljivo računalništvo in kakšne naprave pri tem uporabljamo, se bomo usmerili v priložnosti, ki jih ta napredna tehnologija lahko prinese izobraževanju in kako se lahko zliva z obstoječimi sodobnimi načini izobraževanja. Spoznali bomo tudi nevarnosti, ki jih prinašata tako učenje in poučevanje. Konec predstavitve bo usmerjen v to, kar nam (morda) prinaša prihodnost.

Abstract: After an insight into what wearable learning is and what devices are used for it, we will focus on the benefits and opportunities that this technology is bringing to education and how it can be merged with the contemporary forms of education. The presentation will also highlight some dangers which are an inevitable part of this form of learning and teaching. Finally, we will also look at what the future may bring.





PLENARNA PREDAVANJA V TEMATSKIH SKLOPIH

PLENARIES IN THEME SECTIONS

UČENJE UČENCEM V ROKE
HANDING OVER THE LEARNING TO LEARNERS

ODPRTO UČENJE
OPEN LEARNING

USTVARJAMO ZA UČENJE
CREATING FOR LEARNING

Učenje učencem v roke

Handing over the learning to learners

Upravljanje lastnega procesa učenja spodbuja odgovornost za učni uspeh. Dajmo učencem priložnost, da prevzamejo odgovornost za uspeh. Na samostojni poti učenja potrebujejo učitelja, ki si upa predati učenje v njihove roke.

Ste spremljali učence na njihovi poti samostojnega in odgovornega učenja? Ste pri tem uporabili tehnologijo, ki vas je podprla pri razvijanju učenčeve odgovornosti za lastno učenje? Ste uporabili moč "zunanjega socialnega sveta" za spodbujanje samostojnosti in prevzemanja odgovornosti za lastno učenje? Avtorji prispevkov odgovarjajo na zastavljena vprašanja.

Način predstavitve: Izobraževalni start-up

V dvorani se na šestih različnih omizjih vrstijo predstavitve plenarnih predavanj. Na vsaki sodelujeta avtor in soavtor, ki imata na voljo 7 minut za predstavitev in 3 minute za pogovor. Že pred konferenco so začeli s "Predstavitveno kampanjo" na Twitterju (#podjetnost) in Facebooku, v kateri so vabili udeležence na svojo predstavitev.

Managing one's own learning process prompts the responsibility for one's learning success. Let's give our students an opportunity to take over the responsibility for their success. On their path of independent learning, they need a teacher, who dare turn learning over into their hands.

Did you mentor and tutor your students on their path of independent and responsible learning? Did you make use of the technology, which assisted you in developing students' responsibility for their own learning? Did you make use of the power of the "outside social world" to encourage independence and taking over the responsibility for their learning? If the answer is yes, then this theme section is the right choice for you.

Presentation form: educational start-up

On several spots in the hall, three rounds of presentations will take place. In each presentation the author and co-author will have 15 minutes available: 10 mins for the contents and 5 mins for the discussion. The presentation should be innovative and should engage the audience. Launch your "presentation campaign" already before the conference on Twitter (#podjetnost) and Facebook, where you can invite participants to your presentation.

Formativno s tablicami do samostojnega učenja

Formative with tablets towards independent learning

Rok Lipnik, Gimnazija Celje - Center, Celje

Povzetek: To šolsko leto sodelujem v projektu Formativno spremljanje, v povezavi z uporabo tabličnih računalnikov pa dijake spodbujam k samostojnemu učenju in prevzemanju odgovornosti za svoje učenje. Moji cilji so, da bi dijaki prevzeli odgovornost za učenje in se tako tudi motivirali. Bili bi sposobni samostojno razvijati svoje znanje, ugotavljati svoje pomanjkljivosti v znanju in jih odpravljati. Glavni dejavnosti učitelja v tem primeru sta predvsem vodenje dijakov na poti k temu cilju ter priprava različnih dejavnosti in izvajanje pouka tako, da dosežemo večjo samostojnost dijakov, kar vključuje veliko pogovarjanja in s tem tudi več osebnega stika. Z dejavnostmi na tabličnih računalnikih dijaki samostojno raziskujejo dano temo, se učijo in si izbirajo naloge ter zahtevnost. Prednosti so v tem, da postajajo individualni, aktivni in delajo na lastnem znanju, namesto da so pasivni in čakajo na učitelja. Tako zasnovan pouk od učitelja zahteva veliko časa za pripravo, vendar se zaradi večje sposobnosti dijakov, da se učijo samostojno, to izplača.

Abstract: I am taking part in the Formative assessment project this year and in conjunction with using tablet computers in class, I am motivating students towards independent learning and taking responsibility for their learning. My goals include taking responsibility for students individual learning and motivating themselves. This way, students are capable of developing their knowledge, finding their shortcomings and eliminating them. Teachers main activities include guiding students on the path to being independent, preparing activities and guiding classes in direction of bigger independence, which includes a lot of talking and personal contact. Through tablet activities students research the given topic, learn and choose their assignments and difficulty. Major upsides include gaining independence for students, they become more active and work on their knowledge, instead of being passive and waiting for their teacher. One downside could be the fact that the teacher has to take more time to prepare for classes, but in the long run it pays off, because students become more and more independent and require less help from their teacher.

Z e-listovnikom odgovorno in aktivno do znanja

E-Portfolio - Responsible and Active Way to Knowledge

Jasmina Velikanje, Gimnazija Jurija Vege, Idrija

Povzetek: Pomembno je, da učitelji z učno prakso dijaku pomagamo ozavestiti, da je učenje vseživljenjski proces, katerega gonilna sila so potreba po učenju, notranja motivacija in prevzemanje odgovornosti za svoje učne uspehe in s tem znanje. Upravljanje lastnega učenja je ključ do uspeha in osebnega zadovoljstva. Pri predstavljeni izvedbi pouka nemščine sem želela dijake motivirati za učenje in jih spodbuditi k prevzemanju odgovornosti za svoj uspeh. Glede na predznanje so načrtovali svoje učenje, soustvarjali so kriterije uspešnosti, samostojno obravnavali snov in med seboj vrednotili dokaze učenja. Tema je bila opis stanovanja ali hiše. Kot orodje smo uporabili e-listovnik Mahara, s čimer so dijaki skozi vsebino razvijali digitalno veščino. Za začetek so imeli nalogo natančno opisati fotografijo hiše, notranje prostore in pohištvo. Razmišljali smo, kako bodo lahko to znanje uporabili v življenju, in postavili smo kriterije dobrega opisa hiše ali stanovanja. Dijaki so v Mahari ustvarili novo učno snov z naslovom Mein Haus-meine Wohnung. Vsak je s pomočjo usmerjevalnih vprašanj sam razmišljal o predznanju, lastnih kriterijih uspešnosti, učnih strategijah in dokazih. Dijaki so v 3 učnih urah v skupinah obravnavali snov. Uporabljali so učbenik, spletni slovar in spletne vire. Slednji so bili vnaprej izbrani, imeli pa so možnost poiskati dodatni vir. Ko so snov predelali ter izdelali zapiske in slovarček novih besed, so kot dokaz, da so dosegli zastavljeni cilj, opisali svojo hišo oziroma stanovanje. Izdelek so objavili v Mahari in ga delili z izbranim sošolcem in učiteljico. Še prej pa so v parih v forumu zapisali, kaj je po njihovem mnenju kakovostna povratna informacija. Vsak je sošolcu ali sošolki podal povratno informacijo o izdelku, prav tako je povratno informacijo dala učiteljica. Dijaki so imeli možnost izdelek izboljšati in se tako še bolj približati izbranemu cilju. Za zaključek so v Mahari zapisali samoevalvacijo. Razvidno je, da so bili motivirani za delo, ker so imeli pri izbiri gradiva dokaj proste roke. Všeč jim je bilo, da so lahko snov obravnavali v skupinah. Večina jih je zadovoljnih s svojim dokazom učenja in menijo, da so zastavljeni cilj dosegli ter da jim bo usvojeno znanje koristilo. Prav tako sta jim motivacijo za delo predstavljala delo z računalnikom in uporaba elistovnika.

Abstract: Any teacher conducting lessons should help his students realize that learning is a lifelong process. It is intrinsic motivation and taking responsibility for learning achievements and thus knowledge that make lifelong learning possible. Managing ones own learning is the key to success, personal satisfaction and self-confidence. My goals in the lesson plan presented here were to motivate the students for learning, encourage them to take responsibility for their learning success. They planned their learning accordingly to to their prior knowledge, they co-created

success criteria, studied the learning materials independendly and did a peer- evaluation of their learning proofs. The topic of the lessons was a description of a house or an appartment. To be able to do all this we chose an e-learning environment, ePortfolio Mahara, whisch enabled the students to improve their digital skills through context. The first task was for the students to describe a house, rooms and furniture. We dicussed how and when this knowledge may be useful in their life. Together we set success criteria for a good description of a house. Students worked in ePortfolio,where they created a new fold Mein Haus - meine Wohnung. Each student answered some questions regarding his pripr knowledge of the topic, set his/her personal learning goals, strategies and decied what would be his/her learning proof. In the following 3 lessons students studied the topic in groups. They used studentss book, e-dictionary, and Internet sources. The latter had been chosen in advance but the students could also choose other, additional sources. While studying the topic they created their own notes and vocabulary of new words. As a learning proof they wrote a description of their own house/home, published it in ePortfolio, shared it with a chosen classmate and the teacher. Before every student had to give feedback on the proof to the chosen classmate, pairs of students had to write in a forum what they believe is good feedback information. After that each student gave his partner feedack information, the teacher gave feedback to all students. In this way they had an opportunity to improve their work, to approach the learning goals. At the end students did selfevaluation in the ePortoglio Mahara. Their answers show that they felt more motivated for learning because they could choose learning materials themselves, they liked the group work and most of the students are satisfied with the learning proof. Most of them believe that the knowledge gained will certainly be useful in their life They also liked computer work and the challenge of using ePorfolio.

Na Telečji pečenki z Josipom Jurčičem

Enjoying Telečja pečenka (Roast Veal) in company with Josip Jurčič

Maja Kosmač Zamuda, ŠC Ljubljana, Ljubljana

Povzetek: Prispevek Gimnazije Antona Aškerca prikazuje, kako učence voditi skozi proces učenja, pri katerem so vsi samostojni in aktivni. Učenci se naučijo več, če se učijo na način in v okolju, ki sta jim všeč, kar omogoča predstavljeno e-učenje. Učitelj tako postane usmerjevalec poteka učenja z gradivi, ki so učencem pomagajo pri učenju. Snov so učenci spoznavali z navodili, ki sem jih pripravila v e-listovniku (http://mahara.org). E-listovnik je osebni elektronski prostor učenca, v katerem na različnih stopnjah načrtuje, spremlja in vrednoti svoje učenje. Temelji na formativnem spremljanju in vrednotenju znanja ter tako spodbuja veščino samoregulacije učenja, saj predvideva učenčevo sodelovanje in soodločanje v vseh delih učnega procesa. Delo učencev sem razdelila na več sklopov (predznanje, načrtovanje učenja, doseganje ciljev, razumevanje besedila, zgradba besedila, značajevka, nove naloge, samorazmislek) Ugotovitve in zapise so delili z mano v razdelku Moje učenje (Dokazi). Tako sem sledila njihovemu sprotnemu delu. Pri delu so z reševanjem križanke dokazovali svoje predznanje, samostojnost z razlago literarnih pojmov, ki so jih vpisovali v Padlet.; okolje, v katerega so vpisali svoje predvidevanje razumevanja novega literarnega pojma. S pomočjo teh zapisov kasneje oblikovali definicijo značajevke (http://padlet.com/). Nato so brali besedilo in reševali naloge na učnem listu, s katerim so dokazali razumevanje literarnega besedila. Samoučenje so sklenili s samostojnim delom, saj so morali na podlagi novih znanj ustvariti animacijo (http://www.powtoon.com/) o značaju osrednje osebe in si ogledati film, ki so ga komentirali v skladu z navodili, ali pa so napisali primerjavo s še eno obravnavano novelo. Po koncu učnega procesa sem njihove zapise in gradiva komentirala, da so dobili povratno informacijo. Njihove ugotovitve so bile različne, zelo izvirne, saj je besedilo kratko, a večplastno in omogoča več različnih interpretacij ter predelav. Pomembno je, da so bili vsi dejavni, njihovo znanje pa boljše in trajnejše kot pri dijakih, s katerimi sem snov obravnavala skupaj v razredu. Do ugotovitve o trajnejšem znanju so prišli učenci sami, kar dokazuje anketa (https://www.1ka.si/), na katero so odgovarjali. Samostojno učenje je smiselno, čeprav je proces, kadar gre za kompleksno snov, dolgotrajnejši in tako ni primeren za vsako temo. Pri zahtevnejših temah je bolj smiselno, da učitelj izbere le del učnega procesa, ki ga učenci lahko usvojijo s samostojnim učenjem v e-listovniku.

Abstract: The article shows how to lead students through the process of learning during which all the students are active and autonomous. Students acquire more knowledge if they learn in the way and in the environment they like. This is precisely

what the presented e-learning enables them to do. Thus, the teacher becomes the person who directs the process of learning with the materials that help students while learning. The students have become acquainted with the subject matter through the instructions I have prepared for them on the e-portfolio (http://mahara.org). E-portfolio is a students electronic space in which he/she plans, monitors and evaluates his/her learning at different stages. It is based on formative monitoring and evaluating of knowledge: thus, the skill of self-regulation of learning is stimulated as it anticipates the students cooperation and co-decision making in each and every part of the learning process. The students work has been divided into several units (Previous Knowledge, Planning of Learning, Achieving the Goals, Text Comprehension, Text Structure, Značajevka (a short story focused on the personality of the main character, specific to Slovenian literature), New Assignments and Self-Evaluation); the students shared their findings and notes with me via the subsection My Learning (Evidence). In this way, I was able to monitor their work promptly at each stage. While working, they proved their previous knowledge by solving crossword puzzles and their autonomy in explaining literary concepts which they shared with their classmates on Padlet (http://padlet.com/); then they read the text and filled in the work sheet with which they proved their understanding of the literary text. They concluded their self-learning by being self-creative since they had to - based on the newly acquired knowledge - create an animation (http://www.powtoon.com/) on the character of the main character and watch the film which they commented upon in accordance with the received instructions; furthermore, they wrote a comparison with another already dealt with short story. Upon completion of the learning process, I made comments on their notes and materials to provide the students with feedback. Their findings were many-sided, very original since the text is short yet multifaceted and enables several possible interpretations and remakes. It is important that all the students were active and their knowledge better and more lasting than the knowledge of those students with whom I dealt with the subject matter in the classroom. It was the students themselves who realised that their knowledge is more permanent, which is evidenced by the survey (https://www.1ka.si/) in which they had taken part. Autonomous learning is relevant although in case of a complex subject matter the process is more time-consuming and therefore not suitable for every topic. When dealing with more complex topics it is well-advised for the teacher to select only a part of learning process which the students can acquire via autonomous learning on the e-portfolio.

Lev v igralnici

A lion in the classroom

Neli Mišvelj, Vrtec Trbovlje, Trbovlje

Povzetek: Med izobraževanjem o smiselni uporabi IKT pri delu z najmlajšimi sem pripravila prispevek, ki je nastal v skupini otrok, starih 4–5 let. Izhodišče naloge je ideja otrok. Po prepevanju pesmi o levu je eden od otrok vprašal, zakaj ima lev v pesmici pet nog. Med pogovorom so otroci prišli do različnih ugotovitev. Vprašala sem jih, kje bi lahko videli leva. Otroke je zanimalo, ali bi ga lahko pripeljali v igralnico. Naslednje jutro (še v mraku) sem s projektorjem na celo steno projicirala film o levu in jih povabila, naj vstopijo. Njihovo doživljanje in odzive sem posnela s kamero. Potem sem jim ponudila še različne dejavnosti. Ključni cilj je bil spodbujati različne pristope k spoznavanju narave, kar mi je tudi uspelo, saj je dejavnost nastajala s spodbudo otrok in projicirani lev je bil nekaj popolnoma nepričakovanega in novega. Bil je resničen in eden od otrok me je vprašal, ali lahko pride k nam. Drugi otrok pa je hitro sledil projektorju in odkril računalnik ter preostalim razložil, da je to film z interneta, ki ima ikono, in v nadaljevanju je z miško božal leva. Ob skupnem zaključku so povedali, da ima lev res štiri noge in da nam ga je na drugačen način uspelo pripeljati v igralnico. Ugotovili so, da je prek računalnika prišel z interneta in da je bil lev na posnetku bel, kosmat in prijazen, saj je pil po steklenički. Predlagali so, da bi ga v nadaljevanju poiskali še v knjigah in revijah in da bi dan nadaljevali na prostem, kjer bi se igrali igro lev lovi. Dejavnost se mi zdi dobra, ker je bila hitra popestritev/dopolnitev vsebine – izhajajoč iz razmišljanj otrok. Kako brez posebnih priprav obogatiti vsebine in znanje otrok.

Abstract: During training on the sensible use of technology I make a contribution that is made in a group of children from 4-5 years. The starting point is the idea of children. After singing songs about the lion is one of the children asked why the lion in the songs has five feet. During the conversation the children come to different conclusions. I asked them where we could see the lion? Children wondered if he could be brought to the classroom. The next morning (in the dark) I through the projector to a whole wall projected movie from a lion and invited them to enter. Their experience and reactions I filmed on camera. After the experience I have offered different activities. The key objective was to encourage different approaches to understanding the nature of what I, succeeded, because the activity is created with the encouragement of children and the projected lion was something totally unexpected and new. He was true and one of the children asked me if he can come to us. The second child is quickly followed by the projector and discovered the computer and explain that this is a movie from the Internet, which has an icon and below it with the mouse stroking a lion. In the end kids explained that the lion really has four

legs and that we had a different way managed to bring in a classroom. They found that it came from the Internet with computer and that it was a lion in the frame, white, furry and friendly as he drank fom the bottle. They suggested that we could olso find him in books and magazines, and to continue the day in the open air, where they would play the game lion hunts. Activity seems to me good, because it was fast supplement content - resulting from reflections of children. How without no special preparations to enrich the content and skills of children.

Učenci kot astronavti na Mednarodni vesoljski postaji in pri pouku geografije

Students as astronauts on the International Space Station and at Geography lessons

Jure Radišek, Osnovna šola Franja Malgaja Šentjur, Šentjur

Povzetek: V predstavitvi predstavljam primer dobre prakse učenčeve samostojne uporabe IKT pri pouku geografije na OŠ Franja Malgaja Šentjur. V okviru brezplačnega spletnega izobraževalnega programa Sally Ride EarthKAM, ki poteka pod pokroviteljstvom ameriške vesoljske agencije NASA, smo leta 2014 kot prvi v Sloveniji na šoli izvedli fotografiranje Zemljinega površja z Mednarodne vesoljske postaje (ISS). Pri pouku geografije se naši učenci redno udeležujejo vseh misij, do katerih lahko dostopajo tudi samostojno od doma. Namen programa je razviti zanimanje učencev za naravoslovne vede s pomočjo IKT, zaradi mednarodne narave pa tudi spodbujati uporabo angleškega jezika in razvijati komunikacijske sposobnosti učencev. Glavni cilj programa pa je spodbujanje samostojne uporabe računalniških orodij (npr. GoogleEarth) ob procesu fotografiranja Zemljinega površja in kasnejšem spoznavanju in analiziranju naravnogeografskih in družbenogeografskih procesov na zemeljskem površju. Merilo učenčeve uspešnosti pri usvajanju programske vsebine je uspešno posneta fotografija izbranega površja, kar doseže le v primeru, če je zadovoljil vsem tehničnim pogojem, kot so upoštevanje orbite leta ISS, določitev geografske lege fotografiranega območja in upoštevanje vremenskih napovedi za to območje ter ne nazadnje tudi izbor zanimivih lokacij na površju Zemlje. Učitelj v prvem delu procesa nastopa kot usmerjevalec in koordinator, pri čemer pojasni, kako program deluje in na katere tehnične zahteve naj bodo učenci še posebej pozorni. Drugi del učiteljeve naloge je usmerjanje učencev k samostojni analizi pridobljenih fotografij in uporabi le-teh pri pouku geografije. Tako pridobljene fotografije učenci analizirajo s pomočjo orodja GoogleEarth, s katerim lahko primerjajo prostorska razmerja, reliefne značilnosti, poselitev ter gospodarske in druge človekove dejavnosti v prostoru. Tako je učenje teh vsebin pri rednem pouku geografije precej bolj temeljito in trajnejše. Ugotavljamo, da je uspešnost izvedbe programa potrdila uporabnost IKT pri poučevanju geografije in izboljšala učenčev pristop do dela in samostojnega učenja. Prav učencem je neposreden stik z »vesoljem« pomenil izjemno motivacijo, učitelju pa podlago za kakovostno izvedbo učnega procesa, zato želimo to izkušnjo razširiti v Slovenski učni prostor.

Abstract: The report summarizes an example of good practice in students' self-sustaining use of IKT in geography lessons in Franjo Malgaj primary school. Within the free on line educational software program Sally Ride EarthKAM, which takes place

under the auspices of the National American Space Agency, we carried out as the first school in Slovenia the shooting of the Earths surface from the International Space Station. And nowadays our students are regular users of that interesting experience. Program is designed to learn about natural sciences as well as the use of English language and developing communication skills. The main aim of the project is to promote the use of the computer science in the process of teaching. The result of participation in the project is photographing the Earth`s surface which will students achieved only if they successfully fulfils all the technical conditions, suc as consideration of the ISS`s orbits, the determination of the geographical location, predict the weather forecasts etc.. Acquired photos has been analyzed by using GoogleEarth tools to compared the spatial relationship, relief features and human activities in the area. Implementation of the program confirmed the usefulness of ICT in the process of geography teaching. Particularly encouraging was the students approach, because of direct contact with the space which meant exceptional motivation for them, and a quality learning process for teacher.

Dijaki izdelajo prvo uporabno spletno stran

Students create their first useful website

Nejc Grošelj, Gimnazija Jurija Vege Idrija, Idrija

Povzetek: Dijaki Gimnazije Jurija Vege Idrija so si pri izbirnem predmetu informatika zadali cilj, izdelati prvo uporabno spletno stran za lokalno podjetje, društvo ali organizacijo. Naloga se je zdela na prvi pogled zahtevna, saj večina dijakov še ni postavljala spletnih strani, hkrati pa je bil čas, namenjen tej temi, pri pouku zelo omejen. Prav zato smo za postavitev strani izbrali enostavno tehnologijo Arnes Spleta. Dijaki so pri pouku informatike najprej spoznali glavne smernice uspešnega oblikovanja spletnih strani ter se naučili HTML- in CSS-jezika. Nato so samostojno poiskali stranko, za katero so v svojem prostem času izdelali spletno stran. Na temelju želja naročnikov so si izbrali ustrezno predlogo, jo oblikovali z različnimi vgrajenimi funkcijami, vnesli prispevke z multimedijsko vsebino ter na koncu deloma popravili videz strani s pomočjo CSS-ukazov. Pri ustvarjalnem procesu sem kot učitelj igral le vlogo svetovalca in priskočil na pomoč, ko so naleteli na težave, ki jih sami niso znali rešiti. Ko je bila stran končana, so z različnimi orodji preverili njeno oblikovno odzivnost in barvno usklajenost ter odpravili napake. Potem ko so prejeli oceno izdelka, smo se pogovorili o možnih izboljšavah. Večinoma so predloge upoštevali in odpravili napake. Svoje stranke so naučili objavljati članke znotraj platforme Arnes Spleta, tako da bodo kasneje lahko tudi sami vnašali vsebino, dijaki pa bodo nudili tehnično podporo v primeru težav. Registracijo domene so opravili le dijaki tistih naročnikov, ki so bili zadovoljni s končnim izdelkom. Ob koncu šolskega leta so dijaki s spletno anketo izpostavili prednosti in slabosti tehnologije Arnes Spleta ter kritično ovrednotili svoje delo. Vse strani sicer niso tehnično popolno dovršene, saj je bil pri projektu pomemben zlasti učni proces postavitve in objave spletne strani. S takim načinom dela pa so dijaki postali veliko bolj samostojni in so prevzeli večjo odgovornost za lastne izdelke, saj so ti lahko vidni širši javnosti.

Abstract: Pupils of Jurij Vega Grammar School Idrija have set themselves the goal to create their first useful website as a part of Informatics classes, working with a local firm, association or organization. The task may seem at first sight difficult, because most of them had never before made a website and also the time devoted to this task in the classroom was very limited. Therefore, we chose the simple technology of Arnes splet to make their websites. At the beginning students learned during informatics classes the main guidelines of designing a website and programming in HTML and CSS language. Then they had to find a customer, for whom they had to build the website in their free time. Following their customers desires the students have chosen an appropriate template, used different build-in functionalities to design the site, put in multimedia content and at the end partly

changed the template with CSS commands. The teacher had the role of an advisor and helped the students just in case they did not know how to solve a given issue. Once the page was completed, student used variety of tools to test responsive design and colour consistency to eliminate possible errors. After the students got their marks, they discussed the possibilities of improvement with their teacher. Some of the students took the suggestions into account and made the improvements. They taught their customers how to put in content in their websites, so in the future they could publish content by themselves and students would be just the technical support in case of problems. Students made the domain registration just in case the client was pleased with the final product. At the end of the school year students took an online survey where they expressed the pros and cons of using Arnes splet technology and critically evaluate their work. The main purpose of this project was for the students to learn how to build and publish websites, so not all of the products are perfectly made. With this kind of work pupils became much more independent and took responsibility for their products, because they are visible to the general public.

Prvošolci smo ekoface

First-grade ecofreaks

Karla Koman, Osnovna šola Toma Brejca, Kamnik

Povzetek: Ker je ekologiji v učnem načrtu po mojem mnenju namenjeno premalo ur, sem se odločila, da s prvošolci ustvarimo nekaj, kar bo trajno in uporabno tudi za druge. Starejši učenci oz. občani nimajo pravega odnosa do narave ali pa nimajo idej, kako pomagati ohraniti okolje. Zato smo ustvarili kratke poučne EKO filme. Učenci so na podlagi svojih izkušenj in znanja sestavili scenarij ter posneli dogajanje. Bili so aktivno vključeni v »igro« ločevanja in shranjevanja odpadkov, prek igre so razvijali čut za naravo in njeno ohranitev. Z ustvarjanjem filmov so pridobivali izkušnje, ki se najtrajneje vtisnejo v spomin šestletnika. Filmi so neposredno vplivali na gledalce, ki so postali bolj motivirani, saj so jih o pomembnosti in dejavnostih za ohranitev zdravega planeta poučili najmlajši. Filme so si ogledali v vseh razredih, na občinski prireditvi ob dnevu Zemlje, predstavljeni so bili na šolski spletni strani, naloženi pa so tudi na YouTubu. Njihove ideje se na šoli že uresničujejo. Cilji: 1) ob samostojnem načrtovanju in izvedbi aktivnosti učenci vzpostavijo pristen odnos do teme ter si pridobivajo vrednote in znanja za varovanje okolja, 2) s filmom vplivajo na ekološko ozaveščenost sebe, drugih šolarjev, staršev in občanov, 3) s svojimi prispevki predstavijo delo Ekošole na šolski spletni strani ter na občinski prireditvi, 4) spodbujanje kreativnosti, inovativnosti, 5) razvijanje zmožnosti komuniciranja in sklepanja kompromisov, 6) razvijanje spretnosti uporabe mobilnega telefona, 7) spoznavanje dela z računalnikom. Z učenci smo obravnavali ekološke teme. Sledil je pogovor, v katerem so učenci povedali, kaj lahko sami naredijo za naš planet. Ideje so po skupinah ilustrirali, nato smo izbrali tiste, ki bi jih lahko posneli. Učenci so si sami razdelili vloge pri snemanju kratkega filma (snemalec, režiser, igralec, postavljalec scene). Učitelj jih je le usmerjal. Nato so z mobilnim telefonom film tudi posneli. Učitelj je nato posnetke skopiral v program Moviemaker in jih zmontiral. Učenci so tudi sami poskusili skopirati posnetek v računalnik. V celotnem učnem procesu so bili vsi zbrani, motivirani in sproščeni. Uživali so v šolskih urah, obogatenih s filmom, hkrati pa si pridobili pomembna znanja za vse življenje ter jih prenesli na druge. Filmi bodo uporabni tudi v naslednjih letih.

Abstract: Since the curriculum contains too few lessons dedicated to ecology, I have decided to get creative with my first graders and do something sustainability-oriented that would be useful not just for school children but for others as well. Students from higher grades and people in the community in general do not have the right attitude towards nature or lack ideas for sustaining the environment. Therefore, my first graders have developed short ECO movie clips. Based on their experience and knowledge, they have put together a script and recorded the activities. They were

involved actively in the “game” of waste separation and storage. Through fun activities they have developed a sense for nature and for sustaining it. In creating movie clips they have gained experience that, for a six-year-old, will be long-lasting. The movie clips had a direct impact on viewers. They became more motivated since it was the youngest students who were teaching them about the importance of keeping our planet healthy. The clips were viewed by students of all grades at the Earth Day municipal event. Furthermore, they were presented on our school web page as well as uploaded to YouTube. Thus, our first graders eco-ideas are being realized at our school. GOALS: - to maintain through independent planning and execution of activities an authentic relationship to the topic and acquire values and knowledge related to protecting the environment - to use movie clips to influence the eco-awareness of self, other students, parents and people in the community - to present the work of the eco-school on the school web page and at a municipal event - to encourage creativity and innovativeness - to develop the ability to communicate and to reach compromises - to develop the ability to use a mobile phone - to learn to work with computers CLASSROOM SCENARIO Ecology-related topics were dealt with in class, followed by conversations and brainstorming to generate ideas. Students were thinking about what they could do to care for our planet. The ideas were then illustrated within student groups. Next, a selection was made on what to film. The roles for making the videos (camera, direction, acting, screenwriting) were assigned by students themselves, whereas the teacher’s role was to supervise the activities. Finally, mobile phones were used to record the videos, which were then transferred to computers by the students and put together in Moviemaker by the teacher. DIDACTIC ADDED VALUE: Students were focused, motivated and relaxed in the learning process. They enjoyed the lessons enriched by videos. At the same time, they acquired important knowledge for life and transferred it to others. The videos will be very useful for future generations as well.

Domače branje na Facebooku

Home reading on Facebook

Eva Traven, Osnovna šola Predoslje, Kranj

Povzetek: Domače branje je del pouka slovenščine, ki ga ima marsikateri učenec za nujno zlo in za nekaj, kar je povsem odveč. Kljub trudu učitelja, da bi učencem približal literaturo, ki je predvidena za domače branje, marsikdaj ostanemo samo pri obnovah, prepisanih z interneta, slabo rešenih testih preverjanja in slabem občutku učitelja, da učencev za knjigo ni dovolj motiviral. Zato je zelo pomembno, da vsaj del domačega branja učitelji slovenščine naredimo učencem privlačen. Sama si že vrsto let prizadevam, da zadnje domače branje (od štirih), v zadnjih mesecih šolskega leta, ko so učenci z eno nogo preobremenjeni z zaključevanjem ocen, z drugo pa že na počitnicah, preverimo drugače. To leto smo na zaključek Bralne značke povabili stand-up komika in pisca Boštjana Gorenca - Pižamo, ki je učence navdušil s svojo nedavno izdano knjigo sLOLvenski klasiki, v kateri hudomušno predstavi vsebino najbolj znanih del kanona slovenske literature skozi internetno sodobnost – od Facebooka, Twitterja pa do Bolhe in spletnih forumov. Ideja je bila učencem tako všeč, da smo se odločili nekaj podobnega ustvariti tudi sami. Učence 8. razreda sem razdelila v manjše skupine oz. pare in jim predstavila seznam knjig, za katere sem menila, da bi se jih dalo umestiti na splet podobno, kot je to storil Pižama. Učenci so morali seveda najprej prebrati knjigo, nato pa smo v računalniški učilnici ustvarjali fiktivne profile literarnih junakov in njihove (bolj ali manj z vsebinami knjig povezane) zapise na »zidovih Facebooka«. Učenci so delo nadaljevali doma in z vživljanjem v različne literarne like pisali replike, lepili fotografije, jih komentirali ... V prispevku predstavljam rezultate našega projekta in inovativno obravnavo domačega branja. Prispevek uvrščam v sklop učenje učencem v roke, saj so imeli učenci povsem odprte roke glede izbire knjige, izbire medija za predelavo ter načina, kako bi se ustvarjalno lotili naloge. Dodano didaktično vrednost vidim predvsem v drugačnem pristopu – ustvarjanje je bilo zabavno, saj se je v glavah učencev porodilo ogromno idej, hkrati pa so ozaveščali pomen varnosti na internetu in spoznavali njegove pasti.

Abstract: Home reading as part of Slovene language classes is regarded by many a pupil as a necessary evil and as something completely redundant. Despite the teachers effort to bring the home reading literature topics closer to the pupils, things are often reduced to copy-paste abstracts from the Internet, and poor assessment results, while the teacher is left with a bad feeling that he or she hadnt motivated the pupils enough for a particular book. It makes it vital that Slovene language teachers should make at least part of home reading attractive to the pupils. I have been trying for a number of years to test the last (out of four) home

reading – taking place in the closing months of the school year, when the pupils are on the one hand under excessive stress due to working on their final marks, and already on holidays on the other hand – in an unconventional way. As part of the final Reading Badge ceremony, we invited a stand-up comedian and writer Boštjan Gorenc - Pižama, who has impressed the pupils with his latest book sLOLvenski klasiki (sLOLveninan Classic Writers), where he humorously presents the most well-known titles of the Slovene literary canon through the Internet modernity – from Facebook and Twitter to Bolha and online forums. Our pupils liked the idea to the extent that we have decided to create something similar by ourselves. I divided the pupils of the 8th class into small groups or pairs and presented a list of books that I considered to be suitable to be placed online in a similar way as the above-mentioned comedian had done. The pupils were of course first required to read a book, which was followed by going to our computer classroom and creating fictional profiles of literary heroes and their notes (more or less connected with the contents of the books) on »Facebook walls«. The pupils continued their work at home, stepping into the shoes of literary heroes, writing replies, sticking photos, commenting. With this contribution, I would like to present the results of our project and inspire others to launch an innovative approach to home reading. This contribution should belong into the framework of »Let's put learning into pupils hands«, as the pupils were completely free to choose the book, the transformation medium and the method how to deal with the task in a creative and modern way. As added educational value, I consider a different approach, the work was fun, the pupils produced a vast number of ideas, and at the same time they were becoming aware of safety on the Internet and its traps.

Sodelovanje dijakov v interaktivnem razstavnem projektu »Dober dan, gospod predsednik«

Participation of students in interactive exhibition project »Good morning, Mr. President«

Aleš Hvasti, Srednja tehniška šola Kranj, Kranj

Povzetek: V članku je predstavljeno sodelovanje dijakov pri postavitvi umetniške razstave. Avtor Andrej Koruza si je zamislil računalniško podprto interaktivno instalacijo, dijaki pa so pri tem pod mentorstvom Luke Freliha in Aleša Hvastije postavili celotno strojno opremo in napisali potrebno programsko opremo. Delo je potekalo v obliki projekta, v katerem so morali dijaki pokazati precej lastne ustvarjalnosti in samostojnosti pri reševanju problemov. K sodelovanju sem pritegnil dijake SSI-smeri računalništva in mehatronike. Ti so se pri delu srečali s tehnološko opremo, ki spada v njihovo strokovno področje, vendar se z njo ne seznanijo pri rednem pouku. Sodelovanje pri postavitvi umetniške razstave je za dijake predstavljalo srečanje z zunanjim družbenim okoljem, pri tem pa jih je ves čas spremljalo dejstvo, da so z vsakim dnem bliže otvoritvi razstave, ko bo njihovo delo predstavljeno v javnosti. Temeljna cilja projekta sta bila dva: na prvem mestu je bila želja, da bi dijaki sodelovali v nekem konkretnem projektu, kjer bi se seznanili s postopkom načrtovanja, izvedbe, postavitve in kasnejšega servisiranja opreme, ki so jo namestili pri svojem delu. Pri tem so se srečali z vsemi dejavniki, ki nastopajo pri takšnem delu, kar je predstavljalo dragoceno življenjsko izkušnjo. Poleg tega pa je bila tu še umetnikova želja, približati umetnost dijakom tehniških strok. Kot mentor sem dijakom pomagal pri izbiri in povezovanju strojne opreme ter jim svetoval pri pisanju programske kode. Aktivno smo sodelovali z avtorjem razstave, upoštevali njegove želje in jih pripeljali na raven tehnične izvedbe. Dijaki, ki so sodelovali pri projektu, so kot skupina praktično uporabili mnoga znanja in kompetence, ki so jih pridobili v času šolanja. Poleg tega so si pridobili tudi izkušnje na področju timskega projektnega dela, v okviru katerega je vsak odigral svojo vlogo. Slabost takšnega dela pa je v tem, da lahko sodelujejo le izbrani dijaki. Pridobljena znanja bodo lahko koristno uporabili, ko bodo po končanem šolanju zasedli delovna mesta v podjetjih.

Abstract: The article presents the participation of students in setting up an art exhibition. Andrej Koruza, the author of the exhibition, pictured a computer-aided interactive installation, whilst the students under the supervision of Luka Frelih and Aleš Hvasti assembled the entire hardware and wrote software required. The work was done in the form of a project where students have to show much of their own creativity and independent problem solving. Students of the 4-year Computer Science and Mechatronics Technician programs were chosen to participate in the

project. They were faced with the technological equipment that is a part of their area of expertise, but they are not acquainted with it during the ordinary course of the learning process. Participation in an artistic exhibition for students accounted for a meeting with the external social environment, accompanied by the fact that with each day they are closer to the opening of the exhibition, where their work will be presented to the public. There were two basic objectives of the project. In the first place there was the wish that students participate in a specific project, and become familiar with the process design, execution, installation and subsequently the servicing of equipment, which had been installed. In doing so, they met with all the factors that are a part of such work, and that represented a valuable life experience. In addition, there was the artists desire to approach art to students of technical school programs. As a mentor I assisted in the selection and integration of hardware and advised students in writing software code. We actively cooperated with the author of the exhibition, taking into account his wishes and bring them to the level of technical performance. Students who participated in the project as a group acquired practical use of many skills and competencies that they had acquired during their education. In addition, they also gained experience in the field of team project work, in which they each played a role. The downside of such project is the fact that only a few chosen students can participate. The acquired knowledge will prove useful when they finish their schooling and start a job in various companies.

AnimaTera – inovativni koncept lutkovnih iger in učne igre na spletu za otroke, stare od 2 do 10 let

AnimaTera - innovative concept of puppet plays and learning games on the web for children from 2 to 10

Nika Dulmin in **Miha Dulmin**, Klub Pelikula.si, Ljudska univerza Kranj, Kranj

Povzetek: Projekt AnimaTera povezuje 1) lutkovne igre, ki jih je mogoče postaviti v učilnice in igralnice in ki za kuliso uporabljajo programirani animirani in risani film, hkrati pa se vanje otroci ves čas aktivno vključujejo, 2) učne igre/portal, ki so brezplačno na voljo na spletu (www.ucneigre.si). Do učnih iger, ki med drugim otroke pritegnejo k spoznavanju pojma števila, lahko otroci ob pomoči staršev, vzgojiteljev in učiteljev dostopajo tako rekoč kjer koli, saj jih lahko igrajo na pametnih telefonih ter tabličnih in drugih računalnikih. V povezavi z izbranimi vsebinami pa so sicer na voljo tudi delavnice, ki se lahko izvajajo tako na prostem kot v učilnici oz. igralnici. Ključni cilji: pojem števila, zgodnje učenje tujega jezika, glasbena umetnost, gledališče kot učni medij, risanka oz. animiranka kot učni medij, aktivno sodelovanje v toku predstave, namenska uporaba spletnih orodij, spoznavanje ljudskega izročila na zabaven način. Učni proces si vzgojitelj ali učitelj lahko začrta sam, mi ponudimo le spletno gradivo oz. delavnice in lutkovno igro. Predlagamo, da otrokom najprej ponudimo lutkovno igro, nato izvedemo delavnice mi ali po našem navodilu učitelj oz. vzgojitelj, nato pa se v primeru slabega vremena zaigra še učne igre, ki so povezane z aktualno predstavo. Vzgojitelj lahko učne igre predstavi tudi staršem. Primeri dejavnosti otrok v gledališki igri: a) otroci mečejo glavni lik (igralno kocko) in glede na število pik usmerjajo vedenje lika v lutkovni igri ali v risanki, b) otroci komunicirajo z likom v risanki ali lutko in ga/jo usmerjajo s štetjem. V prispevku se bomo sicer osredotočili na učni proces v povezavi z gledališko igro Red in Green v glasbeni šoli oz. na učne igre s kockama Red in Green. Projekt bosta (z našo pomočjo) predstavila otroka, ki sodelujeta pri izdelavi projekta in ga tudi redno uporabljata ter tudi nastopata v posameznih predstavah. Največja dodana didaktična vrednost naših lutkovnih iger je, da smo naredili številke neizmerno zabavne in igrive, enako velja za posamezne pozabljene povesti/basni/pravljice iz našega ljudskega izročila.

Abstract: AnimaTera presents an innovative concept of puppet plays with active preprogrammed animations in the background as well as workshops and free learning games on the internet, for 2 to 10 years old children in connection with puppet plays.

Videotelling – pripovedovanje o videu

Videotelling

Suzana Oroz, Osnovna šola Medvode, Medvode

Povzetek: Telefoni so v šolah prepovedani. Kljub temu jih imajo učenci ves čas v žepih ter jih skrivaj uporabljajo na hodnikih in izletih. Kaj pa, če poskrbimo, da jih bodo koristno uporabili za učenje? Se je možno s telefonom česa naučiti? Se lahko učimo z gledanjem posnetkov na spletnem portalu YouTube? Sodobni čas prinaša sodobne tehnike, sodobno tehnologijo. Videotelling (pripovedovanje o videoposnetku) je metoda učenja angleščine, ki nam jo je na mednarodni konferenci učiteljev in učiteljic angleščine (IATEFL) leta 2014 prikazal škotski profesor Jamie Keddie (http://videotelling.com/). Leta 2016 bo o tem izšla tudi elektronska knjiga, na spletni strani lessonstream.org pa že zdaj najdemo ogromno gradiv za poučevanje po tej metodi. Metodo na naši šoli zadnji dve leti uporabljamo pri učenju angleščine v 8. in 9. razredu. Živimo v času, ko nas je večina ves čas »priklopljena« na internet. Učenci uporabljajo pametne telefone, poleg družabnih omrežij veliko gledajo tudi videoposnetke na spletni strani YouTube. Z metodo videotellinga pripovedujemo o tem, kar vidimo. Video opisujemo nekomu, ki ga ni videl. S tem čas, ki ga učenci prebijejo na medmrežju, uporabimo za nekaj koristnega, v našem primeru za učenje angleščine. Razvijamo vse štiri spretnosti: govor, pisanje, branje in poslušanje. Predstavila bom nekaj primerov učenja s to tehniko in spregovorila o tem, kako jo uporabljamo pri učenju angleščine in zakaj ter kako učinkuje medpredmetna povezava z izbirnim predmetom multimedija. Poleg jezikovnega vidika se namreč lahko oceni tudi tehnična izvedba posnetka in poznavanje dela s spletnimi orodji, ki omogočajo nalaganje in delitev posnetkov ter njihovo varno nalaganje na spletni portal YouTube. Predstavila bom, kako se s pomočjo videotellinga učimo na naši šoli, kjer ga uporabljamo že drugo šolsko leto.

Abstract: Mobile phones are prohibited in schools. Nonetheless, we can find and sometimes hear them in the students pockets. They secretly use them in the school hallways and on school outings. What if we make sure that they are usefully used for the learning purposes? Is it possible to learn something from using a mobile phone? Can we learn by watching videos on You Tube website? Modern times bring modern techniques and modern technology. Videotelling is a method of learning English, which was presented to the teachers of English as the second language at international conference of teachers and teachers of English (IATEFL) in 2014 by a Scottish professor Jamie Keddie http://videotelling.com/. This year he will publish the electronic book. On his website lessonstream.org you can already find a lot of materials for teaching this method. We have been using videotelling in learning English for the last two years. We use it in classes eight and nine. We live in a time when most of us

are constantly »connected« to the Internet. Students use smartphones, in addition to constantly checking the social networks, many also watch videos on the You Tube website. By videotellinga we tell others what we have seen. We describe a video to someone who has not seen it. This way, the time spent by students on the Internet is used for something useful, in this case for learning English. We develop all four skills: speaking, writing, reading and listening. I will present a few examples of learning this technique and talk about how and for what purpose it is used in learning English and how it affects cross-curricular connection with the optional multimedia object. In addition to the linguistic point of view it is useful to assess the technical execution of the recording and the knowledge of working with online tools that allow uploading and sharing videos. They learn how to upload images and videos safely. I will present how we use videotelling for learning a foreign language. We have been using this method for the second school year.

easelly.meme.voicethread – simpl ko pasulj

easelly.meme.voicethread - easy peasy

Vesna Gros, Osnovna šola Polje, Ljubljana

Povzetek: V prispevku bom predstavila tri povsem različna IKT-orodja, ki jih aktivno uporabljam z učenci pri pouku angleščšine. Z orodjem Easelly ustvarjamo infografike, Memegenerator je naš prijatelj pri ustvarjanju t. i. memov, Voicethread pa je spletna aplikacija, s pomočjo katere učenci prepletajo svoj glas, stas in slikovno gradivo, da ustvarjajo zgodbe za vseslovensko tekmovanje iz angleškega jezika v 7. razredu osnovne šole. Učenci se torej prelevijo v IKT-ustvarjalce in se med snemanjem, timskim delom in drugačnim načinom učenja zabavajo ter pridobivajo tako nove jezikovne kot IKT-veščine. Skozi meme se prelevijo v kritične mislece in filozoraptorje, z njimi dajejo povratne informacije glede dela sošolcev, jih oblikujejo v knjižno ali filmsko kritiko ali pa jih uporabijo samo kot smešen komentar. Namen moje ustvarjalnice je vsa tri orodja predstaviti in približati učiteljem, pokazati in dokazati, da niso noben bav bav in da jih lahko vsak začetnik s pomočjo nekaj praktičnih nasvetov začne uporabljati že v nekaj minutah. Priljubljenost pri učencih in povečanje motivacije sta zagotovljena.

Abstract: My workshop aims to present three utterly different ICT tools, which I use in my English classes. Easelly is a tool to create infographics, Memegenerator is my right-hand assistant for creating memes, and Voicethread a web application with help of which students create presentations combined with audio clips for the purpose of the national English language competition in the 7th grade of primary school. Thus, students become ICT creators and have a lot of fun while working in teams. They find themselves immersed in a different approach to learning, acquiring new language as well as ICT skills in the process. Memes offer them an opportunity to transform themselves in critical thinkers, the so-called philosoraptors, and give constructive feedback to their peers, write a film or book review or just post a witty remark or two. The participants of my workshop will get the opportunity to learn how to use all three tools. I wish to prove that everyone can start using them instantly without prior knowledge with a little help of my secret tips. Students will love it and increase in motivation is guaranteed.

Primeri dejavnosti v vrtcu z uporabo informacijsko-komunikacijske tehnologije in profesionalni razvoj vzgojitelja

Example of activites in pre-school institution with the use of information communication technologies and profesional growth of pre-school teacher

Vesna Tofant, Vrtec Šentjur, Šentjur

Povzetek: Računalnik je postal del našega vsakdana in tega ne moremo spremeniti oziroma zanikati. Otroci so zasičeni z IKT. Menim, da je temeljna naloga vzgojno-izobraževalnih institucij, da jim vso to tehnologijo predstavimo v pravi luči, jih naučimo pravilne in koristne uporabe, komuniciranja z njo ter kritičnega odnosa. Če hočemo slediti hitremu razvoju v tem svetu, se moramo ves čas izobraževati in nadgrajevati svoje znanje na vseh področjih, predvsem na področju IKT, da ne bodo otroci korak pred nami. Ljubica Marjanovič Umek v članku »Vloga jezika in socialnih kontekstov pri razvoju mišljenja in oblikovanju znanja« poudarja, da moramo odrasli v kombinaciji s socialnimi interakcijami nuditi oporo – »zidarski oder« otroku na vseh področjih dejavnosti in ne obratno. Le tako lahko otroci rešujejo težke miselne izzive, ki jih tako pomikajo proti cilju (Marjanovič, 2/2011, str.74). Prav pa je, da kdaj tudi priznamo, da ne znamo, ne vemo, in se skupaj učimo. Tako je rasla in se razvijala tudi moja poklicna pot. Ker pa sem človek, ki ima veliko željo po novostih in nadgradnji svojega znanja, je zdaj moja dolgoletna želja po ustvarjanju stop – motion animacije v skupini predšolskih otrok končno uzrla luč sveta. Otroci so pri izdelavi animiranega filma uživali ter se likovno izražali, ko so izdelovali sceno in figure. Dejavnost jim je omogočila, da so kratko in razumljivo z likovnimi elementi ustvarili zgodbo. V delovnem procesu so razvijali ročne spretnosti, natančnost, potrpežljivost in krepili medsebojne odnose. Učili in spoznavali so uporabo enostavnih AV-pripomočkov (digitalni fotoaparat, snemalnik zvoka, spletna kamera, mikrofon, računalniški program Monkey jam itd.). Enakomerno so si porazdelili delo po svojih močnejših področjih, saj je dejavnost kompleksna in lahko vsak izmed njih izrazi svoje močnejše področje. Nekateri so se izražali likovno, spet drugi so brali vezno besedilo, tretji so uživali pri fotografiranju, ustvarjanju zvokov itd.

Abstract: The fact that a computer has become a part of our everyday life can not be changed or denied. Children are constantly exposed to ICT technology. In my opinion, the primary role of educational institutions is to present this technology in the right way so that the children learn how to use it properly and beneficially, learn how to communicate with as well as develop a critical attitude towards it. If we want to follow the rapid pace of development in this world, we need constant education and upgrade of our knowledge in all fields, especially in the field of ICT. This way children will not be a step ahead of us. In the article "The role of language and social contexts in the development of thinking and designing skills" Marjanovič emphasizes that we are the ones obligated, in combination with social interaction, to provide support for the children in all areas of activities and not vice versa. Only then, children can solve difficult mental challenges and move towards the goal (Marjanovič, 2/2011, str.74). But it is also important to sometimes admit to children that there are things we cannot do or we do not know ... and this way we learn together. My professional path has also grown and developed. Being a person who is always striving to do new things and striving to upgrade my knowledge, my long time wish to create a stop-motion animation with a group of children from a pre-school institution has finally seen the light. Children were enjoying the process of creating the animated film. While creating the scene and the figures they were expressing themselves artistically. The activity enabled them to create a story in a simple and understandable way with the use of the elements of art. Through the working process they were developing hand skills, accuracy, patience, as well as building interpersonal relations. They became acquainted with the use of simple AV equipment (digital camera, sound recorder, web camera, microphone, computer program Monkey jam...). The work was delegated equally an according to the childrens strong areas. The activity of making a stop motion film is complex and every child was able to express his or her strong areas. Some children were expressing themselves artistically, some were reading the text while others were enjoying taking the photos or recording the sounds.

Tablični računalniki/mobilni telefoni pri pouku matematike

Tablets / mobile phones in Math classroom

Breda Poličar, Gimnazija Poljane, Ljubljana

Povzetek: Aprila sem se v okviru projekta USP.EH iz sklopa evropskih projektov Erasmus+ KA1 udeležila seminarja TAP-SWIPE-PINCH INTO STEM – Learning Mathematics and Sciences with tablets. V estonski prestolnici Talin smo se srečali učitelji matematike in naravoslovja iz različnih evropskih držav. Teden smo preživeli ob preskušanju različnih aplikacij za tablične računalnike in pametne telefone, s posebnim poudarkom na uporabi ideje BYOD pri pouku matematike in naravoslovja. Idej je bilo veliko, zato sem po vrnitvi domov nekatere preskusila tudi v razredu. Marsikateri učitelji matematike, zlasti v srednji šoli, so prepričani, da vpeljevanje novih metod poučevanja pri dijakih zmanjšuje znanje matematike, ki tako postaja vse bolj površno. Sama pa sem prepričana, da lahko ustrezna, dobro pretehtana uporaba sodobnih orodij prispeva k globljemu razumevanju včasih sicer precej abstraktnih matematičnih pojmov. V razredu smo za začetek preskusili spletni kviz Kahoot. Pripravila sem nabor logaritemskih enačb in jih predelala v kviz izbirnega tipa. Kviz sem uporabila za utrjevanje snovi. Po navadi zadnje ura pouka niso najbolj učinkovite – dijaki so po nekaj urah ocenjevanja že utrujeni –, zato je bila uporaba nove metode dela dobrodošlo presenečenje. Dijaki so bili tudi zaradi tekmovalne narave aplikacije bolj motivirani in so aktivno sodelovali pri reševanju enačb. Tako smo v eni šolski uri rešili kar lepo število enačb – nekatere na pamet, zahtevnejše pa so dijaki reševali v svoje zvezke. Take metode dela si še želijo, kar so v zaključni evalvaciji ure tudi jasno povedali. Nekateri so izrazili željo, da bi izdelali svoj matematični Kahoot, in dogovorili smo se za vsebinsko ogrodje in pričakovano zahtevnost njihovega spletnega kviza. Učitelju je po izvedbi kviza dana možnost, da si ogleda posamezne rezultate udeležencev kviza in si jih po potrebi tudi shrani. Dijaki, ki pripravljajo spletni kviz, morajo najprej seveda dobro poznati tematiko – torej bodo tako svoje znanje poglobili. Poleg tega spoznavajo nova orodja in njihova digitalna pismenost se tako povečuje. In ne nazadnje, nove metode dela lahko uporabijo oz. predstavijo tudi pri drugih predmetih in tako morda spodbudijo še kakega učitelja, ki sicer sodobnih metod pri pouku po navadi ne uporablja. Ob koncu leta smo tako preskusili kar lepo število dijaških matematičnih Kahootov na temo krivulj II. reda.

Abstract: In April, I attended a seminar within the framework of EU projects Erasmus+ KA1 called TAP-SWIPE-PINCH INTO STEM - Learning mathematics and science using tablets. In the capital of Estonia, Tallinn, math and science teachers from various European countries gathered. We spent a week testing out various

apps for tablet computers and smartphones, with particular focus on the use of BYOD in math and science lessons. Several ideas came up, some of which I tested out in my own classroom after returning to Slovenia. Among many mathematics teachers, especially in high school, it is still believed that the introduction of new teaching methods would decrease students' level of mathematics, which is already decreasing. However, I believe that adequate application of modern technology could help students understand abstract mathematical notions In my classroom, we tested out Kahoot's online quiz. I set up a multiple choice question quiz involving a selection of logarithmic equations. The last school lessons are usually not very effective, because students start to lack energy. The application of new teaching methods was a welcomed surprise. Due to the competitive nature of the application, the students were more motivated and participated actively in order to solve the equations. In one lesson, we solved many equations, either by heart or using notebooks. These teaching methods were very appreciated by the students. Some students expressed their wish to set up their own mathematical Kahoot quizzes; we agreed on the content and the degree of difficulty. When students complete the quiz, the teacher is given the chance to look at the results of individual participants and to save the results. To set up the online quiz, students must first inevitably have good knowledge of the subject, in order for the quiz to benefit their peers. They also learn to use new tools and improve their digital skills. Last but not least, they can introduce the methods in other school subjects; possibly even encourage a teacher who does not use modern methods in the classroom, to do so. By the end of the school year, we had tested out several student-made mathematical Kahoos on the topic of second degree curves.

Uporaba jezikovnih tehnologij pri delu z nadarjenimi učenci tretjega triletja osnovne šole

The use of language technologies in working with gifted pupils of the third triennial of primary school

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Povzetek: Jezikovne tehnologije so v vsakdanji rabi zbirno poimenovanje za različna računalniška orodja in aplikacije, ki izrabljajo obstoječe jezikovne (meta)podatke za razreševanje praktičnih dilem uporabnikov pri uporabi jezika. Pomagamo si s črkovalniki ali slovničnimi pregledovalniki, ki smo jih v večini navajeni uporabljati, ko pišemo besedila v elektronski obliki. Med proizvode jezikovnih tehnologij štejemo tudi korpuse besedil s konkordančnikom (programskim vmesnikom). Ta uporabniku omogoča avtomatsko iskanje po besedilih. Za slovenski jezik so razvite jezikovne tehnologije tako za pisne kakor tudi za govorne jezikovne vire. Govorni jezikovni viri izhajajo iz govora oz. govorne komunikacije, pisni jezikovni viri pa vsebujejo besede ali besedila, ki so večinoma značilna za pisno komunikacijo. Uporabniki na šolah zaradi dostopnosti pogosteje uporabljamo pisne jezikovne vire, in sicer v veliki meri slovarje, redko pa korpuse – urejene zbirke besedil, kjer so v večini besedam dodane jezikovne informacije. Večina proizvodov jezikovnih tehnologij je na spletni strani Slovenskega društva za jezikovne tehnologije (SDJT), ki je bilo ustanovljeno že leta 1998, v slovenskih osnovnih šolah pa so njegovo delo in dosežki slabo poznani in izkoriščeni. Glavno vodilo sodobnega komunikacijskega pristopa pri preučevanju jezika je uporaba jezikovnih tehnologij, ki so prosto dostopne na spletu. Jezikovne tehnologije so odlično sredstvo za delo z nadarjenimi učenci. In ker učenje poteka vse življenje, in če je v davni preteklosti pomenilo le zapisovanje v zvezek in učenje na pamet, v današnjem času zaradi svoje razširjenosti postaja uporaba sodobne tehnologije skoraj potrebna in ob pravilni uporabi predstavlja zelo dober učni pripomoček. Pokazala bom primer učenja in samostojnega učenja nadarjenih učencev v 9. razredu osnovne šole. Želela sem preveriti, ali učenci v Gigafidi, ki je jezikoslovno označen korpus, znajo najti napake in jih rešiti. Gigafida ima namreč pri vsaki besedi pripisano osnovno obliko ali lemo in oblikoskladenjsko oznako. Ker je velika količina besedil in posledično besed ustvarjalcem narekovala avtomatsko označevanje, je prišlo do napak. Ker od nadarjenih učencev pričakujemo višje standarde znanja, pričakujemo, da te napake odkrijejo, ves čas pa jih usmerjamo h kritičnemu mišljenju in presojanju. Učencem lahko omogočimo samostojno uporabo virov, ki so kakovostni, oz. jih vodimo takrat, ko zaradi avtomatiziranosti odkrijemo napake.

Abstract: The language technology is a term for various computer tools and applications, which use existing linguistic (meta) data for solving users practical dilemma in the use of language. We normally use aids such as spell and grammar checkers, often used when writing texts electronically. Among the language technology products are also corpuses of texts with a program interface that enables the user to automatically search the texts. Language technologies have been developed in the Slovene language for the written as well as spoken resources. The spoken or oral resources originate from speech or spoken interaction, and written resources incorporate words or texts, which are common for written interaction. School users normally use written linguistic resources due to better access, whereas they rarely use corpuses- ordered collections of texts where language information is added to words. Most of the language technology products are available on the internet site of the Slovene language technology society (SDTJ), established in 1998. However, its works and accomplishments are poorly recognized and used in Slovene primary schools. The main motto of the contemporary communication approach in studying languages is the use of language technologies, which are available online. It turns out that language technologies are an excellent means of working with gifted pupils. In the past writing things down and learning them by heart was considered proper learning, but nowadays the correct use of modern technologies as learning tools is almost necessary due to their widespread use. I will demonstrate an example of teaching and studying of gifted pupils in the 9th grade of elementary school. I wanted to check if the pupils can find and solve mistakes in Gigafida, which is a language marked corpus. Gigafida namely has an added basic form and a morphological/ syntactic marker. Due to a great number of texts and words automatic labelling was consequently used, and mistakes have occurred. As a higher level of knowledge is expected from the gifted pupils, it is demanded of them to find and recognize these mistakes, and they are at the same time encouraged to think and judge critically. The pupils are enabled to independently use quality resources, however, they are properly guided when they encounter mistakes caused by automatisation.

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Using FLL® approach for autonomous learning

Samo Lipovnik, Osnovna šola Franja Goloba Prevalje, Prevalje

Povzetek: V svetu, nakopičenem z informacijami, je ključnega pomena, da otroke usposobimo za samostojno navigacijo v morju podatkov ter da jim predamo odgovornost za pridobivanje znanja. Sposobnost samostojnega učenja je še posebej pomembna na področju znanosti in tehnologije, saj se mora dober raziskovalec in inovator venomer samostojno izobraževati in iskati nova znanja. Na OŠ Franja Goloba Prevalje smo pri izbirnem predmetu elektronika z robotiko vpeljali delo v okviru tekmovanja First® Lego® League (FLL®), ki je mednarodni projekt za promocijo znanosti in tehnologije. Na FLL®-tekmovanju so se morali učenci pokazati v konstrukciji in programiranju avtonomnega robota, ki so ga sami predhodno sestavili z uporabo zbirk Lego® Mindstorms® EV3. Pri tehničnem intervjuju so morali pokazati teoretično znanje konstruiranja in programiranja. V kategoriji projekt so predstavili raziskovalno nalogo, v kateri so razvili inovativno rešitev za neki svetovni problem. Letošnja tema so bile smeti in učenci so zasnovali manjši koš za zamaške, ki so ga narisali in natisnili na 3D-tiskalniku. Pokazati so morali tudi, koliko so se sposobni organizirati in sodelovati kot ekipa. Vse učne cilje in znanja so med letom usvajali samostojno. Sami so organizirali delo tako časovno kot prostorsko, velikokrat tudi brez navzočnosti učitelja. Učitelj je imel izključno vlogo mentorja in usmerjevalca, saj je tak način dela že v opisu programa FLL®. Tako so prevzeli odgovornost za svoje dosežke. Delo so po nevihti možganov načrtovali za vsak teden posebej. Dogovorjene naloge so delali v manjših skupinah, nato so se vodje usklajevali in načrtovali nadaljnje delo. Pri organizaciji dela ter zbiranju idej in podatkov smo si pomagali s spletnimi orodji, kot sta spletno okolje Moodle in Microsoft OneNote zvezek v skupni rabi. Glavni cilji in hkrati dodane vrednosti so, da se učenci naučijo samostojno raziskovati, so inovativni in iščejo svoje rešitve ter znanja, potrebna za delo. Pri tem morajo sodelovati z okolico, s strokovnjaki, podjetji in čim več ljudem predstaviti svoje delo. Tako so se predstavljali prek kanala YouTube, Facebookovega profila in spletne strani ter v živo na občini in pri direktorju sodelujočega podjetja. Pri tem so sami spoznali, da potrebujejo učitelja kot vir informacij in za pomoč pri načrtovanju dela.

Abstract: In the world full of information it is crucial to prepare children to navigate independently in the flood of information and teach them responsibility of gaining knowledge. The capability of autonomus learning is especially important in science and technology. A good scientist and innovator needs to educate himself and be able to look for new knowledge continuously. As a part of elective course Electronics and Robotics at elementary school Franja Goloba Prevalje we have participated in the First® Lego® League (FLL®) competition, an international project for promoting

science and technology. In FLL® competition pupils had to show their knowledge in construction and programming an autonomous robot, which they built themselves using Lego® Mindstorms® EV3. In the technical interview they had to show their theoretical knowledge of constructing and programming. In the project category they showed their research piece in which they were searching for an innovative solution for a global issue. This year's topic was waste and pupils designed a small bin for plastic corks, which they drew and printed from a 3D printer. They also needed to show their organisational skills and abilities to cooperate. Pupils were adopting all lesson goals and knowledge during school year autonomously. They had to organize when and where to meet, sometimes even without a teacher involved. The teacher's role was exclusively as a mentor and coordinator because the FLL® program itself demanded that. That way they took responsibility for their own acomplishments. After brainstorming, they planned their work on weekly basis. Pupils worked on specific tasks in smaller groups. The leaders then coordinated and planed ahead. For organizing work and collecting ideas and data we used online tools like Moodle and Microsoft OneNote shared notebook. The main goals and also added values are that pupils learn how to do research work autonomously, be innovative, search for their own solutions and gain knowledge needed for work. By doing that they need to cooperate with other people, experts and companies and present their work to as many relevant people as possible. They presented their work on Youtube channel, Facebook, web page, at their municipality and to the CEO of the cooperating company. Along the proces they realized that they need the teacher for guidance and as a source of information.

Ne vsi

Not all

Robert Grom, Osnovna šola Rovte, Rovte

Povzetek: Ko učenci pomislijo na delo oziroma učenje, jim vedno postane nelagodno. Iz izkušenj vedo, da bosta za dosego znanja potrebna potrpljenje in motivacija. Pedagogi se velikokrat sprašujemo, kako dvigniti raven motivacije pri pouku ter kako pritegniti pozornost učencev in z manj energije doseči več. Pouk lahko popestrimo z različnimi novostmi. Ena od njih je žongliranje. To je športna dejavnost, pri kateri se lahko učenci sprostijo in pridobijo samozavest. Pomaga pri koordinaciji gibov in ravnotežju, izboljšuje koncentracijo in znižuje stopnjo agresivnosti. Učencem daje pozitivno energijo, ki jo je moč prepoznati, ko jim nekaj uspe. Svet tehnologije nas je v zadnjem času očaral, saj ponuja številne možnosti za hitro napredovanje in uspešno učenje. Učenci uporabljajo pametne telefone prav tako pogosto kot žogice, kadar to je in kadar to ni dovoljeno. Je morda možno tudi te vrste aktivnost preusmeriti k uram pouka? Pogoj je priznavanje, da je e-kompetentnost učiteljev in digitalna pismenost širše družbe abeceda sodobnega izobraževanja. Aktivno vključevanje učencev v oblikovanje pouka je iskanje sodelovanja med nami. S tem se poveča odgovornost učencev do znanja. Način, kako spodbuditi učence k iskanju vsebin, pa je zelo preprost.

Abstract: When students think about work or studying, they always feel uncomfortable. From the past experiences they know that patience and motivation will be needed for reaching that knowledge. Teachers usually ask ourselves how to rise a level of motivation at lessons. How to get their attention and to reach more with less energy? Lessons can be diversified with different innovations. One of them is juggling. This is a sports activity, where students can relax and get confidence. It helps with coordination and balance, improves concentration and reduces agressiveness. It gives the students a positive energy, that can be identified when students reach something. The world of technology has fascinated us, because it offers numerous chances for fast improvement and successful learning. Students use smart phones as often as balls, whether it is permitted or forbidden. Is it possible to divert that kind of activity to lessons? A condition is admission, that e-competence of teachers and digital literacy is an alphabet of present education. Active involvement of students in designing instruction is searching for cooperation between us. This increases the responsibility of pupils to knowledge . The way to encourage students to search for content , is very simple.

Z ustvarjanjem elektronske knjige do tujih jezikov

From creating an e-book to foreign languages

Nina Bradica, Osnovna šola Metlika, Metlika

Povzetek: Učence v podaljšanem bivanju sem letos želela motivirati za učenje katerega od tujih jezikov (tudi sama sem profesorica slovenščine in južnoslovanskih jezikov). To sem želela storiti z uporabo IKT, da bi jim pokazala učenje jezika na drugačen način. Razmišljala sem, da bi se prijavila v tretji sklop (Ustvarjamo za učenje) in izvedla učno uro v podaljšanem bivanju, vendar morda udeleženci ne bi uspeli doživeti vsega, kar so moji učenci. Del ure pa bi lahko izpeljala. Tretješolci že poznajo računalnik in osnove dela z njim, skupaj pa smo spoznavali njegovo uporabo pri učenju tujega jezika. Program Story Jumper jih je navdušil, ker so lahko izdelali samo svojo knjigo, uporabili že ponujene scene za ozadje ali pa vstavili svoje; fotografirali so se in svojo sliko vstavili v program; skenirali so svoje umetniške izdelke in jih uporabili v »zgodbi«. Preden pa so se lotili konkretnega dela, so raziskovali področje jezika. V skupinah uporabljali hrvaščino, angleščino, nemščino, francoščino ter tudi slovenščino ter zbirali gradivo in spremljali svojo aktivnost v podaljšanem bivanju. Pri tem so uporabljali elektronske dvojezične slovarje, ki so dostopni na spletu. Ker jezikov (razen slovenščine in angleščine, ki so se jo šele začeli učiti) ne poznajo, so v slovarjih iskali samo ključne besede. Zaključek njihovega ustvarjanja pa ni bila samo elektronska knjiga, ki jim je ostala kot nekak spomin na delo v podaljšanem bivanju, ampak to, da so se začasno prelevili v učitelje, preostali pa smo bili njihovi učenci. Po skupinah so v izbranem jeziku oz. v kombinaciji le-tega s slovenščino predstavili gradivo, ki so ga zbirali. Delo ni potekalo natančno tako, kot sem si ga zamislila, kajti tretješolcem je bil izziv že iskanje besede v slovarju. Vsi so imeli na voljo »klasične« slovarje in elektronske slovarje. Kar mi je kot učiteljici predmetnega pouka samoumevno, je tu šlo počasneje in drugače. Druga stvar je bila, ko so se učenci prelevili v učitelje in so sošolcem ter meni predstavili, kar so ustvarili. Trema je bila dvojna – uporaba tujega jezika, na kar niso navajeni, in nastopanje pred občinstvom, četudi znanim, sta nekaterim povzročila nemalo težav. Vendar so nalogo opravili uspešno.

Abstract: This year I tried motivating my students in the after-school programme for learning a foreign language. I wanted to accomplish this by using ICT (information and communication technology), in order to show them a different method for foreign language learning. The third-graders already know the computer and its basic uses. Together we discovered how to use a computer for foreign language learning. They were excited about the programme Story Jumper because they were able to create their very own book and use pre-offered scenes for a background or use theirs. They took photos and inserted their pictures into the programme. They

scanned their art products and used them in a »story«. Before they started the actual work, they researched the field of language. Through Croatian, English, French and Slovene, the children collected materials in groups and monitored their activity in the after-school programme. During the process, they used bilingual dictionaries, which are available online. The e-book, which they kept as a certain souvenir of the work they had done in the after-school programme, was not the only result of their creative process. The idea of them temporarily becoming teachers and the rest of us their students was also important. In groups, the children presented the materials they had collected.

Ponavljanje in utrjevanje s programom ALICE

Repetition and consolidation with programme ALICE

Mateja Slevec, Osnovna šola Marije Vere, Kamnik

Povzetek: Didaktične igre so primerne za učence vseh starosti ne glede na njihovo predznanje. Z njihovo premišljeno pripravo in uporabo pri pouku so učenci pogosto bolj motivirani, pozorni in izkazujejo večje zanimanje za delo. Znanje, ki ga dosegajo, pa je pogosto trajnejše (Kolb, Posodobitev pouka ..., 2014). Interaktivne didaktične igre lahko učenci izdelajo z uporabo programa za interaktivne animacije ALICE. Program je brezplačen in dostopen na svetovnem spletu. Je preprost za uporabo in učenci ga lahko začnejo uporabljati že v 3. razredu. Alice je inovativno 3D-programsko okolje, ki omogoča preprosto ustvarjanje animacij. Učencem omogoča, da se naučijo osnovnih programskih konceptov v okviru ustvarjanja. Z gumbi povleci in spusti oblikujejo animacijo oseb, živali ali avtomobilov. Takojšnja možnost ogleda, kako njihovi animacijski programi delujejo, pa jim omogoča lažje razumevanje odnosa med programskimi izjavami in obnašanjem predmetov v njihovi animaciji. V program lahko preprosto napišejo in osebi v svojem virtualnem svetu vdahnejo življenje ter se poglobijo tudi v dialoge, ki so lahko tematsko obarvani. Pri delu krepijo vseh osem ključnih vseživljenjskih kompetenc. Ker je animacija lahko tematsko obarvana, je program uporaben pri vseh učnih predmetih za ponavljanje in utrjevanje znanja. Učitelj ga lahko uporabi tudi v razširjenem programu v osnovni šoli (v jutranjem varstvu ali podaljšanem bivanju). Zbirka izdelanih animacij, ki so jih pripravili učenci, pa nudi dober pregled opravljenega dela in je učencem navdih za delo v naslednjem šolskem letu, ko animacijo nadgradijo z novim znanjem in osmislijo tudi večkrat slišano tezo, da se znanje pri predmetih nadgrajuje in razširja ter da so osnove pomembne.

Abstract: Educational didactic games are appropriate for children of all ages regardless of their prior knowledge. With thoughtful preparation and use of didactic games pupils are usually more motivated, attentive and show a greater interest in their work. The knowledge they gain in usually long-lasting. Interactive didactic games can be a product made by pupils using Alice (a programme for making interactive didactic games which is available online and it is also free). This programme is easy to use and can be already used by children in the third grade. Alice is an innovative 3D programming environment that makes animations easy to create. It allows pupils to learn basic programming skills by using only two buttons, drop and drag, to shape animated animals, cars or people. The immediate opportunity to see how this programme works gives them a chance to a better understanding of the basic programming skills and concepts while creating these animations themselves. The programme allows them to make their animations alive, pupils can also make

deeper and more profound dialogues according to the theme provided. While using this programme pupils strengthen all eight crucial life-long competences. Since the programme also allows different themes that support the animating process it is also useful for many different school subjects for repeating and practicing. This programme can be also used by teachers during lessons and other school activities in elementary school. The collection of all animations made throughout the year is a nice overview of the pupils work and a great inspiration for the generations to come. Pupils are able to upgrade their animations in the following school year and use their newly acquired skills and also begin to understand why the basic knowledge is so important.

Formativno spremljanje veščin pri kemiji

Formative assessment skills in Chemistry

Andreja Rajh, Srednja ekonomska šola Maribor, Maribor

Povzetek: V tem šolskem letu sem na šoli vodja mednarodnega projekta ATS 2020. Ukvarjamo se s spremljanjem napredka dijakov, z usmerjanjem dijakov z dajanjem povratnih informacij, s skupnim načrtovanjem kriterijev itn. Ob vsem tem pa ima pomembno vlogo tudi sodobna tehnologija z najrazličnejšimi orodji. Ugotavljam, da so dijaki v glavnem vajeni frontalnega pouka, ki marsikdaj pripelje do pasivnosti manj motiviranih dijakov. Kaj narediti, da bomo spodbudili tudi take dijake? Odločila sem se, da jih postavim v vlogo raziskovalcev, načrtovalcev in poročevalcev. Izbrala sem vsebinski sklop: LASTNOSTI IZBRANIH ELEMENTOV. 1. Predznanje smo preverili s kratkim kvizom v Kahootu. 2. Dijaki so pripravili osebno izkaznico za izbrani element s pomočjo podatkov na spletu, pregledali osebno izkaznico sošolca in mu podali povratno informacijo. 3. Z dijaki smo oblikovali opisne kriterije govornega nastopa/predstavitve. 4. Dijaki so pripravili predstavitev izbranega elementa v obliki malega oglasa, ženitne ponudbe, osmrtnice ipd. in jo predstavili v razredu. 5. Sledila je povratna informacija na predstavitev z utemeljitvijo s pomočjo »semaforja«. 6. Ob koncu vseh predstavitev so v Triciderju glasovali za najboljši govorni nastop in svojo odločitev utemeljili. 7. Vse predstavitve smo posneli in pripravili bomo film, ki prikazuje vse faze, skozi katere sem dijake vodila do končnega uspeha. In kaj so se naučili dijaki? Povedali so, da je bilo sprva težko, ker so se s takim načinom dela srečali prvič, bi pa izkušnjo še radi ponovili, ker je bilo poučno in bistveno bolj zabavno kot frontalni pouk. Poleg tega so na podlagi skupaj izdelanih kriterijev natančno vedeli, kaj se od njih pričakuje, zato so bile predstavitve, kar se tiče vsebinskega dela, v glavnem brezhibne. Menim, da je treba dijake večkrat postaviti v takšno ali podobno vlogo, ker jih tako učimo tudi prevzemati odgovornost za lasten uspeh. Ob vsem tem pa ne smemo pozabiti, da je tak način dela in učenja dolgotrajen proces, ki ne bo dal rezultatov v enem letu, se pa bo zagotovo obrestoval.

Abstract: I am the leader of the international project ATS 2020 in this school year. We have observed improvement of the students, directing of the students with giving of feedback information, with planning of criteria together, etc. Modern technology with different tools play an important role with all that. I have found out that the students are mostly used to frontal lessons, which can lead to passive behaviour of less motivated students. What could we do to encourage such students? I have decided to place them in the role of researchers, planners, and reporters. I have chosen a content compound of the chosen chemistry elements' features. 1. We have checked prior knowledge with a short quiz in Kahoot. 2. The students have prepared an identity card for the chosen element with the help of data online, have

checked the ID card of a school-mate, and have given the feedback information. 3. We have formed the descriptive criteria of oral performance/presentation. 4. The students have prepared a presentation of the chosen element in the form of a small ad, marriage proposal, an obituary, etc. and present it in the classroom. 5. A feedback information to the presentation followed based on the proof of a “traffic light”. 6. At the end of all presentations, the students voted for the best oral performance/presentation and substantiated their decisions. 7. All presentations have been recorded and we will prepare a film, which presents all phases that have led the students to the final success. And what have the students learnt? The students have told me that the task has been difficult at first because they have met the method of work for the first time. However, they would like to repeat the experience because it has been educative and funnier than the frontal lessons. Besides that, they also knew what the teacher expected because of the criteria they had formed together. Therefore, the presentations were (content speaking) mostly flawless. I think that students have to be placed in this or a similar role because this is a way we can teach them to take responsibility for their success. We should not forget that this manner of work and learning is a long-term process, which will not give results in one year, however, it will definitely pay off.

Učni in osebnostni vzorci PRST-patterns: spoznaj sebe in razumi druge

Learning and personality patterns PRST-patterns: get to know yourself and understand others

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Povzetek: Sodobno izobraževanje je opredeljeno kot personalizirano, konstruktivistično učenje, pri katerem se upoštevajo učenčeve kognitivne lastnosti, kot so predznanje, in druge učne ter osebnostne značilnosti. Da bi podprli krepitev metakognicije v procesu učenja, smo oblikovali nov unikaten model PRST-patterns (http://prst-patterns.com/), ki je hkrati tudi spletna aplikacija za opredeljevanje in zaznavo učenčevih učnih in osebnostnih vzorcev. Na voljo imamo večje število modelov učnih stilov (denimo Felder-Silvermanov model, Honey-Mumfordov model, Kolbov model in Myers-Briggsov model), ki so po navadi osredotočeni samo na en vidik kognitivnih oz. učnih lastnosti. Da bi dobili čim širšo sliko o učnih karakteristikah, mora učenec rešiti več kot 150 vprašanj, kar je časovno zamudno. Po drugi strani pa včasih ni mogoče opredeliti prevladujočega učnega stila, ker sta lahko v določenem trenutku dva stila (glede na numerično vrednost) zastopana enako močno. Da bi naredili nov model, ki bi izboljšal omenjene pomanjkljivosti, smo uporabili sodobne algoritme strojnega učenja in tako oblikovali nov model PRST-patterns, ki povzema vse izhodne informacije zgoraj omenjenih modelov učnih stilov. Kratica PRST predstavlja iniciale angleških besed za zaznavanje, reagiranje, učenje novega in razmišljanje. Naš povsem nov model vsebuje le 15 vprašanj in pokriva vse ključne informacije o učenčevih učnih ter osebnostnih vzorcih (kognitivne stile, epistemološke stile, hemisferne stile in stile zaznavanja). Kombiniranje več modelov v en model lahko pomaga, da učenci prejmejo celostno sliko svojih vzorcev in tako bolje spoznajo sebe, in sicer spoznajo svoje močne osebnostne vzorce ter prejmejo pozitivno povratno informacijo o šibkejših vzorcih, ki jih lahko izboljšajo. Predstavili bomo model PRST-patterns ter pokazali povsem nov način grafične predstavitve rezultatov in povratne informacije. Predstavili bomo tudi pozitivne odzive učencev, učiteljev in drugih pedagoških delavcev. Naš model je namreč primeren za uporabo pri pedagoškem delu in tudi za osebno rabo. Daodedžing namreč pravi: »Če razumeš druge, si pameten, če razumeš sebe, si razsvetljen.«

Abstract: Modern pedagogy is characterized by personalized, constructivist approach to learning, taking into account different cognitive abilities, such as prior knowledge, as well as learning and personality characteristics. In order to increase metacognition in the process of learning, we have designed a new unique model and web application PRST-patterns (http://prst-patterns.com/) for characterizing and

detecting students learning and personality patterns. There are many kinds of learning style models (eg. Felder and Silvermans, Honey and Mumfords, Kolb,s and Myers-Briggss model), which are specified only for one aspect of students cognitive or learning preferences. In order to get wider picture of personality patterns, a student has to answer numerous questions (more than 150 questions), which is time-consuming. The second disadvantage is the fact that it is not always possible to detect a dominant learning style for a student as two or more learning modes have a high value at the same time. In order to take into account all these findings, we have used some modern algorithms of machine learning and designed a new model PRST-patterns, which summarizes outputs of all learning/cognitive style models mentioned above. Abbreviation PRST stands for patterns of perceiving, reasoning, studying and thinking. Our brand new model contains only 15 questions and covers at the same time all information of students learning preferences and characteristics (cognitive style, epistemic style, hemispheric style and perceiving style). Combining more learning style models into one model can help students to get to know themselves better in order to know their learning and personality strength points and get positive tips to increase weaker points of personality. In our presentation, we will show our model PRST-patterns, present a brand new graphical representation of the results and feedback. We will present positive impact onto learning process and present variety of different usage of our model: in learning process and for personal use. Tao Te Ching said, »If you understand others you are smart. If you understand yourself you are illuminated.«

Argumentiranje umetnostnega besedila

Arguing a fictional text

Tatjana Hafner, Osnovna šola Sava Kladnika Sevnica, Sevnica

Povzetek: Učitelji slovenščine opažamo, da učenci nespretno interpretirajo umetnostna besedila, na naloge utemelji, razloži večinoma sploh ne odgovarjajo. Veščina argumentiranja se je izkazala kot zelo prikladna, saj je v projektu ATS podprta z IKT, ki je učencem blizu in ob računalnikih sploh ne pomislijo, da se učijo. Učenci odgovorijo na zastavljeno vprašanje, ga utemeljijo in napišejo povratno informacijo sošolcem in tovrstno »dopisovanje«/prepričevanje jim je všeč. Glavni cilj take učne ure je, da izgrajujejo razumevanje umetnostnega besedila glede na lastno doživljanje, razmišljanje in ravnanje ter da na temelju povratne informacije sošolca izboljšajo svoj izdelek. Učenci torej ob računalnikih vendarle izrazijo svoje mnenje drugače kot pri običajnih urah, veliko pa jim pomeni tudi povratna informacija vrstnikov.

Abstract: The teachers of Slovene language have noticed that our pupils very ineptly interprete fictional texts. When they are asked to substantiate and explain something, they usually skip these questions. The skill of arguing has proved as very handy for this purpose, because in ATS project it is supported by IKT which the students are very familiar with. When working with computers they forget that they are actually learning. They answer the question they are asked, substantiate it and write a feedback to their schoolmates. They really like this information exchange. The main aim of such a lesson is that pupils upgrade their understanding of a fictional text based on their own experience, thinking and behaviour and that their peers feedback helps them improve their work. So when working with computers the pupils express their oppinion in a different way than they usually do and their peers feedback is of great importance to them.

IKT na razredni stopnji

ICT in Lower Primary Grades

Suzana Vajngerl, Osnovna šola Sladki Vrh, Podružnična O. Š. Velka, Sladki Vrh

Povzetek: Predstavila bom, kako kot profesorica razrednega pouka že vrsto let delam z nadarjenimi oziroma potencialno nadarjenimi učenci in kako pri svojem delu vključujem IKT. B. Drenik (2014) v diplomskem delu piše, kako IKT spreminja procese poučevanja in učenja ter procese upravljanja in vodenja izobraževalnih institucij ter da znanja, pridobljena s pomočjo računalnika, ne služijo le izobraževalnim ciljem, temveč tudi pripravi na vsakdanje življenje. Pri urah individualne skupinske pomoči (ISP) za nadarjene sem učence pripravljala tudi na različna tekmovanja. Delo sem še nadgradila in jih učila, kako izvesti raziskovalno delo in kako to ustrezno zapisati in predstaviti drugim z uporabo IKT. M. Juriševič (2012) meni, da nadarjeni potrebujejo za svoj učni razvoj kompetentne učitelje ter ustrezne spodbude za učenje in vodenje, da bi uresničili svoje potenciale in dosegli odličnost. Prav ta del bom predstavila kot primer dobre prakse, kako na razredni stopnji pripravljamo učence na svet raziskovanja, eksperimentiranja in odkrivanja naravnih zakonitosti ter kako pri tem vključevati tehnologijo. Pri urah individualne in skupinske pomoči (v nadaljevanju ISP) za nadarjene sem učence 4. in 5. razreda pripravljala na naravoslovno tekmovanje Kresnička. Natančno smo pregledali in predebatirali, na kaj morajo biti pazljivi pri izvedbi eksperimentov, katera vsebina je bila poznana od njihove objave v razpisu tekmovanja. Ob prijavi na tekmovanje so se morali zavedati, da jih čaka veliko individualnega dela doma. Pri vseh treh poskusih, ki so jih morali opraviti, so morali natančno in dosledno slediti navodilom za izvedbo, ki sem jih pripravila predhodno. Vsak korak poskusa so učenci tudi fotografirali, saj so tako podkrepili zanimivost predstavitve, ki so jo pripravili v PowerPointu (ppt). Pri uri ISP za nadarjene učence smo kasneje opravili predstavitve in učenci so posredovali svoje rezultate in ugotovitve. Na podlagi ugotovitev in opažanj po opravljenih poskusih so bili učenci pripravljeni na tekmovanje.

Abstract: In my abstract, I would like to present and describe how I work as a teacher at lower primary level with the gifted and potentially gifted students for many years now and how I include ICT into the work. B. Drenik (2014) indicates in the diploma paper how implementing the ICT into classes changes the learning as well as teaching process and changes the management of educational institutions. The knowledge and skills gained on the computer is not only important for education but it prepares each individual for everyday life. At classes of individual and group assistance (ISP) for gifted students I was making them ready for several competitions. In this way I also upgraded the work and taught the students how to perform a research work, how to write it and how to present it to the others by using ICT. M.

Juriševič (2012) is convinced that gifted students need competent and innovative teachers in order to develop their potentials and achieve excellence. At classes of individual and group assistance (ISP) for gifted students from 4th and 5th class I was making them ready for science competition called Kresnička. At individual group assistance classes for the gifted we thoroughly checked and debated everything they need to follow when it goes to performing the experiments which content was known from its announcement in the competition notice. When the students applied for the competition they needed to be aware that a lot of individual work at home awaits them. At all three attempts, which the 4th and 5th graders had to perform, they needed to follow the guidelines and instructions which were prepared by the mentor. Every attempt was photographed and documented, which was the base for the efficient power point presentation. At the classes the students presented their experiments and conclusions as well as results. Based on the findings and conclusions after performed experiments the students were ready for the competition.

Vpliv IKT na motivacijo učencev za šolsko delo

The influence of ICT technology on the students motivation to study

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Povzetek: V prispevku prikazujem vpliv IKT in formativnega spremljanja na motiviranost učencev za učenje fizike. Kot učiteljica matematike in fizike z dolgoletno prakso ugotavljam, da so učenci pri šolskih urah premalo aktivni in premalo motivirani za pridobivanje novega znanja. Zaradi njihove nezainteresiranosti za učenje in znanje se kažejo tudi slabši učni rezultati pri preverjanju znanja v primerjavi s predhodnimi generacijami. Zato je treba v šolsko delo vključiti nove metode dela in didaktične pristope, ki bodo učence spodbudili k učenju in jim vzbudili željo po znanju. Učence je treba opremiti z novimi učnimi strategijami ter jim omogočiti uporabo IKT, ki ga redno uporabljajo v vsakdanjem življenju. Namen prispevka je pokazati, kako izkoristi predhodna znanja učencev o IKT, in povezati šolsko delo z uporabo IKT ter tako vključiti v pouk kreativnost učiteljev in učencev. Sodelujem v mednarodnem projektu EUfolio-razvojni listovnik in v projektu ATS 2020-formativno spremljanje in vrednotenje transverzalnih veščin s pomočjo IKT. Projekta sem izvajala v 8.in 9. razredu pri urah fizike in matematike. Učenci so uporabljali računalniško opremo in program E-listovnik Mahara, ki mi je pomagal preveriti predznanje učencev in jih z dodatnim slikovnim gradivom motiviral za šolsko delo. Rezultati dela v okviru projektov so pokazali, da so učenci, s katerimi se izvaja pouk s pomočjo IKT in formativnega spremljanja, uspešnejši pri preverjanju in ocenjevanju znanja, bolj motivirani za učenje ter aktivneje sodelujejo pri učni uri. Hkrati pa je izvedba učne ure z uporabo IKT in formativnega spremljanja prinesla tudi pozitivne učinke na socialno integracijo učencev v razredu, kajti učenci so si po tako izvedenih učnih urah bolj pripravljeni pomagati. Novi didaktični pristopi – uporaba IKT in formativno spremljanje – so olajšali raziskovalno poučevanje in učenje ter pozitivno vplivali na doseganje višjih ravni znanja. IKT lahko dopolni začetna navodila, ki jih da učitelj pred začetkom dela, in posledično lahko učenec opravi tudi eksperimentalno delo pri fiziki z večjim razumevanjem uporabljenih metod in boljšo teoretično podlago eksperimenta. Rezultati sodelovanja v omenjenih projektih so pokazali tudi, da uporaba IKT pri pouku fizike omogoča deklerativna in procesna znanja, ki prispevajo h kakovostnejšemu učenju naravoslovja na splošno.

Abstract: In my article I want to show the influence of the ICT and formative approach on the students motivation to study physics. As a long-year maths and physics teacher I have found out that the students are not active enough during the lessons and they lack the motivation for new knowledge. For this reason their knowledge

is poorer if compared to the previous generations. Thats why new methods and didactic techniques should be integrated into school work. They should encourage the students to study and stimulate their wish for new knowledge. They should get acquainted with new strategies and they should have the daily access to the ICT. The purpose of my article is to show how to use the studens prior knowledge on ICT and how it can be connected with the school work. In this way the creativity of students and teachers is part of the school work. I am taking part in the international project Mahara e-portfolio and in the project ATS 2020 – formative approach of the assessment of the students skills based on the ICT. The project has been carried out in the 8th and 9th grade in maths and physics class. The students were using ICT and Mahara e-portfolio which helped me to check their previous knowledge and to motivate them for further work with additional graphics. The results have shown that the students using new technologies have better knowledge, are more motivated to study and participate in the class actively. At the same time using new technologies in the class has positively influenced the social integration in the class because the students are more willing to help each other. New didactic approaches have made research teaching and learning easier and have had a positive effect on the knowledge on the higher level. The instructions given by the teacher at the beginning of the class can be supplemented by the ICT. Consequently the students can also do experimental work in physics because they are more aware of the methods they are using and because their theoretic basis is better. The results of joining such projects have shown that using the ICT in physics class enables the process knowledge which contributes to the better knowledge of natural sciences in general.

Model rešitve izvajanja učnega predmeta z omejeno programsko in strojno opremo

Model of solution for subjects of study with limited hardware and software

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Povzetek: Učenje strokovnih predmetov je velikokrat povezano z visokimi stroški strojne in programske opreme, kar posledično največkrat pomeni omejitve pri pravicah uporabe le-te. Oprema je zaradi visokih cen omejena na šolsko uporabo, kar dijakom onemogoča dopolnilno delo doma. Še večji problem pa nastane, kadar v učilnicah za laboratorijske vaje ni toliko opreme, da bi lahko vsak dijak preizkušal obravnavano snov na realnem sistemu. Določen del obravnavane učne snovi je sicer mogoče obdelati na simulatorjih, ki so po navadi cenovno dostopnejši, vendar ne v celoti. V takih pogojih množica novih informacij ne potuje več do dijakov prek učitelja, ampak so za njihovo selektivno sprejemanje odgovorni dijaki sami, učitelj pa postane usmerjevalec in kritični opazovalec na podlagi svojega znanja in izkušenj. Predstavil bom model, ki rešuje opisane težave na programski in strojni opremi SIEMENS in FESTO. Ob upoštevanju dejstva, da imajo dijaki v višjih letnikih strokovne šole zelo različno predznanje s strokovnega področja, predvsem zaradi njihovih lastnih interesov po pridobivanju znanj in veščin, so v učnem modelu prikazane možnosti, kako izkoristiti njihove potenciale v korist rešitve problema omejenih materialnih možnosti šole in hkrati ne omejevanja njihovega hitrega napredovanja v učnem procesu. Učna snov, ki je predvidena v letnem delovnem načrtu, je osnova za določanje kriterijev ocenjevanja in ciljev, ki naj bi jih dijaki dosegli v šolskem letu. Zaradi različnega predznanja so že v začetni fazi uresničevanja učnega načrta predvidene različne hitrosti doseganja ciljev. Tako dijaki, ki imajo boljše izhodiščne potenciale znanja in hitreje usvajajo učno snov, že v prvi četrtini šolskega leta pridejo iz simulacijskih okolij na raven upravljanja realnih sistemov. Usposabljanje in ocenjevanje znanja se tako v prvi četrtini leta lahko izvedeta delno na opremi, delno pa samo na simulatorjih. V naslednjih fazah najboljši dijaki začnejo z zahtevnejšimi, abstraktnejšimi nalogami, ki zahtevajo več načrtovanja, raziskovanja, ustvarjalnosti, samostojnosti, in jim ponovno zadostujejo simulatorji, preostali pa jim po svojih zmožnostih sledijo. Tako je končna ocena odraz dejanskega dijakovega znanja ne glede na omejitve zaradi razpoložljive opreme, po drugi strani pa odprte možnosti dela predstavljajo spodbudo za raziskovalno delo in večje možnosti sodelovanja z gospodarstvom.

Abstract: Teaching of technical subjects is often associated with expensive hardware and many software licenses which are expensive and so students can use them only in school and not also at home for additional training. More bigger problem arises when in the classroom for exercises each student doesn't have his own equipment f. Of course, part of the learning material is possible treated using simulators, which are usually more affordable, but not entirely. In such conditions a multitude of new information doesnt travel any more to the students through a teacher, but for their selective accepting have to take responsibility students themselves. A teacher become only a coordinator and critical observer on the basis of his knowledge and experiences. My intention is to present a model, that solves described problems, on the SIEMENS and FESTO software and hardware. Taking into account the fact that students in higher education professional schools have very different levels of knowledge in the professional field, mainly because of their own interests in acquiring knowledge and skills, I will show in the teaching model, how to exploit their potential when there are limited material possibilities and in the same moment not limiting their rapid progression in the learning process. Teaching material, provided in the annual work plan is the base for making teaching objectives and an assessment plan . Due to different levels of knowledge, I have already provided, at an early stage of the realization of the curriculum, different speed of achievement the goals. Thus, students with better basic knowledge potential and a faster conquering of the subject material, somewhere in the first quarter of the school year, will come from simulation environments to the real systems. So, both, training and assessment of knowledge are possible completed partially on simulators and partially on equipment in the first quarter of the year. In the next stages, the best students begin with more abstract tasks that require more planning, research, creativity, independence and so they can again work on simulators. The rest of students follow them according to their abilities. In this way, the final score of the subject reflects the actual pupils knowledge without restriction due to available equipment, and on the other hand, the open options give an incentive for research and greater opportunities for cooperation with the economy.

Razvijanje podjetniških veščin – kompetenca 21. stoletja

Developing of entrepreneurial skills as a 21st century competence

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Povzetek: V prispevku je opisano iskanje poslovnih idej s pomočjo BMC (Business Model Canvas) pri pouku podjetništva. Gre za sodoben pristop iskanja idej in poslovnih zamisli. Dijaki so najprej BMC spoznali v teoriji, nato pa so se lotili načrtovanja in razvoja virtualnega podjetja. Tu je prišla najbolj do izraza njihova ustvarjalnost. Izdelek so predstavili sošolcem, nekateri so se udeležili tudi državnega tekmovanja, mnogi pa si v prihodnosti želijo razviti pravi posel. Živimo v času, ko bo treba skozi življenje prek številnih ovir tudi v poklicem okolju, miselnost, da bomo vse življenje opravljali samo en poklic, pa se ne sklada s pričakovanji novih pogledov na poklicno udejstvovanje, zato je izjemno pomembno, kakšne poklicne kompetence in veščine pridobi posameznik v formalnem in neformalnem izobraževanju. Spodbujanje mladine k podjetništvu in pridobivanju podjetniških veščin je kompetenca 21. stoletja. Podjetništvo ni le ustanovitev in vodenje podjetja, gre za podjetniški način razmišljanja v vseh sferah profesionalnega življenja. Vpeljevanje podjetništva v šole je strateški proces, kot je nujno povezovanje teorije in prakse, kar zagotavlja pomembne korake.

Abstract: My paper is presenting the research on how to turn business ideas into a teaching process of entrepreneurship, along with the help of BMC (Business Model Canvas). BMC is a stratgic management and entrepreneurial tool. Our students gain theoretical knowledge through the BMC, which is later upgraded to production of design and building a virtual business. This is the crucial moment where their creativity will show up and add to a final product, which they present to their classmaters. Best of presentation get to compete on a national level. A number of them also wants to base a real business in their future to come.Nowadays a person must gain a professional competences and skills through formal and informal education in order to be competitive in the world of daily bussines, also having in mind that a first job isnt realy the best.Encouraging youth to entrepreneurship and acquiring entrepreneurial skills, competence 21st century. Entrepreneurship is not only setting up and running a business, it is the entrepreneurial way of thinking in all areas of professional life. The introduction of entrepreneurship in the schools strategic process, as necessary integration of theory and practice, which provides important steps.

Digitalna igra Pre-Civilization pri pouku zgodovine

Digital game Pre-Civilization at History lessons

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Povzetek: Učenci pogosto uporabljajo IKT, igrajo digitalne igre in veliko časa preživijo na družbenih omrežjih. Vajeni so sodelovati v dejavnostih, v katerih so nagrajeni za svojo predanost in delo. Da bi zagotovili učne rezultate, smo učitelji začeli uporabljati sodobno okolje in tehnologijo računalniških iger. Zato sem se tudi sama odločila, da spremenim svojo tradicionalno prakso poučevanja. Učenec, ki se uči sam, potrebuje učitelja, ki ga usmerja. Izbrala sem učenje z digitalno igro Pre-Civilization. Upoštevala sem prednosti digitalnih iger, vodil pa me je konstruktivistični pristop k učenju, ki daje prednost praktičnemu učenju. Učenci lahko opazujejo tudi sošolce in izboljšajo določene veščine. Konstruktivistične teorije učijo, da se posamezniki učijo skozi interakcijo s svojim okoljem in vrstniki. To zahteva niz poskusov in neuspehov ter učenčevo sposobnost, da razume svoje pretekle in sedanje izkušnje in zna tako dopolniti svoje znanje. Z digitalno igro učenci dosežejo naslednje cilje iz učnega načrta za zgodovino v 7. razredu: 1) opišejo glavne značilnosti sodobnega mislečega človeka (Homo sapiens); 2) pojasnijo, kako so spremembe v okolju vplivale na razvoj človeka; 3) opišejo spremembe načina življenja v posameznih obdobjih prazgodovine in pojasnijo, zakaj so nastale; 4) razložijo pomen kopičenja izkušenj in znanja za izboljšanje življenjskih razmer; 5) sklepajo o glavnih kulturnih dosežkih prazgodovinskih ljudi. Scenarij izvedbe: načrtovani sta dve šolski uri. Učence seznanim s pravili igranja igre. Razložim, da se bomo na nekaterih delih igre ustavili, se pogovorili o pomembnih rečeh, da sodelujejo s svojimi sošolci, iščejo tudi informacije, kako igrati igro naprej in do konca (načrtovani so pogovori na vsaki ključni točki, da bi dogajanje v igri povezali z učnimi rezultati, pomembno je povezati veščine, pridobljene v igri, z učnim načrtom). Uporabim vprašanja, pripravljena za ocenjevanje učenja pri formativnem spremljanju pouka. Dodana didaktična vrednost je digitalna igra, ki ustreza starostni stopnji učencev, upošteva pomembne kriterije didaktičnih iger, uporablja preprosto krivuljo učenja. Učenci, ki sicer ne igrajo digitalnih iger, pridobijo izkušnje s pomočjo sošolcev. Menim, da tak način dela ne more biti prevladujoč, prav pa ga je uporabiti v vsakem razredu vsaj enkrat na leto. Ta premik k sodobnim praksam je potreben, da bi dosegli svoje učence in njihove tipične značilnosti »digitalne generacije«.

Abstract: Students often use information and communication technology, play digital games and spend a lot of time on social media. They are used to cooperate in activities in which they are awarded for their commitment and work. To provide learning results teachers have started using the modern media environment and technology of computer games. Therefore I have decided to change a traditional

way of teaching too. A student, who learns by himself, needs a teacher to guide him. I have chosen learning with a digital game called Pre-Civilization. I have taken into consideration the advantages of digital games, I was guided by a constructivist approach to learning which gives priorities to practical learning. Students can observe their classmates and improve certain skills. Constructivist theories teach that individuals learn through interaction with their environment and peers. This demands a series of attempts and failures as well as a students ability to understand his past and present experiences to complete his own knowledge. With the digital game students achieve the following aims of the history syllabus for grade 7: - describe the main characteristics of a modern thinking man (Homo sapiens), - explain how the changes in the environment influenced on human development, - describe the changes in ways of life in certain periods of prehistoric times and explain why they happened, - explain the meaning of accumulation of experiences and knowledge for improving life circumstances, - come to a conclusion about major cultural achievements of prehistoric humans. Performance scenario 2 lessons are planned. Students get familiar with the rules of the game. I explain they will have to stop at some parts of the game to have a discussion about important things, to cooperate with classmates, look for information how to continue and finish the game (discussions are planned on each key point to connect events in the game with learning results, it is important to connect skills gained through the game with the syllabus). I use questions prepared for formative assessment. An additional didactic value is a digital clock which is age-appropriate, it considers criteria for didactic games, and uses a simple curve of learning. Student who do not play digital games, get some experiences with the help of classmates. In my opinion this approach to learning cannot prevail, it is recommended to be introduced at least once a year in each class. It is nessessary to move to modern practice in order to follow our students and their typical characteristics as a digital generation.

Aplikacije za razgibanje možganov, uporabne pri otrocih s posebnimi potrebami

Brain training applications for children with special needs

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Povzetek: Večini otrok, ki so usmerjeni v redne programe osnovne šole, je skupno to, da imajo največ težav na področju pozornosti in koncentracije, pomnjenja, vidnomotorične koordinacije, zaznavanja, prostorske orientacije in splošne poučenosti. Kot izvajalka ur dodatne strokovne pomoči pedagoga in specialnega pedagoga namenim največ časa prav razvijanju in spodbujanju teh področij ter si jih tudi zastavim kot prioritetni cilj. Pri urah dodatne strokovne pomoči učenci ne glede na vrsto primanjkljaja igrajo različne miselne igre, izvajajo vaje za urjenje spomina, pozornosti in koncentracije (slušne, vizualne ...), krepijo finomotorične in bralne sposobnosti. Pri ohranjanju pozornosti in motivaciji za delo odločilno vlogo odigra IKT. S pomočjo štirih aplikacij za razgibanje možganov (Peak, Elevate Brain Training, Lumosity in Fit Brains Trainer) učenci krepijo in spodbujajo področje mentalnih sposobnosti, spomina, pozornosti, koordinacije, čustev, jezika, se spopadajo z reševanjem problemov na zanimiv, drugačen, prijetnejši način. S pomočjo znanja urejanja besedil v programskem orodju Microsoft Office Word, iskanja na spletu in splošne poučenosti so si sami izdelali različne didaktične pripomočke, ki jih nato uporabljamo pri urah dodatne strokovne pomoči. Tako so si izdelali pripomoček za iskanje parov (na enem kartončku je zapisana beseda, na drugem pa je slika) za zelišča in začimbe, listavce in iglavce, rože, znane slovenske pregovore, prometne znake, glavna mesta evropskih držav, ki ustrezajo določeni evropski državi, pare, kjer iščejo državo skupaj z avtomobilsko oznako, znak za znamko avtomobila skupaj z ustreznim imenom. Delo z učenci s posebnimi potrebami predstavlja velik izziv tako pedagogom kot učiteljem. Vendar se zavedamo, da je prav omogočanje širokega nabora zanimivih dejavnosti, s pomočjo katerih so se učenci sposobni učiti na drugačen, zanimivejši način in pridobivati znanja, tisto, kar v otroku vzbudi zanimanje, morda željo po raziskovanju, radovednosti, ga notranje motivira in zadovolji ter spodbuja in razvija njegove potenciale.

Abstract: To the most of the kids, who attend regular primary school programmes, the common problem is lack of attention and concentration, recollection, visibly-motoric coordination, perception, space orientation and general knowledge. As a mentor of additional assistance in the field of pedagogy I spend most of the time developing and encouraging these fields, which are set as priority goals. At the lessons the children play different mind games, perform exercises for brain memory,

attention and concentration (auditory, visual, etc.), and are strengthening their motoric and reading skills. The ICT, however, plays an important role in keeping their attention on a higher level. With the help of four applications (Peak, Elevate Brain Training, Lumosity and Fit Brains Trainer) the students build up and encourage their mental capabilities, memory, coordination, emotions, language, and are facing with solving the problems on an interesting and pleasant way. With the help of Microsoft Office Word tool and searching the net, the students were able to make their own didactical accessories, which are used afterwards at classes. They made the tool for finding a pair (on one piece of a card is a word and on the other the picture), for herbs and spices, deciduous and coniferous trees, flowers, famous Slovenian proverbs, traffic signs, European capitals, which belong to certain country, pairs which they find with matching the country with the car sign, brand of the car together with the name, etc. It is a great challenge working with the children with special needs not only for pedagogy teachers but for all the teachers. However, we are all aware that offering such students a vast choice of different topics which attract their attention and be able to learn these topics on an interesting way arouses their motivation and eagerness to perform the activities in an efficient way.

Sodelovanje v programu FIRST LEGO League skozi prizmo odgovornega učenja

Participation in the programme FIRST LEGO League through the prism of responsible learning

Ivan Dović, Osnovna šola Brinje, Grosuplje

Povzetek: V prispevku bom predstavil svojo izkušnjo mentorstva ekipi učencev na tekmovanju FIRST LEGO League (FLL), tekmovanju, ki učencem omogoča samostojno in odgovorno učenje. FLL je multidisciplinarno tekmovanje s poudarkom na robotiki. Učenci se morajo izkazati na tekmi robotov, izdelati ter predstaviti inovativno rešitev določenega problema povezanega s temo sezone, in delovati kot povezana skupina, v kateri je vsak član pomemben in spoštovan. Prava vrednost tekmovanja je skrita v njegovem procesu, ki učence spodbuja k samostojnemu, ustvarjalnemu in raziskovalnemu delu oziroma učenju. Mentor skrbi za proces, uspeh ekipe pa je odvisen od energije, ki so jo člani pripravljeni vložiti v pridobivanje novega znanja, ki jim bo na tekmovanju prineslo prednost. Septembra učenci prejmejo komplet kock LEGO, iz katerih si sestavijo naprave, potrebne za trening robota na tekmovalni mizi. Hkrati dobijo povezavo na videonavodila z zahtevami, ki jim bo moral robot zadostiti pri določeni nalogi na tekmovalni mizi. Učenci morajo nato določiti strategijo reševanja nalog ter domisliti zgradbo robota. Sledi izdelava robota s kompleti LEGO Mindstorms in programiranje s priloženo programsko opremo. To sprva zabavno delo pred učence kmalu postavi nove izzive iz mehanike in programiranja, ki pa jih lahko uspešno rešujejo, če so se pripravljeni učiti iz ogromne baze podatkov na internetu. Da jim ne zmanjka motivacije, je novembra organiziran vseslovenski trening robotov, kjer lahko svojega robota in svojo strategijo primerjajo s konkurenco. Vzporedno z robotskim delom začnejo razmišljati o temi sezone. FLL priskrbi okvirne smernice, ki so v pomoč tako mentorju kot učencem. Skupaj poiščemo problem v lokalnem okolju, ki je povezan s temo, in zanj iščemo inovativno rešitev. Pri tem spodbujamo sodelovanje z zunanjimi strokovnjaki, podjetji in institucijami, s katerimi je stik najlaže vzpostaviti prek elektronske komunikacije. Rešitev je treba deliti tudi z ljudmi v okolici; mi smo med drugim uporabili socialna omrežja in spletno stran. V predstavitvi bom svoje navdušenje nad procesom tekmovanja FLL in vrednotami, ki jih tekmovanje spodbuja, konkretiziral z opisom vodenja skupine učencev v sezoni 2014/2015.

Abstract: In this article I will present my experience of mentoring a team of pupils, which entered FIRST LEGO League competition (FLL), a competition which enables students to learn independently and responsibly. FLL is a multidisciplinary competition with a focus on robotics. Students have to perform well in the robot competition,

they have to find and present an innovative solution to a specific problem, related to the season's theme, and they have to act as a cohesive group, where each member is respected and plays an important role. The true value of the competition lies in its process, which encourages students to be independent and creative in their research work and learning. A mentor is responsible for the process, but the success of the team depends on the energy invested in acquiring new knowledge, which will result in a successful outcome in the competition. In September, students receive a set of LEGO bricks, which they use to create devices, required for robot training on a playing field. At the same time, they receive a link to video instructions and requirements the robot will have to fulfil in order to complete a certain task on a playing field. Apart from this, students have to develop a problem solving strategy and come up with the structure of the robot, as well as build a robot with Lego Mindstorms kit and develop a programme, using LEGO software. Even though these seem to be enjoyable tasks, students soon have to face new challenges. These can be successfully overcome, if students are willing to learn from a huge database on the internet. In November, an all-Slovenian robot training is organized, so that students don't lose motivation. This is where teams can test their robots and compare their strategies with others. Simultaneously, students explore the topic of the season. FLL provides guidelines for mentors and students. Together we indicate a problem in our local environment and try to come up with an innovative solution. In doing so students cooperate with external experts, companies and institutions, which are often contacted via electronic communication. It is obligatory to share the problem solution with the locals; that is why we communicated our progress also with the help of social networks and website. In my representation I will share my experience of mentoring a group of students in season 2014/2015. FLL competition truly is an opportunity for students to actively participate in the construction of their knowledge.

Igrajmo se šolo

Lets play school

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Povzetek: Prevzemanje odgovornosti za učenje je ena ključnih kompetenc, ki jih želimo privzgojiti učencem in dijakom na vseh stopnjah poučevanja. Iz šolskih dni se spominjava, da je bilo nekoč prisotne veliko več medvrstniške pomoči, pri čemer smo se veliko naučili tako tisti, ki smo pomagali, kot tisti, ki so bili deležni pomoči. To izkušnjo sva želeli prenesti tudi današnji mladini. Na tem primeru sva jim, med drugim, želeli tudi pokazati, da je treba biti pri znanju dovolj strokovno podkovan, če ga želiš uspešno posredovati. Zamislili sva si projekt sodelovanja med dijaki 1. letnika srednje šole in učenci 4. razreda. Poiskali sva primerno temo, ki je v učnem načrtu na obeh stopnjah – raznolikost živih bitij. Načrtovali sva učno uro mikroskopiranja. Delo sva načrtovali v štirih korakih. 1. PRIPRAVA V RAZREDU – DIJAKI: Dijaki so ponovili znanje o mikroskopiranju in sistematiki živih bitij. Posneli so filmček, v katerem so prikazali metodo mikroskopiranja. Filmček smo opremili z interaktivnimi vsebinami s pomočjo aplikacije Zaption in ga posredovali učencem. Dijaki so za učence pripravili tudi učni list. 2. PRIPRAVA V RAZREDU – UČENCI: Po zaključku vsebin o raznolikosti živih bitij sem učence motivirala za razmišljanje o tem, da nekatera živa bitja očem niso vidna, jih pa lahko vidimo s pomočjo mikroskopa. Skupaj smo si ogledali poslani filmček in odgovorili na vprašanja. Povezavo do filmčka sem jim posredovala v spletno učilnico. Učenci so se na mikroskopiranje pripravili tako, da so s seboj prinesli različne organizme, ki so si jih želeli ogledati. 3. SKUPNO DELO V RAZREDU: Za delo smo predvideli dve šolski uri. Po prihodu učencev v srednjo šolo, so se učenci in dijaki razporedili v dvojice (dijak + učenec). Dijaki so učencem pomagali pri praktični izvedbi mikroskopiranja. Ogledali so si različne mikroskopske preparate – tiste, ki so jih prinesli s seboj, in tiste, ki so jim jih pripravili dijaki. Rešili so tudi učne liste. 4. ANALIZA: Odziv dijakov in učencev na sodelovanje je bil zelo pozitiven. Dijaki so ugotovili, da se je treba za podajanje znanja dobro pripraviti, in so nalogo vzeli zelo resno. Učenci so dijake kljub njihovi mladosti sprejeli kot prave učitelje in še večkrat omenjali skupno uro.

Abstract: Taking responsibility for learning is one of the key competencies that we wish to teach our pupils and students at all levels of schooling. Looking back at our school days we are realizing that peer assistance was much more present, and we were able to learn more either by helping or by receiving help from others. We were eager to transfer this experience to the youth of today. Learners were taught a simple fact: If you want to help others, you have to prove that you possess sufficient knowledge on the topic you want to teach. Our idea was to pull off a cooperative

project involving the students in the 1st year of secondary school (from this point referred to as students) and the 4th graders of primary school (from this point referred to as pupils). We found a suitable topic that is in the curriculum at both levels - the variety of living organism on earth. We planned a lesson on the topic of microscope. We came up with a for-step learning plan: 1. PREPARATION IN THE CLASSROM – students Students revised their knowledge of microscopy and systematics of living organisms. They recorded a scene in which they demonstrated microscopy. The movie was equipped with interactive content using applications Zaption. The movie was sent to the pupils, along with the worksheets that students prepared for the pupils. 2. PREPARATION IN THE CLASSROM – pupils After teaching the 4th graders about the diversity of living organisms I motivated them to think about an interesting fact: some of the creatures' eyes are not visible with the naked eye, but they can be seen through a microscope. We watched a movie made by students and answered questions that we were given by them. A link to the video was placed to our virtual classroom. Pupils had to prepare themselves for working with the microscope so they brought a variety of organisms they wanted to observe through a microscope with them. 3. COOPERATIVE WORK IN THE CLASSROOM The planned duration of this stage was two lessons. After the arrival of the pupils from primary school to secondary school, pupils and students were ranked in doubles (student + pupil). The students helped pupils to use the microscope. They observed various slides - those who were brought by the pupils and those who were prepared by the students. They completed the worksheets. 4. ANALYSIS The feedback about cooperation between students and pupils has been very positive. Students were well prepared to pass on their knowledge and took their task very seriously. Pupils accepted the students as professional teachers despite their youth. Pupils remember the two lessons they have spent learning from older students with a lot of excitement.

Učenje angleščine v Oblaku tudi v vrtcih

English Language Learning in the Cloud also in Kindergartens

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Povzetek: V okviru tematskega sklopa Učenje učencem v roke bo predstavljen način dela, ki otrokom na predšolski ravni omogoča učenje s pomočjo materialov, prirejenih za njihovo razvojno stopnjo, tako znotraj kot tudi zunaj igralnice, hkrati pa sem spremljala njihovo pot samostojnega učenja. Branje in pripovedovanje pravljic ter učenje pesmic in rim sta v predšolskem obdobju dve izmed najpogostejših dejavnosti, po katerih poseže vzgojitelj pri načrtovanju in izvedbi vsebin. Njihov vpliv je vsestranski. Poleg širjenja besedišča branje pravljic in petje pesmic omogočata tudi vpogled v kulturo – bodisi domačo bodisi tujo. Zato so pravljice in pesmi v tujem jeziku pomembno orodje tudi pri poučevanju le-tega v predšolskem obdobju. Pred začetkom tega projekta smo starše na delavnici poučili o uporabi tega programa znotraj Oblaka 365. Starši in otroci so tako imeli vpogled v vsebine, iz katerih je izhajalo naše nadaljnje delo v skupini pri angleščini. V skupini predšolskih otrok smo pri angleščini tako videopravljice kot tudi pesmice v angleškem jeziku dodali v skupno rabo s starši otrok, in sicer v zvezku OneNote Class Notebook. V knjižnico smo odložili tudi zvočne posnetke besed oz. besednih zvez, ki jih spremlja ploskanje glede na število zlogov in sličice. Od otrok sem želela, da na podlagi gradiv v skupni rabi s pomočjo staršev ustvarijo zvočne zapise besed in jih oddajo v za to predviden zvezek. Poleg videopravljic in posnetkov pesmi ter besed pa so v oblaku tudi igre, ki so vsebinsko povezane z gradivi. Otroci so lahko identificirali glavne like, ki so nastopali v pravljici, igrali interaktivno igro tako, da so povezali sličice s primernim zvočnim posnetkom in ugotavljali, kdo oz. kaj je manjkajoči člen verige. Poplava gradiv na spletnih straneh ni nujno primerna za predšolske otroke, z omenjenim programom pa otrokom omogočamo dostop do njim primernega gradiva in spodbujamo samostojno učenje, hkrati pa jim omogočimo ponavljanje, ki ga mlajši učenci potrebujejo pri usvajanju tujega jezika. Pri tem spremljamo njihov napredek. Velika prednost takšne oblike dela je, da so vsebine na voljo na vseh mobilnih napravah, tudi kadar posameznik ni povezan s spletom. S tem zagotavljamo tudi večjo varnost otrok pred zlorabami na internetu.

Abstract: I want to present some ways of teaching English as far as the Handing Over The Learning to Learners theme section is concerned. Pre-school children have used some materials that are suitable for their age and can be used either inside or outside the kindergarten with the help of the adults. Using OneNote Class Notebook has also enabled me to evaluate their independent learning. Reading, storytelling

and singing songs and rhymes are the most frequent activities used in kindergarten when making every-day lesson plans. Their influence on cognitive, social and emotional development of a child is huge. Furthermore, expanding vocabulary, storytelling and singing enable children to have a look at foreign culture. Teaching English by using authentic materials represents an important tool for teaching foreign languages in kindergarten. Before starting the project, using OneNote was introduced to children's parents. We have put English video stories and songs in OneNote Class Notebook Content Library. There have also been some recordings of words and phrases, accompanied by clapping and pictures. I have wanted parents and children to record their children's pronunciation of certain words and leave them in the collaboration part of the OneNote. Beside video stories, songs' recordings and recordings of certain words, there have also been some interactive games available in OneNote. Children can identify main characters of the stories, match pictures with sounds and guess the missing part of a chain. Huge amount of different foreign materials on the web is not necessarily also appropriate for pre-school children. Using the methods mentioned above provide access to materials that encourage independent learning and repetition, necessary for young learners of foreign language. It also enables teachers to evaluate their progress. One of the advantages of the method is also that all the materials are available to everyone who uses mobile phones, smart devices or computers and is not necessarily connected to the internet. This is the way that ensures more online safety for our childern.

Utrjevanje znanja v podaljšanem bivanju s pomočjo interaktivne table

Consolidation of knowledge in the extended stay with the help of intertactive whiteboard

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Povzetek: Podaljšano bivanje je čas, ki si ga želimo učenci in učitelji preživeti kakovostno. Tudi sama se trudim, da bi v podaljšano bivanje vključila vse njegove elemente ter jih povezala in nadgradila z vzgojno-izobraževalnimi cilji pouka. Po napornem dnevu pri pouku je v podaljšanem bivanju še posebno težko učence motivirati pri samostojnem učenju. To me je vodilo, da z novimi pristopi in s pomočjo interaktivnih sredstev popestrim samostojno učenje. Tako sem učencem v času samostojnega učenja med drugimi ponudila tudi interaktivno tablo. Začeli so s prostim risanjem, nadaljevali z risanjem različnih črt, ki so jih nadgradili z vzorci, drug drugemu so podajali navodila za risanje po navodilu, risali zaporedja, predmete na določen glas, pisali črke, sestavljali in računali račune ... Pri delu so bili izjemno motivirani, saj so se trudili, da bi našli čim več rešitev, novih idej oz. predlogov, ki bi jih zapisali tako na tablo kot v zvezek. S takšno obliko dela smo dosegli višji nivo učenja tudi pri učencih z nižjo koncentracijo. Prednost je tudi ta, da sta učenje in utrjevanje znanja pred tablo na vpogled vsem in s tem je marsikdo, ki je bil prej samo opazovalec, dobil nove ideje. Ko učenci rišejo na tablo različne črte, urijo grafomotoriko, ki je podlaga za pisanje črk in številk. Urijo si tudi občutek, kako pritiskati in držati pisalo na tabli. Da ni ostalo le pri risanju na tablo, smo stvari, ki smo jih naredili na tabli in v zvezku nadgradili, povezali v interaktivne igre, s katerimi še danes utrjujejo pridobljeno znanje. In kaj je bilo učencem všeč? Nika: »Tisto, ko delamo vzorčke. Teja: »Ko sem risala.« Živa: »Razvrščanje sličic v kroge.« Noel: »Ker je večja kot zvezek.« Pina: »Ko rišem stvari na tablo.« Meta: Ko rišem po tabli s prstom.« Anja: »Ko igram igrce.« Žiga: »Všeč mi je, ker se laže radira kot v zvezku.« Mark: »Ko sestavljam besede.« Meta: »Ko smo sestavljali in reševali uganke.«

Abstract: Extended stay is the time that we want students and teachers to spend quality. I am trying to include all the elements of an extended stay in exstendet time itself, connect them and upgrade the educational objectives of the school. After a long day in the classroom the extended stay makes particularly difficult to motivate students for independent learning. This challenge led me to new approaches and interactive resources enriching self learning in the extended stay. So during independend learning, among others, I offered studendst an interactive whiteboard. Students started with a free drawing, continued by drawing various lines and

upgrade them with samples, they passed instructions to each other on how to draw based on the instructions they got, draw sequence objects in a certain voice, writing letters, composed and count bills, etc. Students were highly motivated as they tried to find as many solutions and new ideas, proposals that would record them both on board and in the notebook. With this form of work we have achieved a higher level of learning with the students with lower concentration. The advantage of learning and practicing in front of the the board is to everyone see someones work, because of that a lot of students who just observe can get a new idea. When students draw on the blackboard different lines, they train fine hand motor skills, which is the basis for the writing numbers and letters. They train a sense of how to push and hold the stylus on the board. We didnt stop by drawing on the blackboard, things that weve done on the board and in the notebook we connected and upgraded them into interactive games, which today consolidate the acquired knowledge. And what they tell students what they liked? Nika: »That, when we work samples.« Teja: »When I drew.« Živa: »Sorting frames in circles.« Noel: »Because it is bigger than notebook.« Pina: »When I draw things on the blackboard.« Meta: When I am drawing on board with my finger.« Anja: »When I play games.« Žiga: »I like it, because it is easier to erase, as in the notebook.« Mark: »When I compound words.« Meta: »When we composed and solve puzzles.«

Gremo v računalniško!

Lets go to a computer classroom!

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Povzetek: V oddelku podaljšanega bivanja učenci velikokrat želijo obiskati računalniško učilnico, da bi na internetu igrali igrice. Tehnologija predstavlja pomemben del današnjega sveta in je vpeta že v rano otroštvo. Kot učiteljici mi sprva ideja o igranju igric ni bila najbolj všeč, vendar sem se zavedala, da lahko prav na tem mestu otrokom pokažem eno izmed osmišljenih poti dela z računalnikom. Dlje časa sem premišljevala, kako naj izpolnim njihovo željo, hkrati pa osmislim dejavnost. Pri delu veliko časa namenim raziskovanju aktivne pozornosti; ene temeljnih sposobnosti v procesu učenja. Ker različne računalniške aktivnosti (igranje igric, oblikovanje besedila v Wordu, obdelava slik, risanje v programu Slikar, druženje na socialnih omrežjih, gledanje posnetkov ...) v največji meri spodbujajo vidno pozornost, sem se odločila, da sama pripravim didaktične igre za otroke, ki bodo spodbujale in izboljševale slušno pozornost. V sklopu projekta Pozoren sva s sodelavko pripravili didaktični pripomoček Pozorko, ki vsebuje 100 nalog za spodbujanje aktivne pozornosti. Izmed nalog za spodbujanje slušne pozornosti sem izbrala tiste, ki jih je bilo mogoče preoblikovati v računalniški, avdio-videoformat. Pri delu sem uporabila snemalnik zvokov in za dodatno obdelavo, Movie Maker. Po predstavitvi ideje učencem in pripravi iger smo se odpravili v računalniško učilnico, kjer so si učenci namestili slušalke in izbirali med naborom igric za spodbujanje slušne pozornosti. V računalniški učilnici so tako prevzemali odgovornost za napredek na področju slušne pozornosti, prav tako pa pri delu postajali samostojni do te mere, da so predlagali nove igre za naše ciljno področje in sodelovali pri njihovem nastajanju

Abstract: In day care students often want to play computer games on the internet in the computer classroom. Technology is an important part of today's world and is already present in early lives of our children. At first I did not like the idea of playing computer games, but I realized that my students can be shown how to work with computers more efficiently. I had been thinking about various ways how to respect their wish and be productive at the same time. While I teach, I often focus on exploring active attention; this is one of the basic abilities in the process of learning. I decided to prepare didactic games for children which will stimulate and improve listening attention because various computer activities (e. g. playing computer games, processing of Microsoft Word documents, use of social networks, watching videos etc.) mostly stimulate visual attention. In the project "Pozoren sem", my colleague and I introduced a didactic tool called "Pozorko" which contains 100 tasks for active attention stimulation. Among the tasks which improve listening attention, I had chosen the ones that could be transformed into a computer audio-video format.

I used a voice recorder and Movie Maker for further processing. After I presented my work to the students, I took them to a computer classroom where they were able to choose among the tasks that had been designed to help them improve listening attention. The students accepted responsibility for improving their listening attention and they became more independent; they were able to participate in creating new games for improving listening attention.

Samostojno učenje z Moodlom

Self-directed learning with Moodle

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Povzetek: Spletna učilnica Moodle lahko dijakom učinkovito pomaga pri samostojnem učenju. Dostopna je v vsakem trenutku, dijaki si lahko sami prilagajajo ritem učenja in tako postajajo pri svojem učenju samostojnejši. Na Gimnaziji Poljane spletne učilnice uporabljamo že nekaj let, vendar te ne spodbujajo vedno samostojnega učenja dijakov. Pogosto služijo le za odložišče učnega gradiva. V evropskih projektih ITEMS in MUST so udeleženi učitelji Gimnazije Poljane pridobili veliko novega znanja in idej, kako pripraviti spletno učilnico, da bo v večjo pomoč dijakom pri doseganju njihovih ciljev – usvojitvi znanja. Nastale so spletne učilnice za matematiko, informatiko, kemijo, geografijo in likovno umetnost. Znanje učiteljev pri uporabi spletne učilnice se je pokazalo kot ključno, zato je skupina učiteljev, zbranih v e-ŠRT šole, pripravila projekt izobraževanja učiteljev, da bi znanje in krog uporabnikov spletne učilnice Moodle razširili, dijakom pa omogočili samostojno učenje. Erasmus+ projekt z naslovom Ustvarjamo spletne Poljane in širimo e-horizont (na kratko USP. eH) učiteljem ponuja možnost za pridobitev novega znanja za smiselno ustvarjanje gradiv, nalog in testov v razširjenem spletnem okolju Moodle in uporabo drugih IKT-pripomočkov (v porastu je uporaba različnih izobraževalnih aplikacij za mobilne telefone). Osemnajst učiteljev različnih predmetnih področij bo v okviru tega projekta spoznalo najnovejše didaktične metode, s katerimi bodo učinkovito dopolnili pouk v šoli in pripravili naloge za samostojno učenje dijakov. Dijaki so morali vedno prevzemati odgovornost za svoje učenje in znanje, a zdaj jim sodobna tehnologija lahko zelo pomaga. Smiselno pripravljen kviz je odličen didaktični pripomoček bodisi pri učenju bodisi pri utrjevanju znanja. Kvizi v Moodlu dijakom takoj nudijo povratno informacijo o usvojenem znanju. Na primer pri matematiki se v kvizu naključno generirajo parametri v nalogah, dijaki pa tako na vedno novih podatkih utrjujejo predelano snov. Pri likovni umetnosti je ključna zapomnitev velike količine slikovnega gradiva z ustrezno terminologijo. Kviz dijakom pomaga doseči ta cilj z naključno izbranimi likovnimi deli. Učitelj na drugi strani spremlja delo in napredek dijakov prek Moodlove redovalnice, pregleda aktivnosti dijakov ali analizira odgovore, ve, katere naloge za samostojno učenje so večkrat rešene, kje se pojavljajo napake, in lahko nato v razredu učno snov dopolni.

Abstract: Virtual classroom Moodle can be an efficient aid to the students with their self-directed learning. It is constantly available, students can adapt the pace of learning and thus they become more independent learners. At high school Poljane virtual classrooms have been in use for several years, yet they differ considerably and sometimes they serve more as a depository of learning material and not so

much as a tool for self-directed learning. First, our teachers have been engaged in two European projects, ITEMS and MUST. They have acquired a broad knowledge and a lot of new ideas how to manage their virtual classrooms in order to help their students achieve their goals, namely - gain new knowledge. This is how virtual classrooms for Mathematics, Informatics, Chemistry, Geography and Visual arts have been created. Since teacher's competence in virtual classroom management is essential, group of teachers, members of e-School Development Team, proposed a project of structured courses abroad. The ultimate goal was to spread the knowledge and increase the number of teachers using virtual classrooms. Student's profit is the possibility to study at their own pace. The project proposed is an Erasmus+ project, entitled Creating virtual Poljane and spreading e-horizons, and it gives our teachers the possibility to gain new knowledge for creating learning materials, tasks and tests in the widespread virtual platform Moodle. It includes also the use of ICT tools (specially the use of the educational applications for mobile phones). Eighteen teachers of different subjects are in the process of learning about new teaching methods, which will efficiently enrich their teaching practice. Students, on the other hand, have been always responsible for their learning achievements, but by using these new technologies, this task is only made easier. A well prepared quiz is thus a great learning tool as well as a way to deepen the already acquired knowledge. Students get at every quiz attempt an immediate feedback on their knowledge. If a quiz of random generated parameters is used at Mathematics for example, students practice their knowledge until they master the task. At Visual arts memorising a huge quantity of visual material with field terminology is vital. To improve this skill such a quiz has proved to be really useful. Finally, a teacher can evaluate students' work and progress by using the Moodle gradebook, (s)he can check their activity reports and analyse their answers. By doing this, a teacher knows perfectly well which tasks have been done many times, where mistakes are quite frequent and knowing all that (s)he can adapt her/his work in the classroom and explain again what needs to be explained. Moodle, self-directed learning, project USP.eH, Mathematics, Visual arts.

Zgodba o enačbah

The story of equations

Katarina Tadić in **Renata Flander**,
Osnovna šola Davorina Jenka, Cerklje na Gorenjskem

Povzetek: S sodelovanjem v projektu Erasmus+ sva se preizkusili tudi v obrnjenem učenju oz. »flipped classroom«, ki učencem daje priložnost, da prevzamejo odgovornost za učenje. Pri gospodinjstvu so učenci izdelali zgodbo o mafinih, pri matematiki pa zgodbo o enačbah, ki vam jo bova v prispevku tudi natančneje predstavili. Učenci za delo potrebujejo pametni telefon ali tablico. Navodila za učenje pripravi učitelj v orodju Google Predstavitve, dostop do tega dokumenta pa učencem posreduje v obliki QR-kode. Cilj učencev je, da se naučijo reševati enačbe. Delajo v parih. Na začetku si pogledajo videofilm o reševanju enačb s pomočjo aplikacije Photomath. O njem se pogovorijo ter zapišejo dobre in slabe strani uporabe aplikacije. Na podlagi ugotovitev izdelajo filmček oz. zgodbo o poteku reševanja enačb s pomočjo aplikacij Storyo, Animoto ali PicPac. Enačbo rešijo po korakih, posamezni korak fotografirajo. Fotografije opremijo s kratkim besedilom, ki povzame bistvo koraka, saj je število znakov v aplikaciji omejeno. Tako sami izdelajo navodila za reševanje enačb in z njimi dopolnijo dokument v orodju Google Predstavitve. Učno uro končamo s poljubnimi enačbami, ki jih poda učiteljica, učenci pa lahko takoj preverijo, kateri filmček oziroma čigava navodila so najbolj uporabna. Pri delu so zelo motivirani, ker uporabljajo lastne naprave, motivirani učenci pa imajo neprimerno večjo možnost uspešno usvojiti in razumeti snov. Uporaba aplikacij Storyo, Animoto ali PicPac je preprosta in zato primerna za vse učence, treba je le poznati nekaj angleških besed (done, create, save ...). Z izdelavo pripomočka se učenci učijo uporabe strokovnega jezika, gradivo pa je uporabno tudi za učence, ki niso bili navzoči pri pouku. Trditev, da so najbolj uspešni učenci, ki imajo same odlične ocene, ne drži vedno. Pomembno je, da učenci pridobivajo znanje na različne načine, znajo poiskati način, ki njim najbolj ustreza, svoje sposobnosti in znanje izkoristiti v vsakem trenutku ter znanje deliti.

Abstract: Being part of Erasmus+ project we have tried out a method of a flipped classroom, which gives students an opportunity to take responsibility for their own learning. We asked students in home economics to come up with the story about muffins and in maths with the story about equations, which is about to be described in greater detail. Students need a tablet or a smart phone to work. A teacher prepares the instructions using the Google presentations tool and sends the access to the documents in a form of a QR code. The main goal is for students to be able to solve equations. They work in pairs. As an introductory motivation they watch a video about how to solve an equation using Photomath application. They discuss the video, naming advantages and disadvantages of using the application. Based on

their findings they make a video about how to solve an equation using Storio, PicPac or Animoto applications. They go about solving an equation step by step, recording each step by a camera. They express the gist of each step in short since there is a limitation to how many signs can be used. In this way they come up with the instructions themselves and add them to the document in Google presentations. The lesson ends with random equations given by the teacher when students can check which video and whose instructions are most useful and valuable. The motivation is very high on the part of the students as they are able to use their own devices. A motivated student is more likely to learn successfully. The use of Storio, PicPac and Animoto applications is easy, appropriate for students of all ages- however, it is necessary to know a few basic English words (done, create, save, etc.). Not only do students learn technical language, but the study material they use is also useful to anyone who misses classes. It is not always true that students with A's are the most successful ones. What is important is that they acquire knowledge in different ways, that they are able to find the most suitable ways of learning for themselves, that they have access to their knowledge in any given moment and can share their knowledge with others.

Ustvarjanje lastnih besedil s pomočjo programa Storyjumper

Being creative with Storyjumper

Jasna Pitamic, Osnovna šola Dušana Flisa, Hoče

Povzetek: V projektu Usklajen razvoj digitalnih kompetenc vseh učencev na OŠ Dušana Flisa Hoče smo se osredotočili na razvoj digitalnih kompetenc po vertikali. V prvem vzgojno-izobraževalnem obdobju naj bi učenci med drugim usvojili veščine osnovne rabe programov za risanje (LUM) ter osnovno rabo programov za pisanje besedila (SLJ). Oboje sem lahko združila z uporabo programa Storyjumper proti koncu 3. razreda. Učiteljica angleščine je otrokom pri zgodnjem poučevanju angleščine, v katerega so bili vključeni vsi, predstavila sam program, predvsem pa se je osredotočila na besede v angleščini, ki so jih tako spoznali in prevedli skupaj (program je dostopen v angleškem jeziku). Nato pa sem razredničarka poiskala like, ki jih ponuja program, in po žrebu so učenci z dvema glavnima likoma napisali svojo zgodbo (besedni binom), ki je bila lahko zapisana kot pravljica, zgodba, strip ali kombinacija vsega. Lahko so se odločili za individualno delo ali za delo v paru. Zgodbe so pisali v zvezke, po popravkih pa se dela lotili v samem programu. Pozorni so morali biti na pravilnost zapisa (enako kot v Wordu), nato pa so ustvarjali še ilustracije ter animacije, ki jih nudi program. Eden izmed splošnih ciljev pri slovenščini je, da so otroci motivirani za ustvarjanje v vseh štirih sporazumevalnih dejavnostih ter ozaveščajo zmožnost uporabe digitalne tehnologije, kar smo mi združili v nekaj urah. Ob tem smo zasledovali še cilj branja v različnih medijih, saj so bili učenci zelo zainteresirani za delo sošolcev in ta program jim je v hipu omogočal uvid v delo vseh. Prispevek uvrščam v sklop Učenje učencem v roke, saj so imeli učenci priložnost, da prevzamejo odgovornost za uspeh. Storyjumper omogoča spremljanje učencev na njihovi samostojni poti. Z njegovo pomočjo prevzamejo odgovornost za lastno učenje in ob tem uporabljajo tehnologijo, ki je ključ do uspeha.

Abstract: In the project A vertically aligned development of digital competences of all pupils at OŠ Dušana Flisa Hoče we have focused on developing digital competences in a vertical way. In the first educational period students should be able to get the basic skills of using the programs for drawing (at art), and the programs for writing texts (at slovenian). We joined both by using storyjumper towards the end of the third grade. Our English teacher presented Storyjumper to the children during one of the english lessons and focused on the words in English, which they learnt and translated together (the program is available in English). And then I, their class teacher, looked up the characters that the program offers itself and the pupils had to write their story with the given characters involved. The story could be in a form

of a fairy tale, a story, a comic or it could be a combination of any of them. They could worked individually or in pairs. First they wrote stories in their notebooks, then I made some corrections, and they finished them with Storyjumper afterwards. They had to pay attention to the spelling and form of the text. Then they created also illustrations and animations, which are as well offered by the program. One of the main objectives in teaching Slovenian is that the kids are motivated to be creative in all four communicative skills and that we raise their awareness of the usage of digital technology. While using Storyjumper we also achieved the goal of digital reading, the students were very interested in the work of other students. They had an insight into the work of all. Students have the opportunity to take responsibility for their success. Storyjumper enables monitoring students on their individual paths. With the help of Storyjumper they take responsibility for their own learning and using technology, which is key to success. My contribution is thus a part of the Hand over the Learning to Learners section.

S samostojnim delom do trajnejšega znanja

Individual work for more permanent knowledge

Urška Simnovčič Pišek, Gimnazija Litija, Litija

Povzetek: Uporabi sodobne tehnologije pri pouku se danes ne moremo več izogniti. Dijaki jo uporabljajo na vsakem koraku, zato je smiselno izkoristiti njihovo znanje, motivacijo ter učenje usmeriti v iskanje informacij in novega znanja. Učitelj lahko postane usmerjevalec učenja, bistveno je, da zna dijake naučiti, kako se sami učijo in kako priti do uporabnih informacij. Pri tem učitelj uporablja različne metode in tehnike, dostopne spletne strani, namenjene učenju, in z malo spretnosti izdela tudi lastna e-gradiva. V prispevku sta predstavljena dva primera uporabe IKT pri pouku slovenščine oziroma uporabe e-gradiv za samostojno delo. Prvi primer je izdelava enostavnega e-gradiva s pomočjo i-table. Nastalo gradivo je posledica medpredmetne povezave profesoric slovenščine, informatike in knjižničarke. Pri slovenščini so obravnavali referat ter se hkrati naučili iskati in navajati vire. Knjižničarka je demonstrirala uporabo Cobissa, dijaki pa so se v brskanju preizkusili še sami. Uro je profesorica slovenščine s pomočjo i-table posnela, jo uredila v Windows Movie Makerju in posnetek poslala v dropbox. Posnetek ure uporablja pri poučevanju profesorica informatike, ko dijake uči navajati literaturo. Dijakom posnetek služi za samostojno učenje iskanja, navajanja virov in uporabe Cobissa. Drugi primer je zgled sodelovalnega učenja. Dijaki so se s sodelovalnim učenjem samostojno naučili pet besedilnih vrst, pri čemer so uporabljali Publisher za izdelavo zgibank, Puzzlemaker Discovery Education's, brezplačni program za izdelavo križank in svetovni splet. Razdeljeni so bili v pet skupin, iz gradiva, ki ga je pripravila posamezna skupina, so se učile še druge skupine. Dijaki so se učili samostojno v šoli, z uporabo tehnologije in učenjem pa so nadaljevali tudi doma, kar je bilo razvidno iz evalvacije, ki je bila izvedena po treh tednih, ko se je preverjalo doseženo znanje pri takšnem učenju. Rezultati ankete so pokazali, da se dijaki radi učijo samostojno, med sošolci so samozavestnejši, pri skupinskem delu pa se med njimi zmanjša razlika v predznanju. Iz njihovih odgovorov je razvidno, da večkrat posegajo po pripravljenih ali na novo predstavljenih e-gradivih.

Abstract: In today's teachings we can't avoid using modern technology any longer. Students are using this technology on every step they make so it seems purposeful to use their knowledge, motivation and learning and focus it into the search for information and new knowledge. The teacher can become the organizer of learning, but the essence is that students learn how to teach themselves and how to reach useful information. In this process the teacher can use various methods and techniques, websites intended for learning and with a little dexterity they can even produce their own e-material. In this article there are two examples presented of the

use of ICT in the teachings of Slovene language or using e-material for individual work. The first example is making straightforward e-material using the i-board. The created material is a byproduct of the networking of Slovene language teacher, informatics teacher and the librarian. The Slovene language class entailed learning about reports and how to find and cite sources. The librarian has demonstrated the use of Cobiss and the students have tried it out for themselves. The class was recorded with i-board, edited with Windows Movie Maker and shared with Dropbox. The recording of the class is used by the informatics teacher for teaching how to cite literature. The students use the recording for individual learning such as finding sources and using Cobiss. The second example is a case of collaborative learning. The students used collaborative learning to individually learn five different texts using Publisher to make leaflets, Puzzlemaker Discovery Education's free software for crossword making and the internet. They were divided into five groups. The m that was produced by a group was then used by other groups for learning. Students were learning individually in school using the technology and they have continued to learn at home, which was evidentiary from the evaluation that was conducted three weeks after the identifying of the achieved knowledge using this type of learning. The results of the survey have showed that the students appreciate learning individually, are more confident in the classroom and there are smaller differences in preexistent knowledge when working in groups. From their answers it is clear that they often reach for prepared or newly presented e-material.

Učenje in učenčeva odgovornost

Learning and learners responsibility

Irena Gole, Osnovna šola Bršljin, Novo mesto

Povzetek: Kdaj je učenec odgovoren za svoj učni uspeh? Kako spodbuditi učenca, da postane sam odgovoren za učenje? Ali ima učitelj sploh moč, da spodbudi učenca, da postane odgovoren za svoje dosežke? Formativno spremljanje in preverjanje učenčevega napredka je način poučevanja, pri katerem učenec razvije spretnosti in veščine, ki vodijo v samostojnost, in tako lahko začne prevzemati odgovornost za lasten uspeh. Učitelj prek različnih dejavnosti in s pomočjo sodobne tehnologije usmerja učence k razmišljanju o dosežkih, s čimer se povečuje njihova vključenost v spremljanje lastnega učnega procesa, posledično pa tudi njihova odgovornost za lastno delo in kakovost dosežkov. Pri tem se ustvarja učno okolje, ki učence spodbuja k večji aktivnosti, učinkovitejšemu učenju, zavzemanju za kakovostno znanje in prevzemanju odgovornosti za to. Pomemben vidik je tudi medvrstniško sodelovanje v vseh fazah učnega procesa, saj se s tem gradi pozitivna klima v razredu, učenci pa se ob pogovoru in poglobljenem skupnem razmišljanju ter z odkrivanjem, raziskovanjem in razpravo učijo tudi drug od drugega. Po načelu formativnega spremljanja znanja smo se v 5. razredu pri slovenščini učili pisati besedilo z značilnostmi ljudske pravljice. Iz različnih gradiv in z uporabo različnih tehnologij smo najprej iskali ljudske pravljice in ugotavljali njihove temeljne značilnosti. Nato smo iskali odgovore na vprašanje »Kako bom vedel/-a, da sem napisal/-a dobro besedilo z značilnostmi ljudske pravljice?« in tako oblikovali kriterije uspešnosti. Z različnimi dejavnostmi smo pridobivali dokaze o učenju in se urili v dajanju kakovostnih povratnih informacij, ki učencem pokažejo njihov napredek. Hkrati smo s sodelovanjem in vrstniškim vrednotenjem spodbujali kritično prijateljevanje, se spraševali o svojih dosežkih in kako bi jih še izboljšali. Pri vseh aktivnosti je bila naša opora sodobna tehnologija, saj smo z njeno pomočjo raziskovali in beležili naše ugotovitve. S takim načinom dela so šli učenci skozi vse pomembne faze izgrajevanja spoznanj – raziskovali so vire, zbirali podatke in jih analizirali, ugotavljali skupne značilnosti in razlike, sklepali in razpravljali o ugotovitvah. S tem jim je bilo omogočeno izgrajevanje znanja s pomočjo izkušenj, kar zagotavlja večjo trajnost znanja in njegovo uporabnost v novih situacijah, npr. pri pisanju drugih vrst besedil.

Abstract: When are students responsible for their learning success? How to encourage students to become responsible for their own learning? Does the teacher even have any power to encourage students to become responsible for their own achievements? Formative assessment and testing of students' progress is a way of teaching, where learners develop the skills that lead to independence and can begin to take responsibility for their own success. Through various activities and

with the help of modern technology the teacher directs students to reflect on their achievements, thereby increasing their involvement in monitoring their own learning process and, consequently, their responsibility for their own work and quality performance. This creates a learning environment that encourages students to be more active, to learn in a more effective and committed way, to obtain quality knowledge and take responsibility for it. An important aspect of this is peer participation in all stages of the learning process, as it builds a positive climate in the classroom, where students learn from each other through conversation, deeper collective reflection and through discovery, research and discussion. According to the principle of formative assessment of knowledge, students learnt how to write texts with the characteristics of folk tales in the 5th grade of primary school Bršljin. From a variety of materials and by using different techniques, the students first looked for folk tales and identified their basic characteristics. Then they searched for answers to the question: »How do I know that I wrote a good text with the characteristics of folk tales?« and thereby created evaluation criteria. Through various activities they acquired evidence of learning and practiced giving quality feedback that showed the students their progress. At the same time the students were encouraged to build critical friendships through cooperation and peer evaluation and to question their achievements and how they could be improved. Modern technology was used in all activities as it helped in studying and recording of findings. By using this method of work students have gone through all the important phases of building knowledge - they explored resources, collected and analysed data, studied similarities and differences, made conclusions and discussed the findings. This enabled them to build knowledge through experience, which ensures greater sustainability of knowledge and its application in new situations, for example when writing other types of texts.

Mandale + nadarjeni učenci = ...

Mandalas + talented pupils = ...

Aleksandra Vadnjal in **Mojca Stergar**, Osnovna šola Dekani, Dekani

Povzetek: Prispevek predstavlja samostojno raziskovanje mandal, ki so ga izvajali nadarjeni učenci. Ti so nato svoje sošolce pri pouku vodili, da so tudi oni v mandalah odkrivali matematiko. Kombinacija različnih barv, geometrijskih oblik, figur in vzorcev v mandalah od nekdaj zbuja človekovo pozornost. Z njimi se srečujemo vsak dan, saj se pojavljajo vse okrog nas in posnemajo vzorce in oblike iz narave, npr. sončnico, narciso, borov storž, prerezano sadje ali deblo drevesa, vesolje, snežinko ... V njih lahko odkrijemo tudi veliko matematike: geometrijske oblike, simetrične vzorce, simetrale mandal, ustvarjajmo jih s pomočjo transformacij (premiki, vrteži, zrcaljenje) itd. Mandale in njihove lastnosti so raziskovali nadarjeni učenci. Učenci so najprej prepoznavali mandale v naravi, nato so barvali in opazovali že narisane mandale v papirnati obliki, na koncu pa so jih barvali in raziskovali tudi na tabličnih računalnikih. Svoje znanje, ki so ga samostojno pridobili z opazovanjem in barvanjem, so uporabili tudi pri ustvarjanju lastnih mandal s pomočjo aplikacije na tabličnem računalniku. Kasneje pa so učenci poskusili preproste mandale narisati tudi s pomočjo geometrijskega orodja. Nadarjeni učenci so mandale predstavili tudi svojim sošolcem in jih vodili, da so v njih odkrivali matematiko. Barvanje in opazovanje mandal spodbuja delovanje leve in desne možganske hemisfere. Učenci so bili pozorni na svoja čustva, razvijali so ustvarjalnost, uporabljali razum in logično mišljenje. Ob ustvarjanju in raziskovanju mandal so razvijali in krepili lastno kreativnost, ob nekaterih mandalah so se umirili in sprostili, ob drugih pa se zbrali in tako krepili in razvijali pozornost pri delu. Ob svojih izdelkih so razvijali tudi kritično mišljenje in zaupanje v svoje zmožnosti. Problemski pristop je prinesel dodano vrednost pouku, saj so bili vsi učenci aktivni (kar vpliva na njihovo pomnjenje in priklic ter povezovanje znanja), prevzemali pa so tudi odgovornost za lastno učenje in znanje, saj so morali do določenih zakonitosti in spoznanj priti sami ali s pomočjo sodelovalnega učenja.

Abstract: This article presents a self-study of mandalas by talented pupils. Later on, they also led their classmates during the lessons to explore mathematics behind mandalas. The combination of different colours, geometric shapes and patterns of mandalas has always fascinated human beings. They are present in everyday life – they are around us and copy natural patterns and shapes, for example a sunflower, a daffodil, a pine cone, sliced fruit, a cut trunk, universe, a snowflake etc. Behind them, there is also a lot of mathematics: geometric shapes, symmetrical patterns, bisectors; they are created through transformations (translations, rotations, reflections) etc. Mandalas and their features were explored by talented pupils. Firstly,

they recognized mandalas in nature, then they coloured and observed mandalas drawn on paper, and after that they coloured and explored them using tablets. They used their knowledge acquired independently through observation and colouring to create their own mandalas in a tablet application. Finally, they tried to draw simple mandalas using geometric tools. Talented pupils presented mandalas also to their classmates and guided them to explore mathematics behind them. Colouring and observation of mandalas stimulates left and right hemisphere function. Pupils paid attention to their emotions, they stimulated their creativity as well as used their mind and logical thinking. By creating and exploring mandalas, they developed and strengthened their own creativity; some mandalas made them calm and relaxed, while the other ones made them more focused, and thus they improved and developed concentration for work. They developed through their drawings critical thinking and self-confidence as well. Problem education approach brought additional value to the lessons, since all pupils were active (affecting their memorising abilities, recall and synthesized knowledge). Moreover, they also took their own responsibility for their learning and knowledge since they had to come to certain laws and findings alone or through cooperative learning.

Wikispaces – pokaži, da znaš

Wikispaces - show me that you know

Romana Kolar, Zavod za gluhe in naglušne Ljubljana, Ljubljana

Povzetek: Ste se že kdaj srečali s težavo, ko ste vedeli, da je dijak/učenec neko nalogo sposoben izvesti, vendar je zaradi svojih težav ne naredi pred skupino vrstnikov? Mogoče ste tudi vedeli, zakaj tega ne naredi. Se boji zbadanja, norčevanja ali samo ne želi izstopati? Takšnih dijakov imamo pri nas kar nekaj. Na srednji šoli Zavoda za gluhe in naglušne Ljubljana imamo poleg gluhih oseb vedno več oseb z motnjami avtističnega spektra, govorno-jezikovnimi motnjami idr. Dijaki v oddelkih niso ločeni po motnjah, tako da imamo v večini oddelkov dijake z različnimi motnjami. V prispevku bom predstavila možnosti in načine uporabe učilnice Wikispaces, s katero sem sama želela doseči odgovorno in samostojno učenje dijakov ter širšo pozitivno prepoznavnost konkretnega dijaka. Kot učiteljica v enem izmed teh »kombiniranih« oddelkov sem se skoraj vse šolsko leto spopadala s problemom, kako enega od dijakov vzpodbuditi k aktivnemu sodelovanju pri predmetu. Vedela sem, da ima dijak veliko uporabnega znanja, ki pa ga ne želi predstaviti pred vrstniki, ker ga ti velikokrat zasmehujejo. Tej skupini sem poizkusno predstavila možnost ustvarjanja učilnice Wikispaces, še več, za nalogo so morali predstaviti dobljeno, temo na Wikispacesu, jo razložiti tako, da so jo razumeli sošolci, en mesec odgovarjati na postavljena vprašanja ter pripravljati dodatna gradiva, dodatne razlage itd. Rezultati, ki sem jih dobila, so bili že v prvih dneh nepričakovani. Skoraj vsi dijaki so nalogo vzeli resno, se pozanimali o temi, jo predstavili in odgovarjali na vprašanja. Opazila sem tudi, da je omenjeni dijak nalogo opravil izvrstno. Tega pa nisem opazila samo jaz, ampak po določenem času tudi sošolci. Ker smo o njegovi snovi ravno govorili pri pouku, je imel v svoji učilnici veliko vprašanj, na katera pa je redno in primerno odgovarjal. Dijaki so se bolj povezali v smislu izmenjave idej in pogovora o vprašanjih, ki so jih dobili. Kot bodoči računalnikarji pa so nekaj stvari tudi kritično ocenili in skupaj ugotovili, da bi tudi Wikispaces potreboval še kak dodatek.

Abstract: Have you ever faced the problem, when you knew that the student was capable to perform a task, but he could not do it in front of other peers. Perhaps you even knew why he cannot do it. Was he afraid to be mockery of his peers or he didn't want to stand out from others. We have lots of that kind of students in our High School Institute for the Deaf in Ljubljana. In our high school we have deaf students, hard of hearing students, students with autism spectrum, students with speech and language disorder and many other disabilities in every class. In this paper, I would like to present different possibilities to use Wikispaces classrooms for our students to become more responsible and independent when it comes to learning and studying. What is more, I wanted to accomplish the recognition of individual student.

As a teacher in those classes, I was coping with the problem, how to encourage certain student to cooperate at my lessons. I knew that he had lots of knowledge but he didn't want to present it and share it with others, because he was afraid of being laughing at. I had presented them possibilities of creating Wikispaces classroom, even more, they've got an assignment in which they had to present the topic given and they had to explain it in a way that all other students would understand. They had to answer the questions and prepare extra papers and explanations. The results were unexpected. Almost all of my students took this assignment very seriously. They did the research about the topic and all the things they had to do. Not only me but also other students have noticed that the student with problems I have mentioned, did his job excellent. Students contributed many questions at his e-classroom and he answered them very regularly. Students bond even more in this project. They exchanged ideas, they talked about the questions and as a future IT operators, they evaluate the Wikispace. They conclude that they would definitely need more events like this one.

Projekt Učenec meseca z uporabo aplikacije Class Dojo

Student of the month with the Class Dojo app

Petra Matkovič, Osnovna šola Vide Pregarc, Ljubljana

Povzetek: Namen prispevka je prikazati, kako lahko s pomočjo aplikacije Class Dojo učitelj učinkovito vodi razred, z razrednim projektom za učenca meseca pa spodbuja pozitivno vedenje pri učencih in jih pripravi na prevzemanje odgovornosti za samostojno učenje. Poglavitni cilji, ki smo si jih zastavili v razredu, so bili: izboljšati učni uspeh, učence spodbuditi k rednemu pisanju domačih nalog in prinašanju potrebščin ter k medsebojnemu sodelovanju in nudenju pomoči v razredu. O izvedbi projekta z uporabo spletne aplikacije sem predhodno obvestila tudi starše in pridobila njihovo soglasje za izvajanje dejavnosti. Brezplačno mobilno aplikacijo Class Dojo, ki je dostopna za naprave Android in Apple, sem namestila na svoj tablični računalnik. Služila je kot orodje, s katerim smo vzpostavili sistem za tekmovanje. Učence sem usmerjala tako, da so sami razmislili, katera področja učenja in socialnih veščin želijo izboljšati. V aplikaciji so najprej izbrali svoj avatar oziroma sliko, s katero so se predstavljali v aplikaciji. Nato smo skupaj oblikovali več tekmovalnih kategorij, ki smo jih vnesli v aplikacijo. Odločili smo se, da kategorije razdelimo na pozitivne in negativne. S pomočjo pozitivnih kategorij so učenci pridobivali točke (npr. redno prinašanje domačih nalog in potrebščin, sodelovanje med poukom, pomoč sošolcem ...), pri negativnih kategorijah so točke izgubljali (npr. motenje pouka, pozabljanje domačih nalog in potrebščin ...). Medsebojno so sodelovali in si pomagali ter s tem nabirali točke. Njihovo dejavnost smo ovrednotili pri pouku ter pod mojim nadzorom v aplikacijo vnašali točke. Na koncu vsakega meseca sem s pomočjo aplikacije izbrala učenca meseca, ki je dobil priznanje. Aplikacijo Class Dojo uporabljam drugo šolsko leto in rezultati so izjemno pozitivni. Večina učencev v razredu je dosegla zastavljene cilje v kategorijah, ki smo jih ustvarili skupaj. S tem ko so si sami zastavili cilje in ugotovili, katera področja učenja morajo izboljšati, so prevzeli odgovornost za svoje učenje in pozitivno vplivali tudi na dinamiko odnosov v razredu. Razredni projekt Učenec meseca s podporo IKT je služil kot spodbuda in motivacija za dosego zastavljenih ciljev. Končna evalvacija v razredu pa je pokazala, da učenci take spodbude potrebujejo in želijo tekmovati tudi v prihodnjem šolskem letu.

Abstract: Student of the month with the Class Dojo app This paper presents the application Class Dojo as a platform for facilitating effective classroom and behaviour management. It was used as a tool for the student of the month competition, its goal being the promotion of positive behaviour and taking responsibility for ones learning. The main aims of this activity were: to improve students' academic

performance, to encourage students to do homework regularly and to encourage them to offer peer support and to cooperate effectively. Before starting the competition, I notified the parents and they agreed that the competition would be the right incentive that the students needed. I downloaded Class Dojo, a free application which is available for Android and Apple devices. The application was the basis for the student of the month competition. The students first thought about which areas of learning and social skills they would like to improve. Then they each chose their avatar in the application. After careful consideration we formed several categories which we put into the application. We decided to make positive and negative categories. For example, the students were awarded points for positive categories, (doing homework regularly, participation during class, helping schoolmates..., they lost their points in negative categories (disruptive behaviour in class, forgetting homework...). They collected points each month and also helped each other. The students awarded the points in the application by themselves under my supervision. At the end of each month one of the students who gathered the most points received the student of the month certificate. I have been using Class Dojo for the second year now and the results have been really positive and promising. The majority of students made improvements in all the categories. By setting their own goals and thinking about the areas where they have to improve, they took responsibility for their learning and also positively influenced the class dynamics. The student of the month competition conducted in Class Dojo app served as an encouragement and motivation in accomplishing their goals. Evaluation at the end of the year revealed that the students want and need such incentives and they want to continue with the competition in the following school year.

Za formativno! Zato Goformative!

For Formative Assessment! Yes to Goformative.com!

Sanja Leben Jazbec, Osnovna šola Solkan, Solkan

Povzetek: Goformative! je spletno učno okolje oz. orodje, ki učitelju omogoča, da deluje kot formativec, to je, da skupaj z učenci uravnava učni proces, ki ga usmerjajo tri ključna vprašanja (po Ramaprasad, 1983; Thomson, Wiliam, 2007): Kje smo?, Kam gremo?, Kako priti do tja? Ko sem preizkusila Goformative!, se mi je pokazalo kot preprosto in zelo uporabno, ne nazadnje tudi brezplačno orodje, ki odlično podpre učni proces na delih Kje smo? in Kako do tja?. Učitelj najprej ustvari račun, nato odpre skupino in znotraj nje pripravi naloge. Izbiramo med zaprtimi (npr. drži/ne drži, izbira enega ali več pravilnih odgovorov) in odprtimi tipi vprašanj (npr. Napiši odgovor, Nariši, Pokaži svoje delo – ta učečemu se omogoča, da naloži fotografije ali nariše sliko), lahko naložimo fotografije ali videe. Orodje tudi omogoča, da svoje stare učne liste v Wordu ali pdf-u preprosto naložimo, nato pa za posamezni del naredimo naloge. Potem ko se učenci prijavijo, jim učitelj posreduje kodo (quick code) in spremlja njihovo učenje. Izbiramo med možnostma, da naenkrat gledamo vse učence oz. njihove odgovore ali da si odpremo posameznika in spremljamo njegovo učenje. Na nastajajoče izdelke se lahko odzovemo takoj. Prva možnost je, da nalogo nastavimo tako, da jo točkujemo in nato odkljukamo doseženo število točk. Druga možnost je, da napišemo povratno informacijo, lahko pa izberemo oboje – tako točke kot povratno informacijo. Kot formativec vidim veliko vrednost predvsem v tem, da se na izdelek odzovem s takojšnjo povratno informacijo in nato opazujem učenčev odziv, saj mi program javi, ali je bila narejena kakšna sprememba. Iz popravkov razberem, pri čem se je učenec odzval. Obenem analiziram svojo povratno informacijo: Sem povedala dovolj jasno in razumljivo? Sem bila dovolj konkretna? Je moja povratna informacija učenca pomaknila naprej? Tako izdelki kot povratne informacije so izhodišče nadaljnjemu učenju. Včasih pokažem vse odgovore in se o njih pogovorimo, najpogosteje pa izpostavim posamezni odgovor ali sliko, pri čemer izberem, ali bom ime učečega se objavila ali zakrila. Zakaj torej GoFormative? Ker je učna priložnost, s katero ozaveščamo, da se je treba osrediniti na proces in ne na vsebino, in ne nazadnje, kar se mi zdi bistveno – učencu ponujamo priložnost, da (p)ostaja odgovoren izgrajevalec svojega znanja.

Abstract: GoFormative.com is an online tool/environment which enables the teacher to function as a formative teacher; that is, to regulate the learning process in cooperation with the learners. The process is guided by three key questions (Ramaprasad, 1983; Thomson, William, 2007): “Where are we”, “Where to go”, and “How to get there”. When I first tried out Goformative, I found it a simple, very useful, and free tool, which aids the learning process considerably when it comes to the

“Where are we” and “How to get there” phases. First, the teacher creates an account, and next, they open a group, within which they then prepare exercises. There is a choice between closed-ended questions (e.g. true/false exercises, multiple-choice questions, etc.) and open-ended questions (e.g. “Write down the answer”, “Draw”, “Show what you have done” – this option enables the learner to upload his/her photos or draw a picture.) Pre-existing work sheets in Microsoft Word format, photos, and videos can also be uploaded by the teacher, and then he/she can design exercises regarding individual segments of the materials. When the learners have logged in, the teacher forwards them a quick code and follows their progress. Again, there are two options: observing all the learners and their answers at once or to concentrate on a particular learner and follow his/her learning process in a separate window. The teacher can react to the learners’ work instantly. One option is to design the exercise in such a way that it can be graded by ticking the number of points scored. Another possibility is to write feedback, and the teacher can also choose to both grade an exercise AND write feedback. For me as a formative teacher, the most considerable advantage of Goformative is that I can immediately react to a learner’s work with feedback and then observe his/her reaction, since the program notifies me should any changes be made. I can then make out from the learner’s correction in what way he/she reacted. At the same time, I analyse my feedback: was I clear enough? Was I concrete enough? Did my feedback help the learner to develop? Learners’ work, as well as feedback are the starting point for further learning. Sometimes I show my learners all the answers and we discuss them together, but in most cases I point out one particular answer or picture, and I also decide whether I will mention the learner’s name or not. So, why Goformative? Because it presents an opportunity to make everyone involved in the learning process aware of the fact that its focus must be the process itself and not the content. Last but not least, we offer the learner the chance to remain or to become a responsible architect of his/her own knowledge, and I find this feature of crucial importance.

Tudi jaz zmorem!

I can do it too!

Sanja Draksler, Osnovna šola Vransko, Tabor

Povzetek: Učenci s posebnimi potrebami v osnovni šoli predstavljajo ranljivo manjšino in ob sebi velikokrat potrebujejo osebo, ki jim je v oporo in pomoč na poti pridobivanja znanja ter organiziranja šolskih in obšolskih dejavnosti. Poleg prilagoditev pri usvjanju različnih šolskih znanj pa ti učenci pogosto potrebujejo tudi usmeritve pri razporejanju in načrtovanju popoldanskih aktivnosti, v katere morajo vključiti tudi šolske obveznosti. Aplikacija Google koledar omogoča aktivno organiziranje učenja, domačih nalog, utrjevanja, odmorov, interesnih dejavnosti, prostega časa ... Pri urah dodatne strokovne pomoči ob začetku šolskega leta so bili učenci deležni predstavitve programa in načina uporabe. Izkazovali so izjemno zanimanje za aplikacijo, saj je aktualna, privlačna, preprosta za uporabo, hkrati pa so se učili nadzorovati in organizirati svoj popoldanski čas ter usmerjeno uporabljati svoje računalnike, tablice, mobilne telefone. Prav tako pa so sami raziskovali in odkrivali nove aplikacije, ki bi jim morda še pomagale. Ob tem pa so razvijali tudi IKT-veščine uporabe spleta in različnih aplikacij. Otroci so si že dopoldan, v šoli, oblikovali koledar dogodkov v popoldanskem času. Ker pa nekateri čutijo, da pri opravljanju svojih popoldanskih obveznosti niso povsem samostojni in potrebujejo nadzor, smo kot nadgradnjo izkoristili tudi možnost skupne rabe koledarja z neko osebo. Na tem mestu so lahko samostojno določali nastavitve dovoljenj (ali lahko oseba koledar le vidi ali tudi spreminja), prav tako pa dogodke, ki jih otrok ne želi javno prikazati, označi z možnostjo »samo jaz«. Pri delu so nastavljali opomnike in za lažjo prepoznavanje aktivnosti, dogodke označili z različnimi barvami. Organizacijo učenja in učenje smo učencem tako predali v njihove roke. Korak za korakom je bilo pri otrocih zaznati napredek na področju prevzemanja odgovornosti, in vzpostavljanja samostojnosti. Sčasoma so ugotovili, da jim organizacija in aktivno delo prinašata uspeh, kar pa se je kazalo na višanju samopodobe in na daljši rok tudi na višjih ocenah.

Abstract: Students with special needs in primary school represent a vulnerable minority and often need a person who is supports and helps them on the way of acquiring knowledge and organizing curricular and extracurricular activities. In addition to the adjustment in acquiring various educational knowledge, these students often need the guidance in the allocation and planning of after-school activities in the afternoon in which they have to incorporate and plan the school obligations. The Google Calendar app enables active organization of learning, homework, breaks, extra-curricular activities, free time... At the beginning of school year, students received the presentation of the program and of its usage, in additional professional assistance lessons. The students showed extraordinary interest in the application,

because it is topical, children attractive, easy to use and at the same time they have learned to control and organize their afternoon time and also learned about the targeted use of their computers, tablets and mobile phones. They have also researched by themselves and discovered new applications that might also be helpful. At the same time they were developing their ICT skills, use of the Internet and various applications. Children have formed a calendar of their afternoon events already in the morning. However, since some feel that they are not fully independent at their afternoon obligations and need control during the activities, we have taken advantage of the upgrade and used the possibility to share calendar with another person. At that point, the students could independently define the permissions settings (either the person can only see a calendar or change it) and also mark the events that the child does not want to display publicly, with the option “just me”. They set the reminder and marked the events in different colours for easier recognition of activities. The organization of learning and learning itself has been handed in the students’ hands. Step by step the progress in the field of responsibility and independence has been detected. Eventually, they have discovered that their organization and active work bring success, which has also been reflected in the rise of their self-esteem and in the long term also in higher grades.

Učimo se skupaj

Lets learn together

Andrej Nemec, Osnovna šola Prežihovega Voranca Bistrica, Črenšovci

Povzetek: Danes je svet globalna vas, zato morajo imeti učenci pod budnim vodstvom učitelja možnost spoznavati svet, ki jim je zaradi tehnologije skoraj na dlani. Ob tem morajo sami prevzeti čim večji delež odgovornosti za sooblikovanje pouka, spoznavati nove možnosti pri rabi tehnologije, biti pri tem ustvarjalni, dinamični, fleksibilni ter videti, da danes fizična oddaljenost ne pomeni posebnih omejitev pri komuniciranju in sodelovanju, ki premaguje fizične meje posamezne države. S temi cilji pred očmi sem v okviru projekta Erasmus+ z naslovom Seek and Find Nature na naši šoli izvajal pouk na daljavo z uporabo programa Skype. Učenci so se pri različnih urah in dejavnostih povezali z vrstniki iz Finske, Nemčije, Španije in Češke ter sodelovali pri izvajanju pouka pod vodstvom učitelja. Sodobni način poučevanja z uporabo zmogljivega IKT je omogočil medpredmetno povezavo (tuji jeziki, slovenščina, naravoslovje, geografija, računalništvo) in visoko stopnjo interaktivnosti, dinamičnosti in inovativnosti. Tak način dela predpostavlja tako tehnično kot vsebinsko pripravo na potek pouka. Kot učitelj sem bil v vlogi usmerjevalca, povezovalca in tehnične podpore pri individualnem ali skupinskem delu učencev, v nekaj primerih pa sem se medpredmetno povezal s sodelavci na naši šoli in skupaj smo izvedli učne ure na daljavo s partnerji iz tujih držav. Ob tem so učenci prevzemali visoko stopnjo lastne odgovornosti za potek pouka, saj so v sodelovanju z vrstniki sami v veliki meri določali potek pouka in tako oblikovali tudi vsebino, ta se je seveda morala nanašati na cilje in vsebine projekta. Tako so krepili kompetence 21. stoletja, npr. digitalno pismenost in sodelovalno učenje, obenem pa so znanje angleščine, ki je bila sporazumevalni jezik našega projekta. Tak način dela je zelo dobrodošel pri multidisciplinarnosti, sodelovanju, inovativnosti, fleksibilnem poteku pouka. Največja težava je ustrezna tehnološka opremljenost, saj morata za brezhibno izvedbo imeti ustrezno opremo obe sodelujoči strani.

Abstract: The world today is a global village and that's why it's important for us teachers to guide students and give them insight into a world which, thanks to modern technology, is basically at their disposal. Students should be able to take responsibility for cooperating in the lessons. They should have the opportunity to learn about new technological possibilities, be creative, flexible and dynamic while recognising that physical distance does not limit communication and cooperation to borders of individual countries. With those aims I conducted so-called Skype lessons, basically lessons with Skype, among our Slovene students and foreign students from Finland, Czech Republic, Germany and Spain as part of the Erasmus+ Seek and Find Nature project. Students were active players in the development and implementation of the

teaching and learning process under my guidance and the guidance of other teachers. Such teaching and learning process with modern ICT enables cross-curricular learning (foreign language, Slovene language, natural science subjects, geography, IT) and a high interactive and innovative level. The lessons demand good technical preparation and organisation of content, which has to be in line with the project goals, but on the other hand provide a high level of responsibility for the students. I also conducted some cross-curricular lessons with my colleagues. As a teacher I was responsible for guidance and networking as well as for providing technological support for the students with their individual or team work. The purpose of the lessons was to strengthen the students' 21st century competences, like digital literacy and collaborative learning, while improving their language skills; since English was the official language of the project, the students had to communicate in English. This type of work is highly acceptable from a multidisciplinary view, for collaborative teaching, innovative and flexible implementation of the learning process. The technological aspect could sometimes pose a problem, since all involved partners need sufficient technological capacities.

Kaj se dogaja s pljuči padalcev v globino?

What happens to the lungs of skydivers in depth?

Nataša Junež, Gimnazija Bežigrad, Ljubljana

Povzetek: V prispevku bom prikazala pristop poučevanja kemije v kontekstu s ciljem razbremeniti učni načrt. Učni načrti v slovenskih gimnazijah in tudi drugod po svetu (Gilbert, 2009; Pilot and Bulte, 2006) so namreč prenatrpani in obravnavani pojmi nepovezani; premalo so povezani s problemi oz. z reševanjem problemov v vsakdanjem življenju; nepomembne vsebine in poudarke na neustreznih vsebinah in ciljih. Primer pristopa z vključevanjem konteksta v Veliki Britaniji je projekt »Salters«, na temelju katerega bi kemija postala zanimivejša za učence in dijake (Bennett in Lubben, 2010). Watters (2010) navaja, da se je projekt izkazal za zelo uspešnega, saj se je interes učencev za pouk kemije povečal in kemijo je na A-nivoju izbralo več dijakov. Sama sem v 1. letniku gimnazije s pomočjo programa exe predstavila učno enoto Plinski zakoni. Predstavila sem različne življenjske situacije, kot so potapljanje, skoki v globino itd., in procese, ki se dogajajo v človeškem telesu med njimi. Vse skupaj sem povezala s plinskimi zakoni. V omenjenem programu sem izdelala naloge, ki so zahtevale vstavljanje manjkajočih besed, ter animacije molekul plinov, s katerimi so si učenci laže predstavljali obnašanje plinov in reševali zastavljene problemske naloge. Naloge z manjkajočimi besedami imajo možnost povratnih informacij, učenci pa lahko takoj preverijo svoje znanje. Vstavljene besede se obarvajo zeleno, če so pravilne, in rdeče, če niso pravilne. Učenci lahko prav tako s klikom miške dobijo izpisano pravilno besedo ali besedno zvezo. Učno enoto Plinski zakoni sem učencem predstavila v razredu z uporabo interaktivne table. K povečanju zanimanja za predstavljeno snov so močno pripomogli tudi kratki filmi, vključeni v predstavitev. Filmi so se povezovali z učno snovjo in so bili posneti v domačem okolju ali pa v prijetnem in lepem okolju, npr. v morju. Povečano zanimanje dijakov za kemijo se je pokazalo na koncu 2. letnika, saj so pojasnili, zakaj so v tako velikem številu izbrali kemijo za izbirni predmet na maturi. Veliko jih je povedalo, da so na njihov izbor vplivale doživete ure z vključevanjem življenjskih situacij.

Abstract: What happens to the lungs skydivers in depth? In mine presentation, I will show the approach of teaching chemistry in context with the aim of relieving curricula. Curricula in Slovenian gymnasiums and elsewhere in the world (Gilbert (2009); Pilot and Bult, (2006)) are overcrowded and unrelated to the concepts; insufficiently connected with problems or. problem solving in everyday life; the lack of relevant content and emphasis on irrelevant issues and objectives. An example of approach to the use of context in the UK, the project »Salters, on the basis of which it would become a chemistry more interesting for pupils and students (Bennett and Lubbe, 2010). Watters (2010) states that the project has proved very successful,

as demonstrated rising interest of pupils for teaching chemistry, because chemistry at A-level chosen a larger number of students. In the first year of secondary school I have presented the teaching unit Gas laws with the help of the exe program. With the help of a program I presented various life situations, such as diving, jumping, etc. in depth. The processes that occur in the human body during the aforementioned situations in life - events and connect them with gas laws. In the program I developed tasks by inserting the missing words, animations of gas molecules, that students could get better visualization of the behavior of gases and problem-solving set tasks. Tasks with missing words have the opportunity to feedback and students can immediately test their knowledge. The inserted words turn green if they are correct, and red, if they are not correct. Students also can get shown the correct word or phrase with click on a mouse. Learning Unit Gas laws were introduced to the students in the class using an interactive whiteboard. The increase in interest contributed the short films included in the presentation. Movies are associated with teaching material and were recorded in the home environment or in a pleasant and beautiful environment, for example. in the sea. The increased interest of pupils for chemistry has been shown at the end of the 2nd year of secondary school. Students explained why they were selected chemistry as a selective subject at baccalaureate. Many students said that they enjoyed the lessons because they were not boring.

Razvoj veščin in izboljšanje dosežkov pri tehniki in tehnologiji

Development of skills and improvement of achievements at Design and Technology

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Povzetek: Pri pouku tehnike in tehnologije sem želela, da bi učenci sami postali odgovornejši za svoje delo in s tem tudi za njegove rezultate. Dejansko sem dala učenje v roke učencem. To mi je omogočilo formativno spremljanje. Razen cilja, da bi postali odgovorni za svoje delo, sem želela razvijati veščine komuniciranja, raziskovanja, kritičnega mišljenja in dela z viri. Hkrati s tem so razvijali tudi IKT-kompetence, ki so prav tako ključnega pomena v njihovi prihodnosti, tako pri izobraževanju kot kasneje pri zaposlitvi. V okviru formativnega spremljanja sem pouk izvajala na dveh šolah pri sklopih Trdnost papirja in Lesna gradiva v 6. razredu (programsko orodje Mahara) ter Kovine in Energetika v 8. razredu (programsko orodje Oblak 365). S pomočjo obeh orodij so učenci izvedli vse faze formativnega spremljanja: ugotavljanje predznanja, postavljanje ciljev, iskanje strategij za doseganje zastavljenih ciljev, zbiranje dokazov, kritično prijateljevanje (sošolci, učiteljica), dajanje povratnih informacij, vrednotenje in samoevalvacija. Veliko časa smo namenili praktičnemu pouku. Pri tem so učenci postali pozornejši na to, kakšni naj bi bili končani izdelki, predstavitev, govorni nastop, saj so že vnaprej skupaj z mano jasno postavili kriterije in merila za vrednotenje. Pri kritičnem prijateljevanju so znali argumentirati, kaj je dobro, kaj slabo, znali so dati napotek za izboljšavo. Znali so sprejeti kritično prijateljevanje sošolca in učiteljice ter izboljšati izdelke (večina učencev). Na koncu so znali ovrednotiti svoj izdelek in argumentirati, zakaj so ga tako ovrednotili. Ugotavljala pa sem, da imajo nekateri učenci težave tako s pisnim kot ustnim izražanjem. Nekateri njihovi zapisi so bili okorni in skromni. Mahara, predvsem pa Oblak 365 sta služila učencem tudi kot učno okolje. V sklopu formativnega spremljanja sem uporabila obe orodji. Skupaj z učenci sem ugotovila, da je Oblak 365 prijaznejši do uporabnikov. Učenci 8. razreda so v okviru projekta EUfolio pretekli dve leti delali v okolju Mahare, v okviru projekta ATS2020 pa so za formativno spremljanje uporabljali Oblak 365. Ugotovili so, da jim je bilo delo v Oblaku 365 lažje.

Abstract: While teaching Design and Technology, I wanted to achieve that pupils become more responsible for their work and also for the results of their work. In fact, I put learning into the hands of students. This was possible with the help of formative assessment. Except the goal to become responsible for their own work, I wanted to strengthen communication skills, researching, critical thinking and working with sources. At the same time, pupils developed their ICT skills, which are

also of great importance for their education and employment in the future. In the context of formative assessment, I carried out lessons at two schools as a part of topics Firmness of Paper and Wood Materials in class 6 (a software tool Mahara) and Metals and Energetics in class 8 (a software tool Oblak 365). With both tools, the pupils performed all phases of formative assessment: determining prior knowledge, setting goals, finding strategies to achieve these goals, evidence collection, critical friendships (classmates, teacher), giving feedback, evaluation and self-evaluation. A lot of time was devoted to practical lessons. In this process, the pupils paid more attention to how finished products, presentation and oral presentation should look like, because we made a clear set of criteria and evaluation criteria together. Using critical friendship, they were able to argue about what is good and what is bad; they were also able to give advice for improvement. They were able to accept a critical friendship of their classmates and a teacher and improve the products (the majority of pupils). In the end they were able to evaluate their product and argue why it was evaluated in a particular way. I found out that some pupils have problems with written and oral communication. Some of their compositions were clumsy and poor. Mahara, but especially Oblak 365 served pupils as a learning environment. As a part of formative assessment I used both tools. Together with pupils, I found out that the tool Oblak 365 is more user-friendly. Pupils from class 8 worked in the project EUfolio, where they used environment of Mahara for two years. Within the framework of the project ATS2020 they used Oblak 365 for formative assessment. They found out that the work in the tool Oblak 365 is easier.

Če bo špičasto bodo vile, če široko, pa lopata

How to choose the appropriate tool?

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Povzetek: Kadar pri pouku uporabljamo sodobno tehnologijo, se moramo tako pri pripravi, kot pri izvedbi zavedati, da mora le-ta podpirati izobraževalni proces: učenje in poučevanje. V skladu z revidirano Bloomovo taksonomijo so pri učenju najbolj zaželeni procesi analize, evalvacije in ustvarjanja. Vse troje lahko dosežemo, kadar učencem prepustimo odločitev za izbiro orodja, s katerim naj dosežejo zadan cilj ali izpolnijo določeno nalogo (npr. v timu pripravijo predstavitev v obliki miselnega vzorca, časovnega traku itd. in jo oddajo v e-obliki). Hkrati tako zastavljena naloga omogoča tudi razvijanje digitalne pismenosti, ki vključuje samostojno iskanje, vrednotenje/kritično presojo, uporabo, deljenje in ustvarjanje digitalnih vsebin, sodelovanje in komunikacijo ter učinkovito reševanje problemov s pomočjo digitalnih tehnologij. Seveda jih je treba take izbire naučiti oziroma oblikovati čim več učnih priložnosti, ki omogočajo razvijanje teh spretnosti. V prispevku bo predstavljen preizkušen model, ki učence spodbuja k osmišljanju ciljev in postavljanju kriterijev, s pomočjo katerih bodo lahko izbrali ustrezno orodje, ga primerjali z drugimi in utemeljili svoj izbor ter se pri tem zavedali njegovih omejitev in morebitnih pomanjkljivosti. Pri tem v skadu s konceptom formativnega spremljanja dopuščamo možnost napačnih izbir in spreminjanje odločitev na temelju izkušenj z izbranim orodjem, samorefleksije oziroma povratnih informacij (sošolcev in/ali učitelja). Ker imamo v preobilju možnosti težave z izbiro ustreznih orodij (ki naj bodo usklajena z zastavljenimi cilji in omogočajo načrtovane aktivnosti) tudi učitelji, bodo v prispevku predstavljena tudi načela izbiranja ustreznih orodij za učitelja s preprostim odločitvenim modelom, pri katerem si zastavljamo naslednja vprašanja: • Kakšne so potrebe (in zmožnosti) naših učencev (glede na njihovo znanje, interese, stopnjo digitalne pismenosti ...)? • Katere cilje in pričakovane učne dosežke smo načrtovali? • Kakšne in katere aktivnosti načrtujemo (za učence)? • Kako se izbrana tehnologija/orodje povezuje s zmožnostmi, navadami in prepričanji učne skupnosti (šole)? • Je orodje (in njegova namestitev, uporaba itd.) združljivo z tehnologijo in infrastrukturo, ki jo uporabljamo? Le če bomo učitelji sami zmožni izbirati utrezna orodja za načtovane aktivnosti oz. cilje, bomo lahko to zmožnost razvijali tudi pri učencih.

Abstract: When using modern tehnology, teachers should be aware of the fact, that it should support learning activities, teaching and learning process. According to revised Bloom taxonomy we are targeting at analysing, evaluating and creating. All three of them can be reached if leaving the possibility for choosing the right tool for given task to students themselves, especially when working in team. This kind

of learning opportunities also enable developing digital literacy, which includes independent searching, evaluating, using, sharing and creating digital content; collaboration, communication and problem solving using digital tehnology. Teachers task is to create learning activities that will enable developing this skills. We are going to present a tested solution that encourages students to set criteria, which will enable them to choose the right tool, compare it to other and reason their choice. At the same time students will be aware of the limitations and shortcommings of the chosen tool. Within the concept of formative assessment we allow students the possibility to make mistakes and to change their choices, according to their experiences, self-reflection and teachers / students feedback. Also the teachers are having problems choosing the appropriate tool consistent with learning objectives and planned activities, so basic principles of tool selection will be shown, using simple decision model which follows five simple questions: • What are students needs (and skills) regarding their prior knowledge, level of digital literacy, personal interests? • What are specific learning objectives and intended outcomes? • What learning activities are we planning? • How is the chosen activity aligned with skills, mindsets, and beliefs of the learning community (school)? • Is the tool compatible with the tehnology and infastructure that we are already using? Only the teachers, able to choose apropriate tool for planned activities and objectives, will be able to develope this skill with their students.

Formativnost pri pouku likovne umetnosti

Formative assessment in art lessons

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Povzetek: Vrednotenje nam v trenutnem šolskem sistemu predstavlja velik izziv, saj hkrati preverja kakovost našega poučevanja in znanje učencev. Pogosta dilema učiteljev pri današnjem poučevanju je, kaj vse in predvsem kako naučiti učence. V okolju, kjer poučujemo, imamo možnost izbiranja različnih razpoložljivih medijev, s katerimi želimo kakovost znanja vsako leto izboljšati. Zato potrebujeta učitelj in učenec kakovostno povratno informacijo o predhodnem znanju, ki lahko v prihodnje pozitivno vpliva na učenje. Kako izvesti učinkovito formativno preverjanje pri likovni umetnosti? Formativno spremljanje učencev pri likovni umetnosti sem začela z učenci 6. razreda, ki so v petih letih šolanja pridobili veliko teoretičnega in praktičnega znanja. Moja in učenčeva prva faza preverjanja znanja je, ugotoviti, koliko znanja in veščin so učenci pridobili. Ker se likovni problemi delijo na pet področij, je treba preveriti vsa (petkrat v šolskem letu). Preverjanje lahko naredi učitelj ali učenec sam. V našem primeru se učenec oceni sam, in sicer na podlagi predhodnih vprašanj učitelja. Svoje znanje in neznanje v obliki kratkih odgovorov zabeleži s pomočjo prenosnih računalnikov (Wordov dokument s preglednico, razdeljen na pet področij). Po obravnavi likovnega problema si zapiše tudi cilje, ki jih bo moral z reševanjem likovne naloge doseči pri svojem praktičnem delu (likovni izdelek – risba, slika, grafika, kip/relief, prostorska tvorba). Druga faza je digitalizacija likovnega izdelka (tablica, pametni telefon, digitalni fotoaparat). V tretji fazi si učenec oblikuje svojo mapo na mrežnem disku. V njo vstavi podmapo predmeta, v katero vloži še dodatnih pet map po likovnih področjih. V vsako mapo do konca šolskega leta sistemsko vlaga dokumente o predznanju z likovnega področja, cilje nove likovne naloge in likovni izdelek. Nekateri učenci so v mapo vložili tudi svoje zapise iz zvezka. Učitelj lahko pregleduje gradivo v posamezni mapi učenca in sproti preverja aktivnosti učenca. Prednost takšnega načina je tudi v tem, da ima učenec ob koncu osnovnošolskega šolanja zbrano celotno likovno mapo svojih izdelkov. Priprava takšnega načina formativnega spremljanja zahteva več časa in doslednosti učenca in učitelja.

Abstract: Assessment in the current school system represents a big challenge, as it assesses both the quality of teaching and learning. It is often difficult for the teacher to determine what needs to be taught and how. In Slovene schools teachers can choose from a variety of different types of media, which can be used to improve the knowledge of students. Therefore, both the teacher and the student need quality feedback about the student's knowledge, which can have a positive effect on the student's learning in future. How to implement effective formative assessment in art lessons? Formative assessment was used with 6th grade students. The students

have obtained a lot of theoretical and practical knowledge in the five years of their schooling. In the first stage of assessing the student's knowledge the teacher needs to establish the amount of knowledge and skill that a particular students has. Art problems are divided into five areas, so all of them need to be assessed five times in the school year. After the introduction of an art problem the students need to record the objectives that they have to achieve with their practical work (drawing, painting, graphics, statue, spatial planning). In the second phase the students have to digitalise their art product with the use of tablets, smart phones or digital cameras. In the third phase the students create a folder on the computer. In this folder the students create another folder and within this one five more folders for each of the five art areas mentioned above. These folders are then used by the students for their documents about their assessments, the objectives, and their products. Some students also use the folders for the notes they make during lessons. The teacher can access the students' folders at any time and therefore monitor their activities. One of the advantages of this folder system is that at the end of the primary school the students have a collection of their documents in one place. This kind of formative assessment demands a lot of time and consistency from both the student and the teacher.

Sodelovalno učenje s pomočjo LEGO robotov

Collaborative learning with the help of LEGO robots

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Povzetek: Lego roboti so didaktična igrača, ki omogoča razvijanje logičnega mišljenja in kreativnosti. Veliko učiteljev jih uporablja pri pouku kot motivacijo za učenje programiranja. Prav zaradi tega smo tudi na naši gimnaziji nabavili dva kompleta LEGO MINDSTORMS Education EV3 Core Set. Zanimalo nas je, ali bo delo z roboti povečalo zanimanje dijakov za učenje programiranja. Tako smo si v letošnjem šolskem letu zadali cilj ugotoviti, v kolikšni meri so dijaki sposobni sami s pomočjo spleta poiskati informacije in usvojiti vsaj osnovna znanja programiranja lego robotov v grafičnem okolju. Opazovali smo tudi, ali se bodo pri delu in učenju obnašali sodelovalno ali tekmovalno. Naslednji cilj je bil ugotoviti, ali usvojena znanja znajo posredovati svojim sošolcem. Torej smo učenje predali popolnoma v roke učencem. V prispevku bo prikazano, kako organizirati takšen način dela, pri katerem dijaku postanejo veliko bolj aktivni, kreativni in sodelovalni. Prikazana bo tudi vloga učitelja, ki se pri taki obliki dela spremeni iz posredovalca znanja v mentorja in svetovalca, včasih tudi mediatorja.

Abstract: Lego robots are a didactic toy that enables the development of logical thinking and creativity. Many teachers have used it for motivation in teaching programming. As a result, our school purchased two sets of LEGO MINDSTORMS Education EV3 Core Sets. We were interested in finding out if working with robots will increase students interest in learning how to programme. In this academic year we set up a goal to determine the extent to which students are able to find information on their own with the help of the Internet and gain at least some basic knowledge of programming of the Lego robots in a graphical environment. We also observed their work and learning activities to establish whether they were of collaborative or competitive nature. The next objective was to determine whether students were able to convey the acquired knowledge to their schoolmates. By doing that we transferred the teaching completely into the hands of the learners. In this contribution it will be shown how to organize this kind of work in which students become much more active, creative and collaborative. Will also show the role of the teacher, who no longer simply passes on the knowledge but rather becomes a mentor and advisor, and sometimes even a mediator.

Uporaba kamere na mobilnem telefonu pri izvajanju fizikalnih poskusov

Use of a mobile phone camera in physics experiments

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Povzetek: V sklopu naravoslovnega dne Merjenje imamo učno uro opazovanja trkov in odbojev. Učenci dobijo navodilo, kaj je treba izmeriti in katere pripomočke lahko pri tem uporabijo, pot do cilja pa izbirajo sami. Pri izvajanju poskusov so v skupini zelo delavni, ustvarjalni in sodelovalni, pri odčitavanju meritev pa si pomagajo s kamero na mobilnem telefonu. Glavni cilj učne ure je ustvarjalno delo učencev. Kot pripomoček pri izvajanju poskusov uporabljajo tehnologijo, navajajo pa se tudi na delo v skupini. Ob tem ponovijo snov Napake pri merjenju in dobijo izkušnje s trki in odboji teles. Njihovo prvo srečanje z odboji in trki teles lahko povežemo z obravnavo napak pri merjenju. Pri izvajanju poskusov sem naletela na težavo, kako natančno odčitati višino dviga kroglice na nihalu pri odboju. Kroglica potuje hitro in učenci niso uspeli zaznati višine dviga. Odločila sem se za uporabo kamere na mobilnem telefonu in učenci so bili nad izvajanjem poskusa navdušeni. Za pregled posnetkov so uporabili možnost počasnega pregleda posnetka. Meritve so bile natančnejše in vsi so bili zelo motivirani za delo. Pri uvodni uri jim pokažem, kako se izračunajo povprečna vrednost, absolutna napaka in relativna napaka. V skupinah naredijo meritve dolžine razreda. Sami si zamislijo način merjenja dolžine učilnice. Nato izračunajo napake pri merjenju. V drugi šolski uri opazujejo trke dveh kroglic. Skupine imajo različne kroglice: dve leseni, leseno in kroglico za namizni tenis ter še leseno in kroglico iz plastelina. Vsaka skupina izmeri povprečno višino odboja kroglic, če leseno kroglico spustimo z višine 5 cm. Na stojala pritrdijo pare kroglic. Za meritve višine odboja kroglic si pomagajo s karo papirjem formata A3, ki omogoča merjenje dviga kroglice, in s kamerami na mobilnih telefonih, ki omogočajo natančno določitev meritev. Pet uspešnih meritev si zapišejo in nato izračunajo povprečno višino odboja kroglic ter napake pri merjenju. Skupine primerjajo rezultate meritev. Lahko bi najboljši posnetek vsake skupine predvajali in ob analizi dela laže primerjali rezultate skupin, a nas to delo čaka v prihodnjem šolskem letu.

Abstract: In the context of the science day dedicated to measurement, we give a lesson on the observation of collision and bouncing. Pupils get instructions as to what needs to be measured and which devices can be used, but they choose the path to the goal by themselves. They use their mobile phone camera to help them read the measurements. They carry out the experiments with great diligence, creativity and collaboration within the group. The main goal of the lesson is to encourage

the creative work of pupils. It allows them to use technology as a tool in carrying out experiments. Pupils get used to working in a group. At the same time, they revise the topic of measurement errors and get experience with collisions and bouncing of bodies. Pupils' first encounter with the bouncing and collisions of bodies can be linked with the treatment of measurement errors. In carrying out the experiments, we ran into a problem of how to accurately read altitude rises as the pendulum bounces off. The ball travels fast, and pupils have failed to detect the height of the lift. I decided to use a mobile phone camera, and pupils were impressed by the way the experiment was carried out. To view the recordings, pupils used the slow motion playback. Measurements were more accurate, and pupils were very motivated to work. During the introductory lesson, I show pupils how to calculate the average value, the absolute error and the relative error. In groups, they measure the length of the classroom. Pupils come up with their own way of measuring the length and then calculate the measurement error. During the second lesson, pupils observe the collision of two balls. Groups have different balls: two wooden balls, a wooden and a table tennis ball, and a wooden a putty ball. Each group measures the average height of bouncing balls if the wooden ball is released from the height of 5 cm. Pupils attach pairs of balls onto racks. To help them measure the height of the bouncing balls, they use checkered A3 paper, which allows the measurement of the rising balls, and mobile phone cameras, which allow for pinpoint measurements. Pupils note down five successful measurements and then calculate the average height of bouncing balls and the measurement error. The groups compare their measurement results. We could play the best video of each group and compare the videos while thoroughly analysing them, but this is a task for the following school year.

Sodobne ure pouka z Jurčičem in Krjavljem

Modern lessons with Jurčič and Krjavelj

Olga Koplan, Osnovna šola Ivana Groharja, Škofja Loka

Povzetek: Sodobni pouk mora biti usmerjen v zagotavljanje pogojev za učenčev celovit osebnostni razvoj. Učitelj usmerja učence k vse večji samostojnosti, da so aktivni in prevzemajo odgovornost ne le za svoj uspeh, ampak tudi za uspeh skupine, v kateri poteka učni proces. Takšno delovno okolje močno spodbuja sodobna tehnologija, ki jo uporabljajo pri pouku. Digitalno pismenost pri učencih v 6. razredu razvijamo vse leto. Na začetku večinoma še ne obvladajo elektronskih orodij, kot je PowerPoint, hkrati pa tudi ne zanjo navajati virov in literature. Do konca šolskega leta so v tem že popolnoma vešči, obvladajo tudi animacijo in predstavitev v razredu. Pri pouku književnosti v 6. razredu so dobili nalogo, da s pomočjo prenosnih računalnikov, videokamere in fotoaparata predstavijo pisatelja Josipa Jurčiča in njegova dela, spremenijo prozno besedilo v dramsko, ga posredujejo sošolcem po elektronski pošti, se ga naučijo zaigrati, igro posnamejo z videokamero, jo presnamejo na računalnik in predvajajo za ogled in kritično vrednotenje. S takšno obliko dela sem želela pri učencih ob razčlenjevanju in tvorjenju umetnostnega besedila razvijati elemente digitalne pismenosti (spretnosti v uporabi elektronskih orodij, iskanje informacij) ter spodbujati kritično mišljenje, ustvarjalnost in inovativnost. Najprej sem jim predstavila cilj projektnega dela. Pri pripravi predstavitve v PowerPointu o pisatelju in njegovih delih so uporabljali knjižno gradivo in gradivo na spletnih straneh. Pridobljeno gradivo so pregledali, izbrali pomembne podatke in te prikazali na e-prosojnicah. Dodali so tudi slikovno gradivo. Predstavila sem jim pomen upoštevanja avtorskih pravic in jih seznanila z navajanjem virov – te so navedli na zadnji e-prosojnici. Svoje izdelke in ugotovitve so skupine predstavile pred razredom. S pomočjo besedila, preoblikovanega v dramsko zvrst, so po skupinah uprizorili in posneli igro, posnetek prenesli na računalnik ter ga predvajali v razredu. Učiteljeva vloga je bila predvsem usmerjati učence, jih opozarjati na kritičen izbor gradiva pri izdelavi e-prosojnic, spodbude pa niso bile potrebne, ker so učenci pri svojem delu uživali. K motivaciji za delo je veliko prispevalo tudi snemanje, saj so želeli biti na posnetku zelo dobri.

Abstract: Modern lessons with Jurčič and Krjavelj Modern lessons should ensure conditions for comprehensive personal development to each pupil. Teacher directs students towards independent engagement in activities while taking responsibility for both individual and team success in the learning process. Using technology in class facilitates achieving the goals described. In sixth grade students digital literacy is being developed througout the whole study year. While technology related skills are limited in the beginning, great progress is achieved until the end of the year

when presentations in class are no longer an issue. In sixth grade literature class the pupils were given a task requiring use of computers, camera recorder and digital camera. The task instructions were to present writer Josip Jurčič and his work, transform prose text into drama form and should it with other students using email. They learned to play the drama, record it using camera recorder, transfer it to computer and play it on screen for critical evaluation. The goal was developing digital literacy (electronic tool skills, information acquisition), critical thinking and creativity while decomposing and constructing literature. At first students were presented the goals of project work. For Creating PowerPoint presentations printed and online resources were used. Pupils reviewed the acquired texts, extracted the key information and included them in slides enriched with visual resources. The importance of respecting intelectual property rights and citation requests was emphasized. Each group of students presented their created presentations in class. They also performed and recorded the play on a base of their written drama texts. The videos of the play was later viewed in class. The role of teacher was primarily directing the students and supervising their critical choice of resources at creating presentation slides. Special incentives were not necessary since pupils enjoyed the work. Camera recording was one of key motivation factors in the process as it motivated students to put in some extra effort for the recordings.

Formativno spremljanje razvijanja digitalnih kompetenc s sodelovalnimi orodji

Formative assessment of development of digital competences with collaborative tools

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Povzetek: Glede na splošno priznanost učinkovitosti formativnega spremljanja je hitro jasno, da je tudi pri razvijanju digitalnih kompetenc smiselno ubrati podoben pristop. Prispevek prikazuje formativno spremljanje sistematičnega in načrtnega razvijanja digitalnih kompetenc s sodelovalnimi orodji pri zgodnjem poučevanju računalništva v 4., 5. in 6. razredu. Uporabili smo novo digitalno sodelovalno orodje, OneNotov zvezek za predavanja, v katerem so učenci delili svoje vsebine in dajali povratne informacije. Glavni namen dejavnosti je bil podpirati učence pri prevzemanju odgovornosti za svoje znanje. Učenci so spoznali elemente poročila, primerjali so več različnih poročil in skupaj določili kriterije za pripravo kakovostnega poročila. Naučili so se postavljati cilje in skupaj določati kriterije uspeha ter dajati povratne informacije sošolcem. Predznanje uporabe orodja in pisanja vsebin smo preverili z nalogo zlaganja elementov zahvale na ustrezno mesto v zasebnem učenčevem področju v orodju OneNote. Ob pogovoru smo primerjali poročili. Učenci so predlagali kriterije za dobro poročilo, jaz pa sem jih zapisal na tablo. Gradiva sem objavil v javnem delu zvezka tako, da so učencem zmeraj na voljo. Sledil je zapis poročil v privatnem prostoru. Učence sem pri tem usmerjal tudi na objavljena gradiva, kjer so lahko svoje poročilo preverjali s pomočjo kriterijev. Po zaključku pisanja poročila smo ob primerih izvedli pogovor o povratni informaciji. Gradiva so objavili v javnem prostoru zvezka. Svoje poročilo so skopirali v prostor za sodelovanje in vzajemno podajo povratno informacijo ter po potrebi popravili poročilo. Uporabljeno digitalno orodje omogoča sodelovanje, izmenjavo vsebin in dajanje povratnih informacij. Zaradi uporabe digitalnega orodja je bil proces učenja izveden tako, kot na klasičen način ne bi bilo možno, saj je bilo navzočih 28 učencev in je vsak delal na svojem računalniku. V vsakem trenutku sem imel pregled nad delom učencev, oni pa so lahko med delom dostopali do pripravljenih gradiv. Ob tem so na enostaven način sodelovali s sošolci znotraj istega okolja. Naloga je bila za učence 4. razredov precej zahtevna. Pri učencih 6. razreda se opazi veliko boljši pregled nad delom, poročila sicer še niso optimalna, pokaže pa se, da znajo v povratnih informacijah veliko bolj kritično in utemeljeno poudariti pomanjkljivosti ter podati predloge za izboljšave.

Abstract: Formative assessment is clearly effective. It is logical to use the same approach with developing digital skills. The article is about using Formative assessment of digital skills with OneNote Class Notebook tool in teaching computer

science in 4th, 5th and 6th grade. Students were developing digital skills systematically. They learnt how to set goals and criteria. The new digital tool OneNote Class Notebook was used to share documents and to get feedback. The main purpose was to support students to take responsibility for their knowledge. The students learnt about a report. They set criteria for a high quality report. They also learnt how to give feedback to their classmates. Prior knowledge (use of OneNote) was tested. The students had to put pieces of a thank you note in correct order in student's space in OneNote. We discussed two reports. The students proposed criteria for a high quality report and the teacher wrote them on the board. The teacher put the documents in the public section. The students wrote reports in their private section. The teacher reminds students to use the criteria to check their reports. We discussed three reports. Feedback was given according to the previously set criteria. The documents were published in the public section of the OneNote. The students copy their reports into the collaboration section and simultaneously give their collective feedback. We have used digital tools that enable cooperation, exchange of documents and give feedback. In this way the process of learning was not done in a usual way. 28 students were working each on their own computer. The teacher could overlook their work all the time and the students were able to access the material which was prepared by the teacher. The students could easily cooperate with other students within the joint space. The task was more demanding for the students of the 4th grade. The reports of the students of the 6th grade are not yet optimal, but it is obvious that they are able to produce their feedback in a more critical way. They are also able to propose improvements.

»Jajčenje« – učenci učijo s svojo metodo

»Eggearning« - students teach with their own method

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Povzetek: Spremljave in analize učnega procesa v naših šolah kažejo, da še vedno prevladujejo klasične oblike pouka, premalo je osredinjenosti na učence. Učenci se v šoli pogosto dolgočasijo. Predstavljeni primer dela pa jih postavlja v zelo aktiven položaj, spreminja njihovo vlogo in tudi vlogo učitelja. Sami prevzamejo odgovornost za učenje in so pri svojem delu samostojni. Pri tem uporabljajo tehnologijo in tako hitreje pridobijo potrebne informacije, laže sodelujejo med seboj tudi na daljavo, arhivirajo svoje delo, vključujejo izboljšave, učijo druge, z objavo delijo svoje znanje in imajo tako okno v svet zunaj učilnice. V okviru projekta Ves svet je učilnica so iskali inovativno rešitev za bolj zanimivo učenje. Iznašli so novo metodo JAJČENJE (JAJCE+UČENJE), s katero lahko usvajamo znanje in veščine v 21. stoletju. V procesu dela z različnimi viri so med raziskovanjem odkrili, da se lahko z enim vsakdanjim predmetom naučimo več stvari hkrati na različnih področjih (npr. fizika, geografija, slovenščina, biologija itd.). Ta področja so si razdelili na podlagi interesov oziroma talentov. Sami so si razdelili vse potrebne naloge, se posvetovali s strokovnjaki in pridobljeno znanje posredovali drug drugemu. Svoja odkritja so zbrali na spletni strani, pripravili so interaktivne naloge. Nastala je nova učilnica – učilnica brez omejitev. Svojo metodo so preizkusili in tako postali učitelji drugih učencev na šoli ter s svojim inovativnim pristopom navdušili tudi druge učitelje. Dali so jim ideje za podobno izvajanje. Od problema do rešitve so pri delu uporabljali različno tehnologijo: 1KA za izdelavo ankete, Wordpress za postavitev svoje spletne strani, Execute za izdelavo interaktivnih nalog, GoogleDrive za skupno nastajanje dokumentov, MovieMaker in YouTube za filmčke, CorelDraw za izris, PhotoFiltre za urejanje slik, Facebook za delitev rešitve. Moja vloga učiteljice ni bila vodenje izobraževanja, ampak motiviranje, podpiranje, dajanje povratnih informacij, pomoč pri logistiki. Nisem poznala odgovorov na vprašanja, učili smo se skupaj, drug od drugega. Predstavljeni način prinaša učenje, ki ga mladi potrebujejo in želijo. Spodbuja ustvarjalnost, inovativnost in podjetnost ter ponuja drugačno učenje, več predmetov hkrati in vključuje vse to, kar imajo učenci radi: praktično delo, poskuse, video, tehnologijo. Tak način dela omogoča trajnejše, kakovostnejše znanje ter učenje na zabavnejši način.

Abstract: Lesson observations and learning process analyses in our schools show that traditional teaching still prevails. There is too little learner-centre orientation. Students are often bored at school. The presented example puts students in a very active position, changes their role and the role of the teacher as well. Students take responsibility for the learning and are independent. With the use of technology students acquire necessary information faster, co-operate easier with each other on

distance, record their work, include improvements, teach others and have a window in the world outside the classroom. In the project World class Learning Unleashed students looked for an innovative solution for an interesting learning. They have invented a new method Eggearning (egg+learning) with which we can gain knowledge and skills for the 21st century. With using different resources students came to the conclusion that with one everyday object we can learn more things at once in different areas (e.g. Physics, Geography, Slovene, Biology...). These were divided based on students' interests and talents. The students distributed tasks on their own, consulted experts and taught each other. They collected their findings on their own website. Interactive tasks were created. A new classroom was established – one with no limits. Students tested their method and became teachers at their school and with their innovative approach impressed other teachers. They gave them an idea for similar activities. From the problem to the solution students used different technology: 1KA for questionnaire, Wordpress for website, Execute for interative exercises, GoogleDrive for documents sharing, MovieMaker and YouTube for videos, CorelDraw for designs, PhotoFiltre for pictures, Facebook for sharing. My role as a teacher was not in making it, but motivation, support, feedback, logistics. I did not know the answers. We learnt together, from each other. The presented example shows learning that the youth needs and desires. It encourages creativity, innovation and entrepreneurship. It offers different learning, more subjects at once and includes everything that students like: practical work, experiments, video, technology. It enables longer-lasting, better knowledge and learning in a funnier way.

Moderna tehnologija kot pripomoček za formativno spremljanje angleščine v 1. razredu osnovne šole

Modern technology as a tool for formative assessment teaching ESL in primary education

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Povzetek: Razvijanje e-kompetenc in prevzemanje odgovornosti za učenje je v sodobnem učnem procesu ključnega pomena. S pomočjo moderne tehnologije sem želela učencem pokazati, kako se lahko tudi samostojno učijo oziroma izboljšajo svoj uspeh. S pomočjo mobilnega telefona sem že prvo učno uro obravnave pesmi le-to posnela. Nato sem se z učenci naslednjo učno uro dogovorila, da si bomo posnetek ogledali, vendar moramo pri tem upoštevati sodelovalno učenje, da poslušamo drug drugega, dvignemo roko, ko želimo kaj povedati in podobno. Sprva sem bila malce skeptična, saj gre za učence 1. razreda, ki so teže dlje časa zbrani, vendar so me prijetno presenetili, saj so zbrano gledali posnetek ter ga kritično ocenili, prepoznali so morebitne nepravilnosti ter podali predloge za izboljšavo. Po ogledu posnetka in poslušanju komentarjev sem jih ponovno posnela, pri čemer sem jih opozorila, da naj upoštevajo lastne predloge za izboljšavo. Tretjo uro sem jim ponovno pokazala posnetek in ugotovili smo, da je izvedba pesmi še boljša. Tako so postali motivirani za delo, saj so želeli svoje nastope še izboljšati. Dogovorili smo se, da vadijo tudi doma, pri čemer jih starši (lahko) posnamejo in posnetek (lahko) delijo z razredom. Tako smo si skupaj ogledali posnetke, opravila sem pogovor z njimi, kakšno je njihovo mnenje o napredku, in nato so kritično prijateljevali še sošolci in podali svoje mnenje. Za tako obliko dela so bili vsi zelo motivirani, saj so želeli izboljšati svoj nastop, pazili so na izgovarjavo v tujem jeziku, ritem, koreografijo in tako prevzeli odgovornost za lastno učenje z uporabo sodobne tehnologije.

Abstract: Developing ICT competences and taking over the responsibility for self-learning are crucial elements in the modern educational process. I wanted to show and make my pupils aware how they can learn individually and improve their learning process by using modern technology. With the use of a mobile phone I recorded the song for the first time already the first lesson when I only introduced it to my pupils. We agreed to watch the recording at out next lesson regarding and following the rules of cooperative learning so that we listen to each other, raise our hands when we want to speak and similar. At first I was a bit sceptical if this is going to work as young learners (age 6) may have difficulties staying focused and motivated for a longer period of time, but they pleasantly surprised me. They were focused while watching the recording, they critically assessed it and shared ideas for improvement. After watching the recording and listening to the pupils' comments, I recorded them

once more. This time the pupils had to follow their ideas for improvement. In the third lesson I showed them this recording and we established that their performance here is better than the first one. The pupils thus became motivated and wanted to improve even more so we agreed that they practice at home and that their parents (can) record them and they (can) bring this recording to school. We watched these recordings together and analysed them. The recorded pupils expressed their thoughts about the work and then the schoolmates critically assessed the recording as well. As mentioned the pupils were highly motivated, they wanted to improve their performance, paid more attention on the pronunciation, rhythm, choreography thus taking over responsibility for their self-learning and developing skills needed to use modern technology.

E-listovnik kot podpora razvoju samouravnavanja in samodiscipline – Izziv za razrednike v osnovni šoli

E-portfolio - tool for supporting the development of self-regulation skills and self-discipline

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Povzetek: V prispevku prikažemo, kako smo v projektu ATS 2020 pri učencih spodbujali razvoj veščine samouravnavanja učenja raznovrstnih znanj in veščin ob podpori razvojnega e-listovnika. Usmerili smo se predvsem na širše področje učenja, namreč samouravnavanja ravnanja v raznovrstnih življenjskih situacijah, ki jih otroci doživljajo bodisi v šoli bodisi zunaj nje. Spodbujanje veščine samouravnavanja je ena osrednjih veščin modela, značilno zanjo pa je, da učenec prevzema odgovornost za svoje ravnanje ter posledice svojih dejanj. V ta namen smo v spletnem okolju Mahara ustvarili vrsto zanimivih miselnih izzivov in dejavnosti, ki spodbujajo učenje veščin, ki presegajo učenje v šoli. Ključna vprašanja, ki smo jih naslovili v teh dejavnostih, so npr.: Kako si pridobiš prijatelja? Kako zanimivo izrabiš prosti čas in se pri tem nekaj naučiš? Kako imeti dober odnos z nekom, ki je nasprotnega spola? Kaj se zgodi, ko si zaljubljen? Kako krotiti jezo? Namen teh dejavnosti je samospoznavanje ter prevzemanje odgovornosti za posledice svojih dejanj na različnih področjih življenja in dela. Prispevek predstavlja pomemben prispevek k razvoju strategij spodbujanja učenja na socialno-čustvenem področju. Predstavili bomo dejavnosti, kako smo jih izvajali, kako so se nanje odzivali učenci ter kaj vse so v teh dejavnostih ustvarili. Nakazali bomo možnosti za širšo uporabo teh dejavnosti, tako znotraj pouka kot zunaj njega.

Abstract: This article presents how ATS 2020 project encouraged the development of self-regulation of learning various skills in pupils using a developmental e-portfolio. The project was mainly directed towards a wider learning area, namely self-regulation of acting in different situations that children experience either in school or outside of it. For this purpose a variety of interesting mental challenges and activities which encourage learning of skills that surpass school learning, was created in Mahara web environment. The key issues addressed in these activities are, for example: How to make a friend? How to spend your free time in an interesting way and learn something at the same time? How to have a great relationship with someone of the opposite sex? What to do when you are in love? How to control your anger? The purpose of these activities is self-cognition and

taking responsibility for the consequences of your actions in various areas of life and work. We are going to present the activities, the ways they were conducted, how the pupils reacted to them and what the pupils created during these activities. Options for a wider use of these activities will be indicated for both class and non-class purposes.

Nemško besedišče – dijaški izziv

German vocabulary - students´ challenge

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Povzetek: V prispevku so predstavljene možnosti, s katerimi pri pouku nemščine dosežemo, da so dijaki v procesu usvajanja znanja aktivni in samostojni. Ko vsi sprejmemo dejstvo, da za učni uspeh ni odgovoren le učitelj, znajo dijaki prevzeti ključne vloge, postanejo bolj odgovorni do sebe in sošolcev. Vzajemna pomoč med sošolci, pripravljanje ustvarjalnih nalog že v začetni fazi obravnavanja nove teme, njihovo reševanje, komentiranje in vrednotenje dela sošolcev dvigujejo raven motivacije in znanja. Ko pri vsem tem vključimo sodobno tehnologijo, postane delo za dijake še privlačnejše. Pri obravnavi posamezne nove teme dijaki v manjših skupinah v skupnem dokumentu Google Drive soustvarjajo razredne spletne slovarje. V stolpce, ločene po slovničnem spolu in barvah, vnašajo nove besede, ki jih zbirajo s pomočjo slik, katalogov, besedil in elektronskih slovarjev. Potem ko nove razredne slovarje lektorira učitelj, so prek spletne učilnice dostopni vsem dijakom. V drugem koraku dijaki sošolcem pripravijo naloge za obravnavano temo. S spletnim orodjem Quizlet ustvarijo kartice za učenje, utrjevanje ali ponavljanje posameznih besed. V Quizlet lahko vnašajo slike ali prevode besed, mogoče je uporabiti tudi zvočni zapis besed. Če nalog ne pripravljajo zase, temveč za sošolce, je to motivacijsko, hkrati pa s tem utrjujejo in širijo svoje znanje besedišča. Ko je novo besedišče usvojeno in utrjeno, ga umestijo v kontekst. Temu lahko služi animirani način predstavitve situacij, dvogovorov ali zgodb s spletnim orodjem PowToon. Dijaki delajo v manjši skupini. Na spletni strani se registrirajo, si ogledajo možnosti ustvarjanja predstavitev, nato za sošolce na določeno temo samostojno ustvarijo poljubno zgodbo. V njo vključijo usvojeno besedišče. Po ogledu vseh predstavitev si vsak dijak izbere tri, katerim v blogu zapiše komentar in doda po eno vprašanje, povezano s predstavitvijo. Animirane zgodbe komentira tudi učitelj in da dijakom objektivno, a kar se da spodbudno povratno informacijo. Opisani potek dela je že med šolskim letom pokazal, da je učenje nemških besed, fraz in struktur dobilo večji smisel, uporabljene fraze so se hitreje vtisnile v spomin, dijaki pa cenijo možnost samostojnejšega učenja in sodelovanja s sošolci.

Abstract: The paper presents possibilities which enable students to actively and independently learn German vocabulary and language. When all participants accept the fact that not only the teacher but they all are responsible for successful learning, students are able to take over some key roles. They become responsible for themselves and their classmates. When we include the modern technology, the work becomes even more attractive for students. While in class discussing a new subject, students in smaller groups create online classroom dictionaries in the

shared Google Drive document. They enter words they collect with the help of photos, texts, online dictionaries into columns, separated through colours and gender. After the new classroom dictionaries are corrected by the teacher, they are accessible in the virtual classroom for all students. The next step involves students´ preparing different tasks for their classmates, connected with the discussed topic. They create cards for learning and repeating new words using the tool Quizlet. They can add pictures or translations of words, as well as the sound, into the Quizlet. They prepare exercises not only for themselves but for their classmates, which makes them highly motivated. They also strengthen and expand their vocabulary at the same time. After the new vocabulary is learnt and consolidated, the context can be created with the tool called PowToon. Students work in smaller groups, search for various ways of presenting animated stories, dialogues, situations and create one for their classmates. They include the new vocabulary and work collaborating with each other. After the stories are made and presented, each student chooses three which s/he then comments on in the blog and adds one question, connected with the presentation. The teacher comments on all the animated stories as well und gives students an objective, though stimulating feedback. Throughout the school year the described course of learning steps has shown that learning German words, phrases and structures can become more authentic and tangible. Students learn the language easier and appreciate the possibility of both the independent and collaborative learning.

Priprava na pisno ocenjevanje znanja s pomočjo Mahare

Preparation for a written evaluation of knowledge through Mahara

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Povzetek: V tem šolskem letu smo pouk izvajali tudi s pomočjo digitalne tehnologije. Učenci so svoje znanje načrtovali, spremljali in vrednotili v okolju Mahara. Zaradi spremenjenega načina dela so postajali samostojnejši, hkrati pa so prevzemali odgovornost za svoj uspeh v šoli. Cilji, ki smo jih želeli doseči so bili: 1) učenci po preverjanju znanja samostojno ovrednotijo svoj nivo znanja; 2) ob pogovoru ugotovijo, katere strategije učenja so za njih najustreznejše, in zapišejo, katere bodo dejansko uporabili; 3) ob pregledu zahtevanih znanj iz učnega načrta za fiziko presodijo, katere dele poglavij je nujno še utrditi; 4) s sestavljanjem nalog za utrjevanje pred pisnim ocenjevanjem znanja vadijo oblikovanje razumljivih nalog in ob tem seveda pridobivajo znanje; 5) z reševanjem nalog, ki so jih sestavili sošolci, utrdijo svoje znanje, z zapisovanjem mnenja o nalogah sošolcev vadijo dajanje povratne informacije. Učenci so samostojno določali svoje predznanje in se ocenili. Zatem so zapisali strategije učenja, ki jih uporabljajo, in katere bi še lahko uporabili. Izbor strategij so zapisali v Maharo. Pregledali so cilje iz učnega načrta, jih v razredu prediskutirali z učiteljico in sošolci. Po razpravi so ozavestili in zapisali, čemu morajo posvetiti pozornost. Naslednjo uro so se pripravljali na test v razredu z reševanjem raznovrstnih nalog. Do naslednje ure so doma sestavili test s tremi teoretičnimi in eno računsko ali grafično nalogo v Mahari. Rešitve teh nalog so na listu oddali učiteljici. Te naloge so delili s sošolci in učiteljico. Vsak je poskusil rešiti večino nalog, pri tem pa je sošolcem dal povratno informacijo o njih. Veliko učencev je v tem procesu aktivno sodelovalo. Povedali so, da jim je pri učenju pomagalo sestavljanje nalog, kjer so se morali potruditi, saj je bilo treba zapisati tudi rešitve in jih oddati. V tem delu vidim dodatno vrednost takšnega načina priprave na ocenjevanje.

Abstract: In this school year, we also conducted lessons using digital technology. Pupils have their skills to plan, monitor and evaluate in Mahara. Due to the change in the method of work, the students become more independent while they are taking responsibility for their success in school. The objectives we wanted to achieve were: - Pupils after the examinations independently evaluate their level of knowledge - Pupils having a conversation identify what learning strategies are most appropriate for them and write down what they actually use, - The review of the required knowledge of the curriculum for physics students consider which parts of chapters is still necessary to consolidate, - The assembly order for consolidation before the

written knowledge assessment practice design to understand the tasks and the course acquire knowledge, - By solving tasks drawn up by classmates, they strengthen their knowledge, to write opinions about classmates rehearse give feedback. Pupils are independently determine their knowledge and evaluated. Then they wrote learning strategies they use and which could be used. Selection Strategies wrote in Mahara. They reviewed the objectives of the curriculum by the classroom be discussed with the teacher and classmates. After a discussion, they raise awareness and wrote what should pay attention. For the next hour they were preparing for the test in the classroom by solving a variety of tasks. Until the next time they are at home up the test with three theoretical and one computing or graphics task in Mahara. The solutions of these tasks are on the list submitted teacher. These tasks are shared with classmates and teacher. Each tried to solve most of the tasks, while the classmates gave feedback on assignments. Many students have been actively involved in this process. They said that they were helpful in learning assembly tasks where they have to make an effort, because it was necessary to write down the solutions and submit. In this section, I see the added value of this kind of preparation for the evaluation.

Samostojno učenje in ustvarjanje znanja z obratnim učenjem

Self learning and the creation of knowledge with flipped learning

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Povzetek: Hiter razvoj novih tehnologij s področja IKT je popolnoma spremenil način širjenja in sprejemanja ažurnega znanja. Medmrežje je postalo »kraj« izmenjave ter pridobivanja novih misli, znanj ter idej. Eksponentno širjenje le-teh omogoča kakovostno obliko izobraževanja vsem znanja željnih, ko to želijo in potrebujejo. Na Lesarski šoli Maribor že tri leta uporabljamo obratno učenje. To izobraževalno metodo smo postopoma usvojili, posvojili, jo delno tudi prilagodili našim potrebam in jo poimenovali Felicita (Flipped Learning with Creative Teaching). Velik poudarek je na integraciji samostojnega dela ter vključitvi lastnih ugotovitev in rezultatov v obravnavano snov. Ključni cilji: 1) Učenci pridejo na uro pripravljeni. 2) Izvajanje medpredmetnega in medrazrednega sodelovanja omogoča celo paleto različnih oblik pouka. 3) Z uvedbo sodobnih učnih pripomočkov (mobilni telefoni in tablice) popestrimo pouk. Izkoristimo pripravljenost učencev: iskati, ovrednotiti in smiselno povezovati dosegljive informacije v zaključeno celoto ter njihovo predstavitev. 4) Vloga učitelja je pasivna (več časa usmeri v nadzor procesa pridobivanja in ocenjevanja znanja). Večja samostojnost učencev pri delu razvija odgovornost in hkrati sposobnosti ter spretnosti za nadaljnje samostojno delo.

Scenarij poteka učne ure: * Pred poukom učenci dobijo gradivo v avdio-/videooblikи, ki ga predelajo in odgovorijo na vprašanja. Učitelj pred začetkom ure dobi vpogled v usvojeno znanje in prilagodi uro. * Med poukom:– kratka ponovitev obravnavane snovi. Možna razdelitev učencev v dve ali več skupin. – Iskanje in ustvarjanje vsebine na temelju iskanja virov z interneta. Prikažemo jo lahko v obliki: lističev z besedilom (stick it), slik, videov in dokumentov. – Ustvarjeno vsebino prikažemo v obliki miselne sheme – možnost. – Izdelava klasične predstavitve. Če jo naredijo učenci, jo lahko tudi predstavijo. – Prost dostop do shranjene vsebine. Razmislek o dodatni didaktični vrednosti. Glavne smernice metode Felicita: – Večja integracija mobilnih elektronskih naprav v proces izobraževanja. Namen je združiti prijetno s koristnim in narediti učenje ponovno zanimivo. – Učenje je bolj zanimivo, če ga prenesemo iz učilnice v življenjsko okolje. S tem podaljšamo dnevni učni cikel učenja, saj učenje ni več omejeno samo na čas, preživet v šoli, ampak traja večji del dneva. – Čas in obseg iskanja in sprejemanja različnih informacij je odvisen od diferencirane vsebine. Razvijati moramo občutek za organiziran način učenja ter ustvarjalen način pridobivanja (iskanja in vrednotenja) znanja.

Abstract: The rapid development of new technologies in the field of information and communication technology (ICT) has completely changed the way of spreading and receiving up to date knowledge. The Internet has become »the place« of the exchange and acquire new thoughts, knowledge and ideas. The exponential spreading of these make high-quality form of education for all where and whenever they want and need. From old to new On The Wood Technology School Maribor we practiced flipped learning for three years. We gradually conquered and partly adopted to our needs this educational method and named it Felicita (Flipped Learning with Creative Teaching). The main focus is on the integration of independent work and involvement of its own findings and results in the substance. Key aims - Pupils arrive prepared to the lesson. - Implementation of a cross-curricular and interclass cooperation enables a large variety of different forms of teaching. - With the introduction of modern teaching aids (mobile phones and tablets) we liven up lessons. Take advantage of the willingness of students: to search, evaluate and connect logically available information to form a whole and their presentation. - The role of the teacher is passive (more time to focus on monitoring the process of acquiring and evaluating knowledge). Increased independence of pupils in the work of developing responsibility and at the same time abilities and skills for further independent work Scenario of a lesson *Before the lesson Before the lesson pupils are given the material in audio / video form, they study it and answer the questions. The results are send to teacher before the start time. He can gain an insight view into established knowledge and adjusts the lecture. *During the lesson - Brief repetition of the lecture content. Possible distribution of students in two or more groups. - Search for and create content based on a search for sources from the Internet. Display can be in the form of: text pages (Stick it), pictures, videos and documents. - Created display content in the form of mental schemes - optional. - Creating classical presentations. In case that it is made by the students, it can also be presented by them. - Open access to stored content. Reflecting on additional didactic value The main guidance of method Felicita. - Increased integration of mobile electronic devices in the education process. The aim is to combine business with pleasure and make learning interesting again. - Learning is more interesting when it is transferred from the classroom to the living environment. With this we extended daily learning cycle, because learning is no longer confined to the time spent in school but lasts most of the day. - Time and volume of searches and receiving different information depends on the differentiated content. We have to develop a feeling for organized way of learning and creative way of acquiring (search and evaluation) knowledge.

Osmošolci se učijo s sodelovanjem in sestavljanjem matematičnih besedilnih nalog

Eight-graders learn with collaboration and cerating mathematical textual tasks

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Povzetek: Učenci se z lastnimi dejanji naučijo največ in zato sem se odločila, da tokrat predam učenje njim. V okviru projekta ATS smo z besedilnimi nalogami naredili več dejavnosti – učenci so sodelovali drug z drugim in po skupinah oblikovali kriterije, katere besedilne naloge bi označili kot ustrezne pri uri matematike v 8. razredu, torej na kaj moramo biti pozorni pri sestavi nalog, nato so raziskovali in si pri sestavi besedilne naloge pomagali z različnimi viri, na koncu pa so podali povratno informacijo drug drugemu in po metodi sendvič podajanja povratne informacije izpostavili pozitivne stvari ter sošolcu predlagali izboljšave. Nekatere stvari smo naredili na papirju (zapis kriterijev), uporabili pa smo tudi IKT, najprej okolje Moodle, nato pa okolje Mahara, in sicer pri zapisu besedilnih nalog in podajanju povratne informacije. S tem sem želela doseči predvsem to, da učenci vidijo smiselnost in pomembnost matematike v vsakdanjem življenju, saj je meni kot učiteljici matematike to najbolj pomembno. Želim jih spodbuditi, da razmišljajo in s svojimi idejami pripomorejo h kakovostnejšemu pouku ter učinkovitejši rabi matematike zunaj šole. Največkrat je matematika nepriljubljena ravno zaradi dejstva, da jo doživljajo le kot šolski predmet, s sestavo besedilnih nalog in s premislekom o različnih matematičnih problemih v resničnem življenju pa učenci spoznajo, da je matematičnih izzivov nešteto in da nas matematika res spremlja na vsakem koraku. Učenci so sestavili besedilne naloge upoštevajoč kriterije, ki smo jih oblikovali skupaj. Rezultat so izvirne in raznolike besedilne naloge – tako s področja aritmetike kot tudi geometrije. Prav tako so se učenci učili s sodelovanjem, saj so morali premisliti tudi o smiselnosti nalog sošolcev in jim ustrezno podati povratno informacijo, učili pa so se tudi kritično misliti. Naslednjič bi več poudarka dala sami komunikaciji, podajanju povratne informacije in argumentiranju, saj so na teh področjih učenci še nekoliko šibki. S svojim prispevkom želim predvsem izpostaviti pomembnost zavedanja, da matematika nekaterim učencem ni razumljiva in smiselna, če jim ne pokažemo primerov iz vsakdanjega življenja in predamo učenja njim. To pa je najlažje, če zbudimo njihovo ustvarjalnost in jih spodbudimo, da sami dodajo svoje primere in pomagajo drugim do boljšega znanja.

Abstract: Students learn mostly from their own actions therefore I decided to hand learning over to the students. Within the project ATS we carried out several activities – students collaborated with each other, formed criteria of textual tasks in

groups and decided what elements an appropriate mathematical textual task in eighth class should contain. Further on they have researched and used different sources during creating textual tasks. As the final activity they made comments to each others textual tasks and using the sandwich feedback method they focused on positive things and suggested improvements. We did some things using paper (writing criteria) and we also used ICT, first Moodle platform and then platform Mahara for writing textual tasks and giving feedback. My aim is for students to see the meaning and importance of mathematics in everyday life because this is the most important thing for me as a teacher. I would like to encourage the students to think and to contribute their ideas to more quality lessons and effective use of mathematics outside of school. Most often mathematics is unpopular because it is seen only as a school subject, but by creating textual tasks and thinking about different mathematical problems in real life students can discover that there are numerous mathematical challenges and that mathematics is all around us. Students made textual tasks by abiding the criteria formed in the beginning of acitivty. The results are original and diverse textual tasks – both arithmetical and geometrical. Students also learned with collaboration because they had to think about the meaning and main point of their school mates tasks and give feedback in an appropriate way, they also learned about critical opinion. Next time I would put the emphasis on the communication, giving feedback and argumentation, because students are still weaker on this area. The aim of this article is to set out the importance of knowing that some students do not find mathematics understandable and logical without seeing the examples from daily life and handing learning over to them. Doing this easily is to awaken their creativity and encourage them to add their own examples and help others gain better knowledge.

Microsoft Sway kot del formativnega spremljanja pri pouku zgodovine

Microsoft Sway as part of formative assessment in history lessons

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Povzetek: Cilji nas motivirajo, da se zavedamo razlike med tem, kje trenutno smo, in tem, kaj želimo doseči. Učiteljeva naloga je, da učencem pomaga postaviti realne cilje, jih skupaj z njimi spremlja ter jim jih pomaga doseči in ovrednotiti. Doseženi cilj je praznik tako za učitelja kot za učenca. Učenje učenja spada med temeljne veščine, ki naj bi jih učenci usvojili za uspešno samostojno učenje. Ta veščina zajema sposobnost učiti se in vztrajati pri učenju ter organizirati lastno učenje s pomočjo različnih e-gradiv ter dostopnih aplikacij. Učenci so pri uri zgodovine uporabili program Microsoft Sway, s pomočjo katerega so spoznavali, utrjevali in predstavljali svoja opažanja o holokavstu. Program omogoča izdelavo interaktivnih poročil in predstavitev, ki so lahko objavljeni na spletu ali shranjeni lokalno na računalniku. Predstavitev lahko izdeluje več učencev sočasno, pri tem pa si razdelijo vloge; nekateri urejajo obliko predstavitve, medtem ko drugi vstavljajo vsebino. Osnovni namen dela z Microsoft Swayjem je, da so učenci aktivni »soustvarjalci« usvajanja znanja, učitelj pa njihov moderator/usmerjevalec. S tem sva sledila sodobnim metodičnim usmeritvam pouka v osnovni šoli, katerega cilj je postopno vpeljevanje učencev v samostojno ustvarjalno-kritično mišljenje, učenje z odkrivanjem in raziskovanjem. S pomočjo tako imenovane metode sendvič sva sledila ciljem formativnega (sprotnega) spremljanja znanja pri pouku zgodovine, katerega namen je sporočanje povratnih informacij učencem o njihovem delu in učenju. Namen metode sendvič je bil, da učenec dobi uvid v kakovost svojega znanja in učenja ter izostri svoje doživljanje učenja, vedenja, zmožnosti aktualizacije in vživljanja. Povratno informacijo smo sporočili midva kot učitelja in pa ob koncu tudi sami sošolci (vrstniško vrednotenje). Povratna informacija se je nanašala na vprašanja: • Kaj sem se novega naučil? Na kaj sem ponosen? • Kaj sem že vedel? Na kaj sem ponosen? • Kaj bi še lahko izboljšal? Seveda je obstajala možnost, da bodo nekatere informacije za posamezne učence popolnoma nove, drugi pa bodo svoje znanje le še poglobili in utrdili. Tako sva skušala upoštevati individualnost učencev. Z ustreznim stopnjevanjem, osebnim stilom poučevanja ter s sodelovanjem učencev smo uresničili cilj spodbujanja višjih nivojev mišljenja in razumevanja ter ne nazadnje tudi razvijanje vrstniškega sodelovanja, vrednotenja ter razvijanja samovrednotenja.

Abstract: Goals motivate us to distinguish between our current state and what we want to achieve. It is the role of the teacher to help learners achieve realistic goals. Teachers and learners monitor, reach and assess learners' goals together. When goals are achieved, it is a celebration for both teachers and learners alike. Learning-to-learn is one of the most fundamental skills learners should acquire for successful independent/self-reliant learning. This skill encompasses the ability to learn, to keep up with learning and to organize learning with the help of various digital learning resources and available apps. During the History lesson, students used Microsoft Sway to learn, revise and present their views on the Holocaust. The software programme Microsoft Sway enables learners to create interactive reports and presentations, which can be published on the Internet or saved locally on a computer. Several learners can work on a single presentation simultaneously. Learners perform different roles; some learners are responsible for the visual part of the presentation, while others provide content. The main purpose of working with Microsoft Sway is to engage learners to become active co-creators of knowledge and content, while teachers only monitor and moderate. We have applied modern methods of classroom management as used in primary schools, the goal of which is to prepare learners to become independent/self-reliant individuals who are creative, critical and learn by exploring and researching. During the History lesson, the so-called "assessment sandwich" was used as part of formative assessment, whose main purpose is to provide feedback to learners about their work and results as well as to allow learners to contemplate about their own learning, behaviour, their ability to actualize and to empathize with others. The feedback was provided by us, the teachers, as well as their peers and, finally, by themselves. Feedback was based on the following questions: • What have I learnt? / What am I proud of? • What did I already know? / What am I proud of? • What could I do improve? Some information was completely new to a few learners, while others only strengthened their knowledge. The individuality of each learner was assured. The goal of developing higher thought processes and understanding was assured by raising the difficulty of tasks, individual teaching methods and learner collaboration. Finally, collaborative learning, evaluation as well as self-evaluation were also developed.

Vrednotenje zanesljivosti podatkov na spletu in bralno razumevanje pri pouku angleščine

Evaluating data on Internet and reading comprehension in English classes

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Povzetek: Pri pouku angleščine so učenci poleg razvijanja bralnega razumevanja razvijali tudi digitalne kompetence na področju informacij. Razvijali so kompetenco brskanje, iskanje in izbiranje informacij ter kompetenco ocenjevanje informacije iz modela DigComp. Z razvijanjem teh dveh kompetenc so postali kritični uporabniki spleta, medijev in družabnih omrežij. Uporabljali so e-listovnik, v katerem se razvijanje kompetenc načrtovali, spremljali in vrednotili. Spoznavali so, da sta načrtovanje in spremljanje pomembna pri prevzemanju odgovornosti za lastno učenje. Vsebinski cilj pri predstavljenem sklopu je bil razvijanje veščine bralnega razumevanja s pomočjo besedil v angleškem jeziku. Učenci so dosegali tudi procesne cilje. Poleg zmožnosti iskanja in vrednotenja najdenih podatkov so razvijali tudi zmožnost dajanja podpornih povratnih informacij. Najprej so ozavestili svoje prevladujoče načine iskanja podatkov na svetovnem spletu. S pomočjo vprašanj so nato poskušali oceniti zanesljivost podanih spletnih virov. Nato so si v listovniku postavili lastne cilje učenja in načrtovali dejavnosti, ki so jim pomagale pri uresničevanju ciljev. Seznanili so se s kriteriji za vrednotenje najdenih virov in poskušali oceniti verodostojnost nekaj spletnih strani. Spoznali so slikovno iskanje in kako preveriti, ali je neka novica spletna potegavščina. Svoja razmišljanja, ugotovitve in argumente so delili z vrstniki in si medsebojno podali povratne informacije. Svoj napredek pri razvoju digitalnih kompetenc so ovrednotili. Pouk angleščine v računalniški učilnici je bil osmišljen, vsebinski cilji so se prepletali s procesnimi. Učenci so najdene podatke začeli kritično vrednotiti, hkrati pa so se naučili svoje učenje načrtovati, spremljati in vrednotiti. Ker so iskali podatke v angleškem jeziku, so hkrati večali tudi besedišče in bralno razumevanje. Slabost takšnega načina dela vidimo v težavah, povezanih z uporabo računalniške učilnice (premalo računalnikov, slaba digitalna pismenost učencev, zasedenost računalniške učilnice, nedelovanje opreme itd.), kljub temu pa je treba digitalne kompetence razvijati načrtno in sistematično v vseh razredih.

Abstract: During English lessons pupils were developing the digital competence in the field of information along with the development of reading comprehension. Pupils were working on competency 1.1 Browse, Search and selection of information and competence 1.2 Assessment of information from the model DigComp. By learning these competencies, the students have become critical users of the internet, media and social networks. The pupils used e-Portfolio, which improved their

competencies to plan, monitor and evaluate. Pupils became aware that planning and monitoring are essential in taking responsibility for their own learning. The content aim in this learning unit was to develop the skills of reading comprehension using texts in English. In addition to this, pupils have achieved the process aims. They improved the skills of searching end evaluating information, as well as the ability to support their schoolmates by giving them constructive feedback. First, students became aware of their dominant ways of searching data on the Internet. With leading questions they tried to assess the reliability of given online resources. In their Portfolios they set their own learning objectives and planned activities to support them in achieving the objectives. They took note of the criteria for the sources evaluation and learned to assess the credibility of some websites. They were taught to search image and to recognize Hoax pages and Web pranks. The students shared their opinions, findings and arguments with their peers and gave each other supportive feedback. Finally, they made self - evaluations concerning their progress in the development of digital competences . The English lessons in the computer lab were meaningful because the content goals were intertwined with the process ones. The pupils started to critically evaluate the data on Internet and they learned to plan, monitor and evaluate their learning as well. Along with searching for information in English, the learners enriched vocabulary and improved the comprehension skill. The problems or challenges of this kind of learning are mostly associated with the use of computer labs (lack of computers, poor digital literacy, equipment failure ...), however, we are convinced that it is necessary to systematically develop digital skills in all classes.

Formativno spremljanje pouka matematike v Oblaku

Formative assessment of Math class in the Cloud

Marija Blažič, Osnovna šola Dobje, Dobje

Povzetek: Novi časi prinašajo nove zahteve poučevanja otrok, ki jim bodo dale uporabno znanje. Učenci postanejo sami odgovorni za svoje znanje. Sami znajo svoje delo načrtovati, si postaviti cilje in jih tudi ocenjevati. Znajo kritično ovrednotiti delo in podati konstruktivno kritiko. Pri matematiki nam je zvezek OneNote postal orodje, kako učinkovito spremljati korake formativnega spremljanja. V njem zapišejo vse korake v e-listovniku v zavihku Moje učenje: predznanje, cilji in kriteriji, strategije, dokazi, samoevalvacija in doseženi cilji. Ugotavljajo predznanje, dokaze fotografirajo in priložijo v zvezek (OneNote). Sami postavijo cilje in kriterije za obravnavane teme, kar jim služi kot podlaga, da v dvojicah sestavijo nalogo, ki jo kasneje rešijo sošolci. Nato nalogo ocenijo po kriterijih in podajo tudi povratno pisno informacijo o znanju sošolcev. Prav tako učenci komentirajo, kako je naloga sestavljena. Uporabnost znanja pokažejo tudi pri sestavljanju spletne ankete. Po zbranih odzivih analizirajo odgovore, zapišejo ugotovitve in oblikujejo seminarsko nalogo. Dva učenca sta se preizkusila v raziskovalni nalogi. Učenci pripravijo tudi predstavitev. Naloga sošolcev je, da komentirajo ter po izdelanih kriterijih ocenijo nalogo in predstavitev. Način dela nam je omogočal razvijanje transverzalnih veščin, kot so argumentiranje, delo z viri, digitalna pismenost, raziskovanje v znanosti in sodelovanje ter komuniciranje. V veliko pomoč pri tem nam je oblak, ki učitelju in učencu nudi primerno okolje za spremljavo pouka in zbiranje dokazov. V oblaku je več programov, s katerimi lahko ustvarjamo in tudi shranjujemo naše delo. Je tudi prostor za izmenjavo mnenj in spletni zvezek je na voljo vsem doma in v šoli. Učenec ima podroben pregled dogajanja pri pouku in domačem delu. Zvezek pa tudi omogoča, da določene vsebine niso vidne vsem.

Abstract: New times, new requirements of teaching children that will give them useful skills. Students become responsible for your own knowledge. Sami ability to plan your work, to set goals and evaluate them. They are able to critically evaluate the work and also give constructive criticism. In mathematics we Volume One note has become a tool to monitor how effective the steps of formative assessment. In the booklet written all the steps of my learning, knowledge, goals and criteria, strategies, evidence of self-evaluation and goals achieved. Students identify knowledge, evidence and accompanied by a photograph of the notebook (one note). Students themselves set goals and criteria for the subjects dealt with, jar it serves as a basis to draw doubles task, which subsequently rescued classmates. Then consider the task according to the criteria and make a return in writing information on the knowledge classmates. Also, students comment on how the arrest was made.

The applicability of knowledge show the drafting of an online survey. According to the collected responses the students analyzed the answers written findings and develop a seminar paper. Two students were tested in the research project. Pupils prepare a presentation. Classmates that comment and evaluate the defined criteria for the task, and presentation. Way of working allows us to develop transversal skills when reasoning, work with sources, digital literacy and research in science and collaboration and communication. In a lot of help with this we have in the cloud, the teacher and the student provides a suitable environment for monitoring teaching and gathering evidence. The cloud is a number of programs with which we can create and store our work. It is also a space for exchange and online notebook is available to all at home and at school. Student has a detailed overview of developments in teaching and domestic work. Volume also allows that some content is not visible to everyone in the cloud.

Ali 3D-modeli spodbujajo več idej in boljšo predstavo?

Do 3D models produce more ideas and a better spatial image?

Uroš Ozmec, Osnovna šola Selnica ob Dravi, Osnovna šola Lovrenc na Pohorju

Povzetek: Čim bolj samostojno upravljanje učnega procesa s strani učencev je zagotovo priložnost, da učence spodbujamo k inovativnosti, aktivnemu razmišljanju, reševanju problemov in prevzemanju odgovornosti za lastno delo ter dosežke. Pri pouku tehnike in tehnologije sem v 8. razredu izvajal projektno nalogo, kjer sem vključil notranjo diferenciacijo na več načinov. Učenci so delo izvajali individualno, heterogeno skupinsko in frontalno (skupno 8 ur). Cilji, ki sem si jih zastavil, so bili: 1) uriti ročne spretnosti in digitalne kompetence pri uporabi informacijske tehnologije; 2) pri učencih izboljšati prostorske predstave, razvijati njihovo abstraktno mišljenje in kreativnost; 3) učence navajati na timsko delo in upoštevanje pravil skupinskega dela; 4) primerjati rezultate skupin, ki pri TIT uporabljajo različne metode dela. Učni proces je potekal v več skupinah. Delitev učencev v skupine je bila predhodno opravljena glede na to, kakšne so njihove učne sposobnosti (uspešni in učno manj uspešni). Vsaka skupina je lahko izbirala, s katerim izdelkom se bo ukvarjala: stojalom za sol in poper ali držalom za namizne prtičke (oboje iz kovine). Skupine so se prav tako samostojno odločile, ali bodo izdelek načrtovale s pomočjo programa Google Sketchup (programa za 3D-modeliranje) ali po klasični metodi. Vse skupine so nato s projekcijo predstavile svojo idejo za izdelek in utemeljile svoje odločitve. Učenci preostalih skupin so s točkami ovrednotili predstavljeno in dodali svoje komentarje. Ideja z največ točkami je bila izbrana za konkretno izdelavo. Po izbrani ideji so vsi skupaj naredili še seznam predlogov za izboljšavo izdelka. Notranja diferenciacija je bila tudi v tem, da so skupine lahko izbirale med navodili za izdelavo izdelka (navodila A: bolj preprosta, natančna in navodila B: zahtevnejša, z vključeno metodo reševanja problemov). Po izvedenem projektnem delu sem ugotovil, da so skupine boljših učencev izbrale računalniški program, zahtevnejša navodila in da so res dobro opravile vse zadane naloge. Učencem je bila všeč možnost izbire v več korakih učnega procesa, samostojne regulacije izvajanja nalog in skupinsko vrednotenje pri predstavitvah. Učno šibkejši učenci pa so imeli nekaj težav pri izvedbi nalog, smo jih pa v kasnejših urah naučili uporabljati 3D-program.

Abstract: Giving students an opportunity to manage the learning process is certainly a chance to boost their creativity, active thinking, problem solution and taking the responsibility for their own work and achievements. At my 8th class technology (TIT) lessons I have performed a project in which I have incorporated classroom

differentiation in several different ways. The work has been performed individually, in mixed ability groups and using the teacher-centred method (8 lessons altogether). The goals I set were: - to develop handicrafts and digital competence with the use of information technology; - to improve students spatial imagination as well as develop their abstract thinking and creativity; - to get the students used to team work and to follow the rules while working in groups; - to compare the results of the groups which use different work methods at the technology (TIT) lessons. The learning process has been performed in several groups. The students have been put in different groups according to their learning abilities. Every group have had an opportunity to choose a product they would make: a salt and pepper holder or a napkin holder (both made of metal). The groups have also decided on how to design the product – by using Google Sketchup programme (3D modeling software) or by doing a drawing. All groups have then visually presented their idea and justified their decisions. The members of the other groups have marked the presentation using the point evaluation method as well as adding their comments. The idea with the most points has been chosen for production. The internal differentiation has been implemented by two different levels of instructions (instructions A – simpler and more accurate; instructions B – more demanding, including problem solving method). After the project realisation I found out that groups of stronger students had chosen the computer programme, the demanding instructions and that they had carried out all the tasks well. The students liked the fact they had been given the possibility to choose at several steps of the learning process, to regulate their task execution and to evaluate presentations in groups. The weaker students encountered some problems with the task execution yet they have later on learned how to use a 3D computer programme.

Si upamo? Jim zaupamo?

Do we dare? Do we trust them?

Nataša Jeras, Osnovna šola Šmartno pod Šmarno goro, Ljubljana Šmartno

Povzetek: Si upamo prepustiti učenje učencem? Otroci so po naravi radovedni. Zanima jih veliko stvari. To njihovo radovednost moramo v šoli izkoristiti. V svoje poučevanje pogosto vpeljujem različne novosti z namenom, da se učenci naučijo čim več. Kadar vzpostavimo okolje, ko so visoko motivirani, je rezultat zagotovo boljši. Učenci so bolj motivirani, kadar so lahko aktivni. Veliko nam pri tem lahko pomaga sodobna tehnologija. Vloga učitelja je pri teh dejavnostih zelo pomembna. Na ure, kjer prepustimo, da učenci na različne načine samostojno pridejo do znanja, se je treba skrbno pripraviti. Učencem je treba dati jasna navodila, treba jih je spremljati, jim po potrebi priskočiti na pomoč, jih usmerjati k cilju, ki ga želimo doseči. Hkrati pa moramo paziti, da jim ne vsiljujemo svojih poti, ampak spodbujamo, da iščejo svoje. V letošnjem letu sem četrtošolcem večkrat omogočila, da so sami na različne načine raziskovali, izdelovali, ustvarjali in pridobivali znanje. Pri skoraj vseh dejavnostih smo na različne načine vključevali sodobno tehnologijo. Pri naravoslovju in tehniki so samostojno predelali poglavje V naravi opazujemo pojave. Razdeljeni so bili v skupine in so prejeli vprašanja, na katera so poskušali odgovoriti v prihodnjih urah. Njihova glavna naloga je bila, da med učenjem razmišljajo, kako bodo svoje znanje predstavili sošolcem. Informacije so iskali v učbenikih, knjigah iz knjižnice, v e-učbeniku, na spletu. Izdelali so predstavitve, plakate, makete, s tablico posneli razlago. Podobno nalogo so dobili pri glasbi, le da je pri glasbi vsaka skupina dobila drugo temo, torej je bilo še bolj pomembno, kako so to na koncu predstavili sošolcem, saj je bil naš cilj, da na koncu vsi spoznajo vse teme (rondo, kanon, opera ...). Na koncu leta so si pri naravoslovju izbrali temo, ki jim je bila to leto posebej zanimiva. Samostojno so izdelovali predstavitve, kvize, pripravljali poskuse. Pri matematiki so se preizkusili v izdelovanju učnih listov za sošolce, pri slovenščini v sestavljanju in narekovanju narekov. Kadar koli preložimo odgovornost za učenje na učence, je rezultat veliko boljši. Ko začutijo, da jim zaupamo, da bodo delo dobro opravili, se še bolj potrudijo in včasih so rezultati res presenetljivi. Torej upajmo si in jim zaupajmo.

Abstract: Do we dare let the learner take the ownership of their leaning? Children are curious by nature. They are interested in so many things. We need to make use of their curiosity in school as well.

I often introduce various kinds of novelties in my teaching, to encourage students to learn. When we create the environment in which students are motivated, the effects of their learning are much greater. Students are more motivated when they are active. The technology plays an important role in that. The role of the teacher in such

activities is very important. He/she needs to prepare carefully when students are encouraged to search new knowledge autonomously. They need clear instructions, monitoring, support if they need it; we need to lead them towards the goal of the planned activity. Simultaneously, we should not impose our will but rather let them find their own ways of reaching the goal.

This school year, I designed activities for my fourth-year students to encourage them to explore, design, create and acquire knowledge in various ways. We included the use of technology in all activities.

In Science and technology students worked autonomously on a new chapter. They worked in groups and focused on questions which they researched in a certain period of time. Their task was during the research was also how to share new knowledge with the rest of the students from different groups. They search for information in student books, the library, interactive student books, on the web. They designed presentations, posters, models, video. Similar activities were done for Music; groups were assigned different topics which they had to present to each other at the end (rondo, canon, opera ...). At the end of the school year, they selected topics for Science which they found most interesting. They designed presentations, quizzes and experiments for it. In Maths classes they designed work sheets for classmates, and in Slovene classes they designed dictations themselves.

My conclusion is that students achieve much better results when they take ownership for learning themselves. When they feel we trust them to perform the task on their own, they make their best and many times to our great surprise. So – let's be daring and trust our students!

Shakespeare malo drugače

A different Shakspeare

Mojca Filipčič, Ginnasio Antonio Sema, Piran

Povzetek: V prispevku predstavljamo interpretacijo Shakespearjevih sonetov (natančneje Soneta 130) nekoliko drugače – s pomočjo tehnike stop-motion. Letos obeležujemo 400 obletnico smrti tega izjemnega dramatika in pesnika, poleg tega je omenjeni sonet na seznamu umetnostnih besedil pri splošni maturi iz angleščine na višji ravni. Dijaki dobro poznajo tehnologijo, vsakodnevno jo uporabljajo v prostem času, manj pa za učenje. S projektom smo jih želeli vzpodbuditi, da raziščejo možnosti, ki jih ponuja tehnologija, samostojno poiščejo informacije na spletu, jih uporabijo za oblikovanje lastne interpretacije in tako izrazijo svojo kreativnost. Ker so na projektu delali v skupinah, je bil namen še razvijanje pripravljenosti za skupinsko delo s ciljem skozi »premikajoče se« papirnate figurice v tehniki stop-motion poustvariti znani sonet. Vizualno interpretacijo soneta smo si zastavili kot kombinacijo frontalnega in skupinskega dela v razredu, nadgrajeno s samostojnim in skupinskim delom v prostem času, kjer so pobudo in odgovornost za učenje v celoti prevzeli dijaki. V uvodnem predavanju smo z možgansko nevihto z dijaki na kratko povzeli znanje o avtorju in zgodovinskem obdobju. V nadaljevanju je posamezni dijak s pomočjo spletnih virov odgovoril na sklop vprašanj o avtorju in obdobju (webquest) in svoje izsledke predstavil razredu. V skupinah so izbrali sonet za interpretacijo, pri kateri so si pomagali z informacijami na spletu. Sledila je predstavitev tehnike stop-motion. Osrednji del projekta je obsegal izdelavo natančnega scenarija, kjer so dijaki pri posameznemu verzu navedli, katere sličice morajo narisati in izrezati za posamezni kader (verz), ter opisali njihove premike. Ker so morali premikanje sličic uskladiti s časovnim intervalom govorjenega besedila (posameznega verza), so predhodno posneli besedilo soneta. Sledilo je fotografiranje kadrov in v zaključni fazi še pretvorba fotografij v obliko filma v tehniki stop-motion s podnapisi. Tovrstni pristop k interpretaciji umetnostnega besedila se je kljub določenim omejitvam brezplačnih programov izkazal za uspešnega, od dijakov je zahteval samostojnost, upoštevanje časovnih omejitev in omejitev tehnologije. Omogočal je izražanje lastnih idej in kreativnosti v povezavi z interpretacijo dela. Čeprav je nadzor nad posameznimi fazami projekta s strani učitelja manjši, je projekt z dobrim načrtovanjem (in poročanjem) moč v celoti izvesti ne samo s kombiniranim pristopom, ampak tudi izključno »online«.

Abstract: The paper presents an alternative approach to interpretation of Shakespeare sonnets (specifically Sonnet 130)through stop-motion technique. This year marks the 400 anniversary of the death of this exceptional playwright and poet, moreover, the sonnet is on the list of texts students have to interpret when

taking their A-levels in English. Students master new technology quickly, they use it extensively in their free time, however, less when learning. The project aims to encourage students to explore the possibilities that technology offers, seek information on the web, use it to create their own interpretation, and express their creativity. As the students work on the project in groups, the purpose is for them to get used to the concept of team work and use paper figurines in stop-motion technique to recreate the famous sonnet. This visual interpretation of the sonnet is set as a combination of frontal and group work in the classroom, followed by individual and group work in students' spare time, where the responsibility for learning in entirely left to the students. The introductory lesson is a braistorming activity on the author and historical period. Each student has to answer a set of questions about the author and period (webquest) using online resources. The findings are presented in class. Students in groups choose to interpret the sonnet by the help of information on the web. This is followed by the presentation of the »stop-motion« technique. The central part of the project consists of making precise scenario, where students in each verse, indicate actions and cut-out figurines needed in each scene. Because students need to have the movements of the figurines synchronised with the speech (each verse), the text of the sonnet is previously recorded. Finally photo-shooting takes place with the final phase, i.e. the conversion of photos into movie format in the »stop-motion« technique with subtitles. Such an approach to the interpretation of literary texts, has, despite certain restrictions when using free programs, proved successful. It demands independence, compliance with time limits and technology limitations from the part of students. On the other hand it enables the expression of students'own ideas and creativity in relation to the interpretation of the work. Although the control over the individual phases of the project is indeed smaller when compared to a traditional classroom, the project can be fully implemented not only into a blended learning classroom but into an online classroom as well.

Od nerodnih stopinj do prvih korakov v svet različnih veščin pri pouku zgodovine

From awkward footprints to first steps into the world of different transversal skills at History

Špela Frantar, Gimnazija Bežigrad, Ljubljana

Povzetek: V letošnjem šolskem letu sem vpeljevala inovativni način poučevanja s pomočjo formativnega spremljanja transverzalnih veščin pri pouku zgodovine. Formativno spremljanje dijakovega dela je pomemben proces v šolski praksi, ki učitelju omogoča prepoznati dijakov napredek s pomočjo eListovnika, formativno spremljati izbrane transverzalne veščine, še zlasti dela z zgodovinskimi viri, ponuja pa tudi smernice za kakovostnejši pouk. Razvojni e-listovnik je elektronsko orodje, ki nam v razdelku Moje učenje omogoča načrtovanje, spremljanje in vrednotenje dijakovega dela in učenja. Načrtovanje dijakovega dela poteka v korakih: od prepoznavanja in aktiviranja predznanja prek oblikovanja učnih ciljev in strategij ter skupnih kriterijev uspeha do predpostavljanja učne strategije, zbiranja dokazov in samorefleksije. Predstavila bom primer dobre prakse, in sicer uporabo eListovnika na dveh učnih sklopih (Združitev Italije ter Kolonializem in imperializem). Na podlagi konkretnega učnega sklopa bom predstavila svojo izkušnjo dela z Maharo od popolnih začetkov do nadgradnje v poskusnem uvajanju veščin dela z viri ter digitalnih kompetenc, ki sem jih z dijaki razvijala pri obravnavi učne teme. Pri prvem učnem sklopu sem se osredotočala na pomen skupinskega dela in pravila dobrega sodelovanja in komuniciranja, tvorjenje kakovostnih vprašanj na podlagi dela z različnimi zgodovinskimi viri, načrtovanje procesa in pomen Bloomove taksonomije pri oblikovanju učnega lista. S pomočjo povratne informacije oziroma kritičnega prijateljevanja so dijaki svoje izdelke nadgrajevali in tako usvajali novo učno snov. Pri drugem učnem sklopu pa sem pozornost dijakov preusmerila na individualno delo z zgodovinskimi viri s pomočjo IKT. V skladu z elementi formativnega spremljanja so morali oblikovati učne cilje in kriterije uspešnosti ter načrtovali strategije, s katerimi bodo zastavljene vsebinske in veščinske cilje tudi dosegali. Znova sta bila v ospredju kritično prijateljevanje in pomembnost dobre povratne informacije, ki je morala biti podana v skladu z vnaprej opredeljenimi kriteriji. S tem so dijaki lahko svoje znanje in veščino izpopolnjevali, prav tako pa skozi celoten proces razvijali digitalne kompetence, ki so ključne za razvoj digitalne pismenosti. Z načinom dela so bili zadovoljni, pojavljale so se sicer določene pomanjkljivosti in opažene so bile nekatere slabosti, a ključno za njih je bilo spoznanje, da prevzemajo odgovornost za svoje učenje.

Abstract: Throughout the school year, I have been introducing a new way of teaching with applying formative assessment and transversal skills into the history lessons. Formative assessment of student's work is an important process in school practice, which allows teacher to recognize students effort, in this case with the help of ePortfolio in Mahara on one hand, and on the other formative assessment of chosen transversal skill, especially working with sources; therefore, it sets down the development guidelines for more quality classes. Mahara ePortfolio System is a web application, which allows us to create its own learning process through prior knowledge, setting goals and strategies to collecting evidence of work and at the end self-evaluation of learning process. A good practice will be introduced on two unit planners that were covered in third year of high school education. The first one is Unification of Italy and the second Colonialism and Imperialism. Through the historical content, a new experience was presented to students – from the start, where the students have been informed about their work and the first difficulties appeared, until the upgrade of transversal skills, digital competence and students learning practice. At the beginning of the project, students learnt more about the group work, the rules of proper communication and collaboration and the meaning of Bloom taxonomy when forming good question and working sheets. With the help of peer assessment students managed to improve their work and assimilate new knowledge. Later one the focus shift on individual work with the help of different historical sources and information literacy and digital skills. Students had to according to five elements of formative assessment, develop their content and process aims. Students were satisfied with the new teaching approach, however, the project itself with all objectives pointed out some imperfections, but the most important was for students finding a responsibility for their own teaching process.

Obravnava domačega branja s pomočjo kompleta Lego Story Starter in programa Story Visualizer

Home reading through the Story Starter Lego Kit and Story Visualizer computer programme

Polona Miklavc, Osnovna šola Vransko, Tabor

Povzetek: Učitelji slovenščine se vedno znova srečujemo z vprašanjem, kako učence motivirati za branje literarnih besedil, za razmišljanje in pisanje o prebranem ter jih navdušiti za ustvarjanje lastnih zgodb. Ker predstavlja domače branje (in njegova obravnava v razredu) pogosto problem, saj učenci neradi berejo, sem se odločila, da bom v 6. in 7. razredu besedilo domačega branja obravnavala s pomočjo kompleta Lego Story Starter in tako odgovornost za učenje predala tudi v njihove roke. Učenci so kot vedno dobili naslov knjige, ki so jo morali v dogovorjenem času prebrati za domače branje, nato smo prebrano besedilo obravnavali pri pouku, a drugače kot po navadi. Učenci so prebrano zgodbo obnovili z uporabo Lego kock, mini figuric in manjših elementov, ki so jih postavili na osnovne plošče, od katerih je vsaka predstavljala del zgodbe. Tako je vsak učenec predstavil del zgodbe, na koncu pa so jo sestavili v celoto. Ko so zgodbo sestavili in jo tudi predstavili, so s pomočjo programa Story Visualizer ustvarili strip. Omenjeni program omogoča tudi oblikovanje knjige ali časopisnega članka. S pametnimi telefoni so posneli slikovno gradivo za oblikovanje zgodbe in ga izvozili v računalniški program. S pomočjo različnih predlog v programu so nato združili slike in vnešena besedila ter tako izvirno predstavili in izmenjali zgodbo. Glavni cilj, ki sem ga želela doseči, je bil, da učence motiviram za branje in obravnavo literarnih besedil. Poleg tega sem želela doseči, da si skozi izkustveno učenje hitreje zapomnijo potek zgodbe in da s pomočjo njim zanimivih orodij analiziramo celotno literarno besedilo. Da pa niso razmišljali samo o prebranem, ampak prebudili tudi svojo domišljijo in ustvarjalnost, sem se odločila, da obravnavo sklenemo s poustvarjanjem s pomočjo programa Lego Story Visualizer. Dodana vrednost kompleta Lego Story Starter je, da učencem omogoča razvijanje pripovedovalskih sposobnosti, spoznavanje idej in konceptov zgodbe, razvijanje vizualizacije in jezika, hitrejše in učinkovitejše pomnjenje zgodbe, izboljšanje bralnega razumevanja, sodelovanje v skupini in vključevanje tehnologije v proces učenja.

Abstract: Teachers of Slovenian language always face the question of how to motivate their students to read literary texts, to think and write about what they have read and how to inspire them to create their own stories. As home reading (checking the comprehension of the texts read at home in the class) is often a problem because students are reluctant to read, I decided to deal with the problem (in the 6th and 7th class) using a Story Starter Lego Kit and to hand the responsibility for learning

over into their own hands. Students got the title of the book to be read in the agreed time for home reading as usual. Then we discussed the text which was read in the classroom, but in a slightly different way than usual. Pupils had to summarize the story using Lego cubes and minor pieces, which were put on the base plate. Each of the plates represented a part of the story. Thus, each student presented a part of the story and in the end when they put the plates together there was a whole story presented. When the story was put together and well presented, they also created a comic with the help of a Story Visualizer computer programme. This programme also allows the creation of books or newspaper articles. Students recorded visuals to create stories using their smartphones and exported the recorded items to a computer programme. With the help of different templates in the programme they combined the images and entered texts. That was an original way to present and to share the story. The main goal I wanted to achieve was to motivate students to read literary texts. Moreover, I wanted to make students - through experiential learning - remember the course of the story easily, and analyse the entire literary text with the help of tools and IT which are close to them. I also decided to conclude the comprehension by recreating the story through the Story Visualizer computer programme so that pupils would not just think about what they had read but also to awake their imagination and creativity. The added value of the Story Starter Lego Kit is that it allows pupils and students to develop their narrative skills, learn about ideas and concepts of different stories, it helps develop their visualization and language skills, helps them memorize the stories faster and more efficiently, improve reading comprehension, encourage participation in the group and allows the integration of technology into the learning process.

Okrogla miza pri pouku slovenščine – kako dijaki (so)ustvarjajo, (so)vodijo in (so)vrednotijo učne vsebine v učnem procesu

Round table at the slovenian language class – how students (co)-create, (co-)run and (co-)assess class content in a teaching process

Mojca Kolenik, Gimnazija Jožeta Plečnika Ljubljana, Ljubljana

Povzetek: Besedilna vrsta okrogla miza – dvogovorno besedilo je učna vsebina, ki omogoča vključevanje inovativnih pristopov poučevanja v učni proces slovenščine. Namen in izvedba projektnega scenarija sta izražena v ključnih ciljih projektnega sodelovalnega dela: dijake usposobiti in pripraviti na samostojno učenje in delo zunaj šole, kjer ni vse organizirano pod vodstvom učitelja (dijaki za načrtovanje pouka uporabljajo dokumente v oblaku); dijake naučiti sodelovati z drugimi, naključno izbranimi v skupino za okroglo mizo (prek Skypa), in uporabljati IKT-orodja kot del učnega procesa, pri čemer razvijajo digitalno kompetenco in uporabo orodja za učenje in nadaljnje delo. Izvedbi sta sledili samoevalvacija (dnevnik dela na spletu) in refleksija dela. Učni proces je potekal po predlogi učnega scenarija za projektno sodelovalno delo, ki je bil pripravljen in izpeljan po korakih: idejna zasnova, raziskovanje, načrtovanje, ustvarjanje, poizvedovanje, izboljšava in predstavitev. Dijaki so bili vključeni v vse korake projektnega sodelovalnega dela. Aktivna vključenost dijakov v posamezne korake (zlasti načrtovanje, izvajanje, samoevalvacija) učnega procesa učitelju omogoča več možnosti za formativno spremljanje njihovega dela in za pogosto dajanje povratnih informacij o opravljenem delu.

Abstract: Word class round table – dialogic text as part of class content enables inclusivity of innovative approaches of education in teaching processes of the Slovenian language. The purpose and the execution of the project scenario are expressed in the key objectives of the project collaborative work, which is to qualify and prepare students for independent studying and work outside of the school, where the organisation is not handled by the teacher (students use documents in the Cloud for planning); to prepare students for collaborative work inside a work group formation (using Skype) and to introduce the use of IC Ttools as part of the teaching process, which leads to students developing their digital competence and the skills to use the presented tools for studying and accompanying work. The execution was followed by self-evalvation (kept in an online work journal) and contemplation upon the completed work. The teaching process ran upon the directions of the teaching scenario for project collaborative work, which was prepared and completed on

the base of the Creative Classroom project, which our secondary school was part of. The base consisted of the following acts: dream, explore, map, make, ask, re-make and show. Students were included in every part of it. Their active participation and inclusion into individual parts (especially mapping, execution and self-evalvation) of the teaching process allowed the teacher to have more options regarding the formal monitoring of students work and was useful for giving regular feedback.

Učenje učencem v roke

Learning students in hands

Erika Rejec, Osnovna šola Muta, Muta

Povzetek: Prispevek sem uvrstila v sklop Učenje učencem v roke zato, da bi pokazala, kako lahko učenci prek športne aktivnosti in novih spletnih orodij NearPod utrjujejo predelano snov pri slovenščini (glagol, časovne oblike (sedanjik, preteklik, prihodnjik), osebo, število, izdelava miselnega vzorca ali zapis dispozicijskih točk) in se učijo nove (opis športne dejavnosti – poligon), ne da bi se tega zavedali. To je bil uvod v obravnavo novega sklopa: Smučanje – smučanje ni samo šport, ampak tudi zabava. Učenci so bili obe uri zelo aktivni. Premagovali so poligon in se trudili čim prej sestaviti stavke, povezane s športom. Skupine so celo tekmovale, kdo bo prej opravil nalogo. Ko sem naslednjo uro pouk nadaljevala v računalniški učilnici, so bili nad delom navdušeni, saj so spoznali novo spletno orodje NearPod in prek »za njih igre« utrjevali predelano snov. Po uri so mi rekli, da je bilo odlično in da si želijo še več takih ur. Sposobnost učencev za samostojno delo in učenje je po mojem mnenju ključnega pomena za njihov napredek. Seveda se to ne zgodi od danes na jutri, ampak gre za dolgotrajen proces, ki ga moramo učitelji nenehno negovati in ga poglabljati. Učiteljevo delo ni omejeno samo na prenašanje in podajanje nekih podatkov, ampak je tudi sposobnost aktivirati učence za sprejemanje znanja na nekonvencionalen način zunaj klasičnega razreda. Če učitelj želi biti uspešen, mora imeti najrazličnejše sposobnosti, ne samo pedagoške, ampak tudi občečloveške. Mora se znati približati učencem, jih poslušati in jih pripraviti na samostojnost, da bodo sami izrazili željo po novem znanju in pri tem uporabljali nove tehnologije ter programe. Še posebej je dobrodošlo delo z IKT, saj je učencem blizu in so pri delu spretni in inovativni. Pomemno je, da si tudi starejši učitelji zaupamo, da se lahko približamo otrokom na njihov način. Le takšno delo je danes lahko uspešno.

Abstract: Contribution I placed it in the assembly: Learning student hands in order to show how students through sports and new online tools NearPod consolidate the recovered substance in Slovenian (verb, time form (present tense, past tense, future tense), the person, number, production mental attitude or disposition record points) and learn new (description sports - ground), without realizing it. This was the prelude to deal with a new set: Skiing - skiing is not just sport, but also fun. Students have two hours of very active. Overcoming site and are trying as soon as possible to draw up a strike linked to sport. Groups even compete who will soon carry out a task. When I resumed the next hour classes in the computer lab, students were enthusiastic about the work, because they can see the new online tool, and through »for them to play« consolidate the recovered substance. Pupils me after class to say that it was great and they want more of such hours. Keywords: cross-curricular

integration, sports activities, verb, a description of the sport, mindset / text NearPod. The ability of pupils to work independently and learning in my opinion, the key to the pupils progress . Of course, this does not happen overnight , but it is a lengthy process that we have teachers constantly nurtured and deepened . The teachers work is not limited to the transfer and expression of some data , but also has the ability to activate learners to adopt knowledge in an unconventional way beyond the classic class . If a teacher wants to be successful, it must have a wide range of skills , not only teaching , but also the general human . Must be able to approach the students listen to them and prepare them for independence to be themselves they expressed a desire for new knowledge and the use of new technologies and programs . Especially welcome is the work of the ICT technology as students are close and work proficient and innovative. Important is that older teachers are trusted to be closer to children on their way . Only such work today can be successful.

Primerjava izdelave G-kode z ročnim programiranjem in s programsko opremo

Comparison of manufacturing G codes with manual programming and with software

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Povzetek: Prispevek predstavi primerjavo ročnega programiranja CNC-obdelovalnih strojev in programiranja z uporabo namenskih programskih paketov. Predstavi tudi uporabo programskega paketa za predstavitev izdelave izdelka z rezkanjem. Cilj je torej predstaviti možnosti, ki jih nudi sodobna programska oprema. Učni proces poteka po korakih: modeliranje primernega izdelka za rezkanje, ročno programiranje G-kode, kontrola napisanega s programsko opremo, kontrola izdelave rezkanja s programsko opremo. Dijaki lahko v programu strojni tehnik s to programsko opremo takoj preverijo, ali so napisali ustrezen program za krmiljenje ali ne. Tako lahko tudi najdejo svoje napake in jih poskusijo odpraviti. Delo se odvija veliko hitreje kot brez take programske opreme. Motiviranost dijakov je večja, ker se lahko sami nadzorujejo in poiščejo napake. Vse to predstavlja dodatno didaktično vrednost.

Abstract: The article presents a comparison of manual programming CNC machine tools and programming through the use of dedicated software packages. Introduce the use of presentation software package for the manufacturing of the product by milling. The aim is therefore to present the possibilities offered by modern software. The learning process takes place step by step: modeling product suitable for milling, G code programming manual, G code programming with control software, control manufacturing milling software. Students in the program mechanical technician can use this software for immediately verify whether the write appropriate program for the control or not. In this way, they can also find their mistakes and try to eliminate them. The work takes place much faster than without such software. Motivation of students is greater, because they can control himself and find errors. All of this is additional didactic value.

Obravnava slikanice pri pouku književnosti z uporabo informacijsko-komunikacijske tehnologije

Consideration of picture books for teaching literature with the use of information and communication technology

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Povzetek: Sodobni pouk književnosti temelji na obravnavi literarnih besedil po metodičnem sistemu faz šolske interpretacije, po kateri naj bi obravnavali tudi integralna besedila in učencem omogočili hkratno recepcijo vizualnega in besedilnega dela. Kordigel Aberšek (2008) pravi, da to naredimo tako, da vsem zagotovimo dostop do slikovnega dela, sočasno zagotovimo zaznavanje besedilnega in slikovnega dela slikanice ter da otrokovo zmožnost recepcije slikanice razvijamo najprej z recepcijo besedilnega dela, nato z recepcijo likovnega dela, nato pa še z recepcijo besedilnih in likovnih signalov. Ker v šoli vsem učencem ne moremo priskrbeti svojega izvoda slikanice, učitelji pogosto beremo slikanice tako, da učenci natrpano sedijo v krogu, učitelj pa bere književno besedilo in kaže ilustracije v slikanici. Tako se učenci ves čas borijo za ugodno poslušalsko, še bolj pa za dobro gledalsko pozicijo, recepcija književnega besedila pa je tako ves čas motena. Recepcijo slikanice lahko izboljšamo tako, da ilustracije ob branju književnega besedila predvajamo prek projektorja na platno, učne dejavnosti pa v več fazah šolske interpretacije v skladu z odprtim učenjem popestrimo z uporabo IKT-orodij, kot so JQUIZ, JMATHC, JCLOSE, JMIX, JCROSS idr. V uvodni motivaciji tako učence animiramo z uporabo različnih senzoričnih aktivnosti, kot je npr. zanimiv odlomek obravnavanega dela v obliki radijske igre ali filma. V fazi interpretacije mladinskega literarnega dela prek različnih nalog, narejenih z IKT-orodji, preverjamo razumevanje besedila, usvajanje in razlago novih besed in osebni odziv na prebrano literarno besedilo. V tej fazi izvedemo različne vaje odprtega učenja, ki omogočajo individualno sodelovanje vseh učencev. Z razdelitvijo v manjše skupine jih prisilimo, da aktivno razmišljajo in poglabljajo literarnoestetsko doživetje ter stopnjujejo svojo pozornost in osredotočenost na slikanico. Otrokova recepcija besedila se z aktivno udeležbo v procesu izobraževanja bistveno izboljša. Z različnimi animacijskimi vložki in uporabo IKT pridobivamo učenčevo pozornost v vseh fazah šolske interpretacije in dosežemo poglobljeno razmišljanje. V primerjavi s klasičnim poukom je poučevanje z IKT oplemeniteno, recepcija književnih besedil je boljša, uresničevanje ciljev iz Učnega načrta za slovenščino (2011) pa bolje doseženo.

Abstract: Modern literature teaching is based on the interpretation of literary texts by methodical system of school interpretation phases. The same principle should be applied when teaching integral texts - allowing pupils to perform simultaneous reception of visual and textual work. Kordigel Aberšek (2008) states, that we can achieve that by assuring everyone has access to the pictorial work while listening to the literary text. Children's ability to reception should be further developed by reception of pictorial and literary work as well as with reception of text and art signals. Since the school does not provide enough copies of picture books for all pupils, teachers often read picture books in a way that all pupils sit in a crowded circle around teacher and the teacher is reading a literary text and showing illustrations from a picture book. In this way, the pupils are all the time fighting for a favourable position in order to listen and see the picture book. The reception of the literature is most of the time disturbed. Reception of the picture book can be improved by projecting pictorial work using ICT while reading the text out loud. Furthermore, other teaching activities involved in school interpretation phases can be liven up with the use of ICT tools such as JQuiz, JMATHC, JCLOSE, JMIX, JCross and others. In the introductory motivation pupils are animated by use of a variety of sensory activities, such as interesting excerpt of the work in the form of a radio play or a film. At the stage of interpretation of the youth literary work a variety of exercises made by ICT tools are used in order to check the understanding of the text, the acquisition and interpretation of new words and personal response to read literary text. Exercises are focused on open learning techniques, which allow individual participation of each pupil. Splitting them into smaller groups to forces them to actively think and deepen literary aesthetic experience and escalate their attention and focus in a picture book. The childs reception of the text significantly improves with his active participation in the educational process. With various entertaining inputs and the use of ICT we are strengthening pupil's attention in all phases of school interpretation and achieving deeper thinking. In comparison with the conventional teaching is the teaching with ICT enriched, allows stronger reception of literary texts and leads to better performance in achieving of the Slovene curriculum objectives (Učni načrt za slovenščino, 2011).

Pozabljene igre

Forgotten games

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Povzetek: Cilj eTwinning projekta Pozabljene igre je bil vrniti stare igre v otroški vsakdan in prek njih spodbuditi realno komunikacijo, ki se je z uvedbo IKT postavila na stranski tir. Otroci so se v projektu starih iger naučili prek izdelanih avtorskih videovodnikov in pripravljenih pravil, ki so jih objavili v spletni učilnici projekta. Z učenjem iger drugih držav so spoznali njihovo različnost, spoznavali so njihov jezik, prek iger pa so se učili tudi strpnosti in medsebojnega sodelovanja. Prek projekta smo najprej spoznali igre svoje države. Učenci so izhajali iz ustnega izročila svojih sorodnikov. Pomagali smo si z informacijami na svetovnem spletu. Izdelali smo pripomočke za igre. V šoli smo se najprej naučili igrati igre. Sledilo je sestavljanje pravil z uporabo dokumentov v oblaku. Nato smo posneli videovodnike z razpoložljivo opremo za snemanje (fotoaparate, kamere, tablice). Posnetke smo obdelali in objavili na YouTubu in v spletni učilnici projekta. Čas, ki je bil namenjen dejavnostim projekta, je bil vedno razdeljen v tri dele. Najprej sta bila na vrsti ogled in učenje navodil. Sledila je igra na prostem. Delo se je vedno zaključilo s posnetkom igre in objavo te povratne informacije v spletni učilnici. Dodana vrednost projekta so prek različnih kanalov posredovane informacije. Izdelani videovodniki so še dodatno podprli pisna navodila za igro. Večkrat smo izdelali tudi različne izpeljanke iger in jih delili z drugimi prek videoposnetkov.

Abstract: The goal of the eTwinning project entitled Forgotten games is to return forgotten games into childrens everyday lives and thus to encourage a genuine communication, which has been kept in the background due to the introduction of the modern Information and communications technology. During the project, the children learned how to play old games by authorial video guides and prepared rules, published in the projects virtual classroom. By learning games from other countries, the children learned about countries diversities and expanded their vocabulary. While playing, they were also getting to know the importance of tolerance and cooperation with each other. At first, they learned the games of our own country. The children played games on the basis of the oral tradition of their relatives and the information on the internet. We made utensils for the games and at school we learned how to play the games in practice. Afterwards we prepared rules using documents in a cloud. Then we recorded video guides with the disposable shooting equipment (cameras, tablets). The video shots were processed and published on YouTube and in the projects virtual classroom. The time spent for the projects activities consisted of three parts. The first was to take a look at instructions and learn them, followed by the game in the open air, concluded with a video shot of the game

and publication of this feedback in the virtual classroom. The added value of the project is information transmitted through various channels. The shot video guides additionally supported the written game instructions. Several times we invented various game realizations and shared them with others through video shots.

»MEDIENKOFFER« etwinning projekt v osnovni šoli

»MEDIENKOFFER« etwinning project at primary school

Brigita Barbarič, Osnovna šola Kuzma, Kuzma

Povzetek: Glavni cilji in namen je sodelovanje in krepitev mednarodnega dialoga v evropskih dimenzijah in v prihodnost usmerjena edukacija. E-twinnerji so namenjeni temu, da s svojimi idejami in izdelki senzibilizirajo vse sodelujoče za miroljubno reševanje konfliktov in dogovorov. Za sodelovanje smo se odločili z namenom krepiti in izboljšati vse kompetence v procesu učenja nemščine. Jezikovne kompetence: Tako pri bralnem in govornem razumevanju ter pisnem sporočanju kot tudi pri širjenju in krepitvi besedišča in izrazoslovja v tujem jeziku. Socialne kompetence: Z željo po spoznavanju drugih kultur, motivacija za učenje in uporabo tujega jezika v vsakdanjem življenju, sodelovanje in uporaba medijskih orodij, razvijanje samopodobe učencev, sodelovalno učenje, krepitev zmožnosti in znanja za timsko delo, razvijanje odgovornosti do dela in učenja, spoznavanje vrstnikov iz drugih držav. IKT-kompetence: Diapredstavitve, videokonference, delovanje v različnih spletnih okoljih in uporaba različnih kreativnih računalniških programov, socialnega omrežja in klepetanje, spletna komunikacija o vsakdanjih temah. Delovni postopek: V multinacionalnih in medkulturnih skupinah mladi razmišljajo o reševanju konfliktov in sožitju. Delovne skupine sestavljajo učenci različnih starosti od 11 do 16 let iz različnih razredov. Tematski sklopi podpirajo začetno kot tudi nadaljevalno učenje jezika ter se prilagajajo zanimanju in željam učencev. Naloge učencev se medpredmetno povezujejo. Organiziramo klepete, videokonference, spletno dopisovanje, pogovore ipd., forume z namenom spoznavanja drug drugega in pogovarjanja o idejah, aktualnih težavah in dogajanjih v družbi. V projektu skušamo tradicionalne poučevalne in učne vloge zamenjati in učence motivirati za delo in učenje ter deljenje svojih znanj in izmenjavo izkušenj z drugimi učenci, učitelji, tudi s starši (flipped learning) s pomočjo različnih tehnik, metod in instrumentov učenja in sodobnega IKT-znanja. Dosežki: Projektne dejavnosti učence aktivirajo in motivirajo za živo komunikacijo v tujem jeziku, nemščini, ob intenzivni uporabi sodobnih pristopov komunikacijskih orodij in sodobnih učnih okolij na spletu. Pričakovana je medsebojna izmenjava dosežkov, izsledkov, doživetij, mnenj in izdelkov učencev s poudarkom na vseevropskih vrednotah sodobne družbe, kot so drugačnost, pravičnost, mir in pogum. Učenci izpostavljajo probleme in konflikte ter se ukvarjajo z njimi. Pomembna je integracija takih alternativnih in sodobnih oblik in metod učenja jezika v klasični pouk, saj pozitivno vpliva na učenje jezika.

Abstract: Aims: The main aim and purpose is the cooperation and promotion of an international dialogue in European space as forward-looking education. Etwinners intention, ideas and products try to make everyone cooperating sensible

for peaceful solution of conflicts and agreements. We have decided to cooperate with the intention of promotion and improvement of all language skills at learning German as a foreign language. Language skills: We intend to improve reading and speaking skills, as well as writing skills, expanding foreign language vocabulary and terminology. Social skills: We have a wish to learn about other cultures, gain more motivation for learning a foreign language and use it in everyday communication, cooperation and use of media tools, development of self-esteem of pupils, team learning and improvement of knowledge, development of responsible attitude towards learning and getting to know new friends in other countries. ICT competence: Power-point presentation, video conference, working in different web areas and use of various creative computer programmes, social networks and chatting, web talks of current topics. Working process: Young people think of peaceful conflict solving in multicultural and intercultural groups. Working groups consist of pupils aged 11 to 16 from different classes. Topics are adjusted to beginner and advanced learners and also to their interests and wishes. The tasks of pupils contain cross curricular integration. We organize chats, videoconferences, mailing, talks, forums for getting to know each other, exchange ideas, current events in the society. In this project we try to replace the traditional learning roles, motivate pupils for learning and sharing their knowledge with pupils, teachers and parents (flipped learning) with the help of various techniques, methods, learning tools and modern ICT skills. Achievements: Project activities activate and motivate pupils for live communication in German as a foreign language with intensive use of modern communication tool approaches in modern web environment learning. We expect exchange of achievements, trace results, experience, opinion and pupils products. The emphasis should contain European value of modern society such as accepting difference, justice, peace and courage. Pupils highlight problems and conflicts and they deal with them. The integration of such alternative and modern approach, methods and classical learning are important for learning foreign language.

Odprto učenje

Open learning

Učinkoviti učenci zanesljivo niso le pasivni prejemniki znanja, ampak gradijo svoje znanje in veščine skozi interakcije z okoljem, ki je veliko širše kot le razred s sošolci in učiteljem. To lahko poteka le, če zagotavljamo učno okolje, v katerem učilnica in urnik ne ovirata njihovega ustvarjalnega procesa učenja.

V tematskem sklopu Odprto učenje so zato predstavljene izkušnje o tem, kako organizirati učenje brez časovnih in prostorskih omejitev, kako vzpostavljati odprto učno okolje, ki omogoča samostojno učenje, kako načrtovati odgovorno učenje s pomočjo mentorja, vrstnika ali drugega strokovnjaka zunaj šole in kakšna tehnološka okolja so najprimernejša za to.

Način predstavitve: BežiBeži (*pecha kucha*)

Predstavitve strokovnih prispevkov v tem tematskem sklopu so v obliki BežiBeži, za katero je značilno: predstavitev vsebuje natanko 20 slik. Vsaka slika se lahko prikazuje na zaslonu največ 20 sekund. Po 20 sekundah se samodejno pojavi nova slika. Predavateljevo predavanje mora slediti tempu menjavanja slik in prikazani vsebini. To pomeni, da ima vsak predavatelj na voljo: 20 x 20s = 400 sekund časa oz. 6 minut in 40 sekund za predstavitev 20 slik.

Efficient learners are not only passive receivers of knowledge; they also build their knowledge and skills through their interaction with the environment, which is not only a classroom full of schoolmates and a teacher. This can be achieved only when a learning environment is provided, where the classroom and the timetable do not interfere with the creative learning process.

The theme section Open learning thus presents experiences about organizing learning without time and space limitations, establishing open learning environment providing independent learning, planning responsible learning by means of a mentor, a peer or any other professional outside school and about what kind of technological environments are most suitable for this kind of learning.

Presentation form: *PechaKucha*

Presentation form in this section is PechaKucha. It is typical for the PechaKucha presentations that they comprise of exactly 20 slides. Each slide can be shown for no more than 20 seconds. After 20 seconds the next slide is presented automatically. The presenter's speech has to follow the pace of the slides and the contents shown. In short, each speaker has 400 seconds available (20 slides X 20 seconds), i.e. 6 mins and 40 secs.

Ali lahko igrifikacijo uporabimo za doseganje boljših učnih rezultatov

Can you use gamification to drive better learning outcomes

Lawrence Lilley, Head of Solutions Design and Delivery at Dollar Financial Group, The open University, United Kingdom

Povzetek: Igrifikacija je uporaba »igralne mehanike, estetike in igričarskega načina razmišljanja z namenom aktivnega vključevanja ljudi, spodbujanja dejavnosti, promocije učenja in reševanje problemov«.

Večina učnih metod se že poslužuje uporabe t.im. 'jaz' (self) elementov igrifikacije – dosežkov, ocen, časovnih omejitev, itd. Vendar pa je le malo raziskav bilo izvedenih na temo uravnoteženja teh elementov s t.im. 'družbenimi' (social) elementi igrifikacije, t.j. vedenj, kako upravljati in kako uravnotežiti sodobno mobilno tehnologijo. Vse to mora biti zagotovljeno na trajnostni način.

Predstavitev bo raziskala nekaj mehanizmov, ki jih komercialni svet uporablja za spodbujanje določenih vedenj, in razpravljala o tem, kako te mehanizme uporabiti na področju izobraževanja.

Razpravljal bom o tem, da sta hkrati z uporabo igrifikacije v izobraževalnem okolju, dosežek in trajnostnost neposredno povezana z izbranimi tehnikami in tehnologijami. Tehten premislek je potreben pri spremenljivkah kot so izbor vedenja, povratna informacija, časovni okvirji, nagrade in izpeljava.

V zaključnem delu bo predstavitev poskušala raziskati kako se metode igrifikacije in njeni okvirji iz komercialnega svta lahko uporabijo za informiranje in omogočanje boljših učnih dosežkov.

Abstract: Gamification is about leveraging »game-based mechanics, aesthetics and game thinking to engage people, motivate action, promote learning, and solve problems«.

Most education methods already use the *self* elements of gamification - achievements, grades, time restrictions, etc. - however little research has been done in balancing this with so*cial* elements of gamification, behaviours to drive *and* how to leverage modern mobile technology. And all this needs to be provided in a sustainable setting.

This talk will examine some of the mechanisms the commercial world is using to drive behaviours, and discuss how these can be used in an educational setting.

I will argue that whilst gamification could be used in an educational setting, achievement and sustainability are directly associated to the techniques and technologies selected. Careful consideration needs to be taken of variables such as behaviour selection, feedback, timescales, rewards and implementation

In conclusion, this session will explore how gamification methods and frameworks from the commercial world can be used to inform, and enable, more successful learning outcomes.

Značka e-varna šola

E-safety label

Ajda Petek in **Marko Puschner**, Safe.si

Povzetek: Slovenskim šolam želimo pomagati, da še izboljšajo svojo e-varnost in si pridobijo naziv E-varna šola. Evropsko značko E-varna šola lahko z letošnjim letom namreč pridobijo tudi slovenske osnovne in srednje šole. Vseevropski projekt eSafety Label, ki je razvil metodologijo samoocenjevanja e-varnosti za šole, smo v Centru za varnejši internet pripeljali tudi v Slovenijo, portal projekta www.esafetylabel.eu z vsemi gradivi pa je na voljo tudi v slovenskem jeziku.

Značka E-varna šola je storitev Evropskega šolskega omrežja (EUN) za osnovne in srednje šole, ki olajša sledenje smernicam varne uporabe sodobne tehnologije v šolskem prostoru. Šola lahko oceni stanje svoje e-varnosti in pridobi značko E-varna šola, ki izkazuje odličnost na področju uporabe in varnosti sodobne tehnologije, kot so računalniki, tablice, mobilni telefoni in internet.

V 35 evropskih državah, ki sodelujejo v projektu, je bilo 2300 šolam podeljeno že 1170 značk, od tega 1099 bronastih, 59 srebrnih in 12 zlatih.

V sklopu značke E-varna šola deluje spletna stran www.esafetylabel.eu. Na spletni strani so dostopni različni obrazci za ocenjevanje e-varnosti, nasveti za njeno izboljšanje in za ravnanje ob incidentih. Prav tako je mogoče pridobiti nasvete za oblikovanje šolske politike sprejemljive rabe tehnologij in tudi vzorec priporočenega besedila politik, ki ga lahko šola prilagodi lastnim potrebam in nato sprejme kot veljavno politiko zagotavljanja varne in odgovorne rabe tehnologij med učenci in zaposlenimi na svoji šoli. Vsa gradiva, obrazci, nasveti in vzorci so na voljo v slovenskem jeziku.

Vsaka šola, ki želi pridobiti značko E-varna šola, se registrira v Skupnost na spletni strani www.esafetylabel.eu in tam izpolni evalvacijski obrazec, s katerim oceni stanje e-varnosti na svoji šoli, nato pa prejme nasvete za izboljšanje. Ob zadostnem številu točk prejme bronasto značko E-varna šola. Ob izpolnjevanju dodatnih kriterijev bo jeseni mogoče pridobiti tudi srebrno ali zlato značko.

Spletna stran E-varna šola je tudi skupnost, kjer si učitelji iz Slovenije in Evrope lahko izmenjujejo izkušnje, gradiva ter informacije o incidentih in rešitvah le-teh.

Značka E-varna šola pomaga pri prilagajanju uporabi najnovejših tehnologij v šolskem prostoru, obenem pa je kazalnik odličnosti šole na področju e-varnosti in tako tudi informacija za starše. V Sloveniji značko E-varna šola koordinira Točka osveščanja o varni rabi interneta Safe.si.

Abstract: eSafety Label (značka E-varna šola) is a European-wide project coordinated by European Schoolnet (EUN) that developed a methodology of self-accessing e-safety in the school environment. In 2016 it has been introduced also in Slovenia,

so Slovenian schools can also acquire an eSafety label and access all the resources and the portal www.esafetylabel.eu in Slovenian language.

What is the eSafety Label?

- Free tool to help keep up with ICT integration in the classroom
- European-wide eSafety accreditation and support service
- Equipping schools with resources to develop eSafety confidence

Through a few simple steps schools can:

- Complete an eSafety Label Self-Assessment Questionnaire which is an easy way for schools to evaluate how they are addressing eSafety infrastructure, policies and practices based on international standards.
- Receive an Action Plan, a practical guide to develop schools' level of eSafety practice further.
- Gain Accreditation for school as a Bronze, Silver or Gold 'eSafety Label Certified' school.

Benefits for your school:

- Benchmark against schools in your country and across Europe
- Access an ever-growing set of resources and tools: eSafety advice and guidance, fact sheets, checklists and templates of school's policies etc.
- Exchange best practices with other schools and experts on a range of eSafety issues
- Share your accreditation status with parents and the local community

In Slovenia the eSafety Label is coordinated by Safer Internet Centre (Safe.si). Across Europe in 35 countries that participate in the project so far 2.300 schools have been accredited with 1170 labels, 1099 Bronze, 59 Silver and 12 Gold.

Uporabne naloge iz matematike pri urah nadomeščanj

Math tasks for hours replacement

Miha Simončič, Srednja tehniška in poklicna šola Trbovlje, Trbovlje

Povzetek: S pomočjo sodobne tehnologije sem pripravil uporabne matematične naloge za dijake srednjih strokovnih, srednjih poklicnih in nižjih poklicnih šol. Naloge so namenjene za ure nadomeščanj, ko manjka učitelj za matematiko in ga nadomesti učitelj druge stroke. Vse so zasnovane tako, da so uporabne v vsakdanjem življenju; tako sem vključil zunanji svet. Na kratko bi lahko rekli, da je to spletna zbirka matematičnih uporabnih nalog z rešitvami. Zbirka je zasnovana tako, da deluje tako na pametnem telefonu kot na tablici ali osebnem računalniku v katerem koli operacijskem sistemu. Naloge imajo zraven namig, tako da jih lahko rešujejo dijaki 1. ali 4. letnika posameznega strokovnega izobraževanja. Na vsaki šoli so nadomeščanja del vsakdanjika. Da bi bile ure nadomeščanj laže izvedljive, bolj poučne in zanimive, lahko učitelj, ki nadomešča, uporabi to spletno matematično zbirko, ki vsebuje matematične naloge iz vsakdanjega življenja. Zadeva je popolnoma preprosta. Recimo, da učitelj za matematiko zboli in dobijo dijaki tisti dan nadomeščanje. Ni pomembno, kateri učitelj gre tisto uro matematike v razred, lahko gre učitelj za slovenščino, angleščino, zgodovino ... Ta učitelj prejme spletni naslov zbirke nalog ali pa jih v papirnati obliki vzame v zbornici. Naloge predstavi na projektorju in dijaki jih začnejo reševati. Prav vsaka naloga ima dodan namig (uporabna formula ali skica). Ko dijaki nalogo rešijo,učitelj prikaže rešitev. Rešitev je podana kot celoten potek naloge in ne kot samo rezultat. Zbirka nalog je pripravljena za tri programe: srednje strokovno izobraževanje, srednje poklicno izobraževanje in nižje poklicno izobraževanje. Vsak program ima svojo težavnostno stopnjo, naloge pa so zasnovane tako, da jih lahko rešijo dijaki 1. ali 4. letnika. Vse matematične naloge izhajajo iz vsakdanjega življenja in je velika verjetnost, da se bodo dijaki nekoč v prihodnosti še srečali s takšno uporabno nalogo. Spletna zbirka je izdelana tako, da se lahko uporablja na računalniku ali na tablici oz. mobilnem telefonu. Bolj zaželena sta seveda računalnik in projektor, vendar lahko učitelj poda naloge kar iz tabličnega računalnika ali mobilnega telefona. Seveda mora nato besedilo naloge, namig, potek, rešitev prepisati na tablo. Za začetek bo zbirka vsebovala iz vsakega programa po 15 nalog, to je skupaj 45 nalog, vendar se bo vsako leto večala. Vse naloge in rešitve so v pdf-obliki, tako da se jih lahko prenese na računalnik, lahko se jih tudi natisne. Upam da bo s tem projektom postala matematika še bolj zanimiva in privlačna, ter da bodo dijaki spoznali, zakaj je matematika tako pomembna v življenju. Celotna zbirka je dosegljiva na http://mihasimoncic1982.wix.com/upomat, vendar je brskalniki ne najdejo, tako da učitelj, ki nadomešča učno uro, pridobi spletni naslov prek e-pošte od učitelja matematike.

Abstract: In school we have some days replacements. If math teacher isn´t at school that day, we can use this web tasks for math. It is not important wich teacher is in class. He or Her only need this tasks and computer in classroom. The web adress is http://mihasimoncic1982.wix.com/upomat, and teacher and students can start to do tasks. Teacher can uste this web tasks on computer, notebook, netbook or mobile phone. Math tasks can calculate students from first class to fourth class. Tasks have solution and answers too.

E-učenje in pridobitev ocen računalniškega programiranja prek množičnih odprtih spletnih tečajev

E-learning and obtaining grades of computer programming through massive open online courses

Gašper Strniša, Šolski center Kranj, Kranj

Povzetek: Upravljanje lastnega procesa učenja je še posebej pomembno za dijake, ki zaradi svojih interesnih dejavnosti veliko izostajajo od ur rednega pouka. Poseben izziv tako za dijake kot tudi učitelje pa predstavlja dopisno učenje in poučevanje, še posebej pri predmetih, za katere ne obstajajo predpisani učbeniki. Eden od takšnih predmetov je tudi računalniško programiranje na strokovnih tehniških gimnazijah. V prispevku bo prikazan primer, ko je dijakinja 3. letnika Strokovne gimnazije Šolskega centra Kranj, ki vzporedno opravlja tudi študij na Univerzi za glasbo in pripadajočo umetnost v Gradcu, na daljavo opravila obveznosti predmeta računalništvo. Učitelj je na spletni izobraževalni platformi edX ameriških univerz MIT in Harvard, ki deluje na principu množičnih odprtih spletnih tečajev (MOOC), poiskal in preveril tečaje, ki pokrivajo vsebine učnega načrta predmeta računalništvo. Dijakinja je nato v svojem tempu in prostorsko neodvisno opravila vse vsebine in obveznosti tečaja programiranja v Javi, s tem pa pridobila tudi certifikat Univerze Carlos III. iz Madrida in oceno pri predmetu.

Abstract: Managing their own learning process is especially important for students who are, due to their extra-curricular activities, absent a lot from hours of regular classes. A particular challenge for both students and teachers, represents a correspondence learning and teaching, especially in subjects for which there are no prescribed textbooks. One of such objects is also computer programming at a technical grammar schools. This paper shows an example where the third-year student of Specialist grammar school, School centre Kranj, which also carries a parallel study at the University of Music and related arts in Graz, carried out obligations towards the school subject computer science through correspondence learning. Her teacher looked up and verified the courses that cover the content of the curriculum object computing and in online education platform edX developed by American universities MIT and Harvard, which operates on the principle of massive open online courses (MOOC). Student then at her own choice of time and place independently completed all the content of the course Programming in Java. Therefore she obtained a certificate of the University Carlos III of Madrid and a grade for her school subject.

Odprto učenje – snemanje mladinskega celovečernega filma Vloga za Emo

Open learning – the making of “Changing Emma”, a youth feature film

Mateja Zorko Pavšar in **Alen Pavšar**, Šolski center Celje, Celje

Povzetek: Učenje za delo v medijih težko poteka le v šolskih klopeh. Medijska produkcija živi na terenu, med ljudmi, ustvarja iz njih in zanje. Zato sva Mateja Zorko Pavšar (avtorica scenarija, sicer pa svetovalna delavka na Srednji šoli za strojništvo, mehatroniko in medije) in Alen Pavšar (režiser filma Vloga za Emo, sicer profesor na Srednji šoli za strojništvo, mehatroniko in medije) želela ustvariti pogoje za drugačno učenje – za odprto učenje na realnem projektu, ki sva si ga zastavila kot projekt na visokem nivoju, ki se lahko kosa in celo preseže profesionalne projekte. Najin cilj je bil med drugim tudi, da dijaki svoj izdelek pokažejo javnosti in da ga lahko kot referenco uporabijo tudi v nadaljevanju svoje kariere. Namesto na poletne počitnice je ekipa odšla na teren … na snemanje celovečernega filma, ki se je zapisal v zgodovino slovenske kinematografije kot najbolj gledan neodvisni slovenski film (film je videlo okoli 35.000 gledalcev). Ekipa 200 dijakov in številnih profesionalcev je snemala 42 dni in nastal je film, ki želi mlade navdihniti, motivirati in jim skozi zgodbo glavne junakinje Eme pokazati, da v življenju nikoli ne smemo obupati. Za vse je bilo prvič – oba profesorja sva se prvič lotila tako velikega projekta in tudi dijaki so v filmu sodelovali prvič, bodisi kot igralci bodisi kot del tehnične, produkcijske ekipe. Film ni bil podprt s strani Slovenskega filmskega centra, bil pa je narejen s srcem, energijo, premagal je številne prepreke (tako finančne kot organizacijske) in je zato zagotovo zgodba o uspehu, pogumu, drznosti, sanjah … predvsem pa o odprtem učenju, o procesu, v katerem nikomur ni bilo težko delati in se učiti tudi po 13 ur na dan. Ker je bilo to učenje prežeto z realnostjo, navdihom, učenjem zunaj šolskih učilnic. Ker so se dijaki učili od profesionalnih filmskih igralcev in tehničnih sodelavcev, ker so se učili drug ob drugem in ker je ob tem nastalo nekaj konkretnega, kar so lahko pokazali vsej Sloveniji, Hrvaški, Srbiji …

Abstract: It took a team of 200 secondary school students 42 days and the support of several professionals to create a work that aims to inspire and motivate young people and show them, through the life of the story’s leading character Emma, that giving up is never an option. This was a big first for almost everyone involved; it was the first time the director and producer worked on a feature film, the first time students took on acting, technical, and production roles, and certainly the first time any of them had attempted such an ambitious project. Instead of going on their summer vacation, the team headed out and produced a full feature film that made

Slovenian cinematic history as the most watched Slovenian independent film of all time. The film received no support from the Slovenian Film Centre and the heart and spirit that went into it and drove it resolvedly past the all too many obstacles in its path (both financial and bureaucratic) have made it a success story on its own. It is a testament to hard-earned success and daring, a monument to the courage to hope and to dream, and above all to the process of open learning, where not a single soul thought twice about working hard and learning for 13 hours a day. This was an educational process that unfolded in the real world and was guided by an inspiration that comes from beyond the classroom walls. The students learned from professional actors and technical personnel, they learned from each other, and they created something real that they were able to proudly show to the whole country, as well as Croatia and Serbia and many other audiences.

Odprto učno okolje pri pouku naravoslovja in tehnike v 4. razredu osnovne šole

Open learning environment for teaching science and techniques in 4th grade of primary school

Katarina Dolgan, Zavod RS za šolstvo, Nova Gorica

Povzetek: Kot profesorica razrednega pouka se zavedam, da pri učenju niso pomembne samo vsebine, ki jih učenec sprejema, temveč sam proces učenja, strategije učenja in ustreznost le-teh. Ker želim učencem zagotoviti kakovostno poučevanje, se trudim ustvarjati odprto učno okolje, v katerem učence poslušam, jih usmerjam, jim svetujem, jih spodbujam k samostojnosti in odgovornosti, pri njih razvijam sposobnost kritičnega mišljenja in presojanja ter skupaj z njimi organiziram dejavnosti učenja tako, da jih bodo optimalno pripeljale do zastavljenih ciljev. Pri pouku uporabljam didaktične pristope, ki sodijo v konstruktivistični model poučevanja (sodelovalno učenje, projektno učno delo, problemski pouk, igra vlog, terensko, eksperimentalno ter raziskovalno delo, e-učenje), formativno spremljanje ter diferenciacijo in individualizacijo pouka. Vem, da učencem nisem edini vir informaciji, in ne smem biti strokovnjak le na vsebinskem področju. Pouk večkrat organiziram tako, da krajevno ni omejen izključno na učilnico, časovno pa preseže okvire urnika. Nujna je interakcija z okoljem, zato v pouk vključujem tudi zunanje sodelavce in strokovnjake. Tako je bila izvedena tudi obravnava snovi Moje telo v 4. razredu. Z učenci smo najprej ugotavljali njihovo predhodno znanje, interese, želje in potrebe po znanju o človeškem telesu. Nato smo načrtovali potek in izvedbo obravnave snovi, ki smo jo razdelili na posamezne sklope. V prvem obravnavanem sklopu smo se skupaj učili, kje poiščemo informacije in kako, ter jih med seboj primerjali in kritično ovrednotili. Učenci so nato v manjših skupinah, parih ali sami izbrali enega od sklopov, ki so se mu natančneje posvetili. Pri učnih urah so izbrani sklop predstavili, pripravili eksperimente, krajše videoposnetke, plakate ali PPT-predstavitve. Pri tem so jim bili v pomoč različni didaktični pripomočki ter IKT. Vsebine smo tudi medpredmetno povezovali. Ob koncu predstavljenega sklopa smo skupaj oblikovali in zapisali temeljna znanja, ki so izhajala iz učnih ciljev učnega načrta. Pri obravnavi dveh vsebin sta nam pomagali tudi zunanji sodelavki iz Zdravstvenega doma Ajdovščina in Rdečega križa. Po zaključenem sklopu smo z različnimi metodami in uporabo IKT (didaktične računalniške igre, kvizi, križanke) ponovili in utrdili pridobljeno znanje. Učencem so bili najbolj všeč raznoliki pristopi podajanja snovi, njihova lastna aktivnost in možnost oblikovanja učne ure. S takim načinom dela je bilo za učence organizirano odprto učno okolje, ki je spodbujalo kakovostno samostojno in sodelovalno učenje.

Abstract: My everyday practice as primary school teacher is proving me, that besides the learning content, the learning process and learning strategy are almost equally important. I try to provide a quality teaching to my pupils, therefore I create an open learning environment in which I listen to my pupils, direct them, advise them and encourage them towards their independence and accountability. We try to develop critical thinking skills and judgment. We organize learning activities together in a way that will optimally lead them to conceived goals. In class I use didactic approaches, which belong to the constructivist model of teaching (cooperative learning, project based learning, problem teaching, role-playing, field, experimental and research work, e-teaching) formative assessment and differentiation and individualisation of teaching. I am aware that I should not be the only source of information and expert only on the content area. I try to organize lessons that are not limited to the classroom and the lesson hours that are not limited to the schedule. The interaction with the environment is necessary, therefore we often invite external experts and professionals to our classroom or we visit them. I tried to include all that facts in learning material of lessons My body in the 4th grade. At the beginning the pupils expressed their prior knowledge, interests, preferences and needs for knowledge about the human body. Then we planned the course and divided the learning material into several lessons. We learned how to do it by doing the first lesson together. We learned where and how to find information and critically evaluate them. Divided into small groups, couples or single pupil chose one of the lessons, examined it and presented it to others. Pupils prepared experiments, short videos, posters or PowerPoint presentations. The presentations were supported by different didactic materials and ICT. Contents were also cross-curricular linked. When the lesson was over, we wrote down the fundamental facts that are part of the learning objectives of the curriculum. We also invited two external experts from Ajdovščina Health Centre and the Red Cross to learn how to provide first aid if needed. At the end pupils used different methods and ICT (didactic computer games, quizzes, crosswords) to revise and consolidate the acquired knowledge. The things pupils liked the most in this kind of learning were diverse approaches, feed materials, their own activity and the possibility of creating a lesson. An open learning environment that promoted high-quality independent and collaborative learning was organized with this method of work.

Odprto učenje v Oblaku

Open Learning in the Cloud

Barbara Hebar, Osnovna šola Dobje, Dobje

Povzetek: Ko se v osnovni šoli učitelj sreča s problemom »na istem mestu ob istem času«, je odprto učenje odlična rešitev. Sama sem se s tem problemom srečala ob začetku šolskega leta, ko sem načrtovala priprave na tekmovanje v znanju. Z učenci treh različnih razredov nismo našli skupnega časa, v katerem bi se kontinuirano pripravljali na tekmovanje, ki je šele v drugi polovici šolskega leta. Z delom v Oblaku nam je to uspelo. V Office 365 smo si izdelali spletno mesto, ki nam je služilo kot nekakšna spletna učilnica oz. mesto naših digitalnih srečanj in mesto virov in hrambe različnih gradiv in informacij. Z uporabo Koledarja ter Pošte smo načrtovali naša srečanja v živo in online. Prek spletnega mesta so učenci lahko dostopali do mesečnih gradiv, ki so jih nato spoznavali in predelali z uporabo različnih programov (Word, PowerPoint, OneNote). Ker Office 365 omogoča skupno rabo dokumentov, so si delo razdelili in vzpostavili sodelovalno učenje. Nastale so skupne predstavitve vsebin, slovarčki novih besed, vprašanja za ponavljanje itd. Pri takšni obliki učenja je vloga učitelja izrazito mentorska. Učence lahko pri delu usmerja prek spletnih opomb. Zaradi sodelovalnega učenja so učenci v vlogi aktivnega in odgovornega člena skupine. Živost spletnega mesta je dodala Klepetalnica, ki je še posebej oživela tik pred tekmovanjem, ko so se učenci medsebojno spodbujali. Delo v oblaku omogoča samodejno shranjevanje in preprosto dostopnost do različnih gradiv, ki so vsa na enem mestu. Učenci lahko do njih dostopajo povsod (doma, v šoli) in z različnimi napravami (telefon, tablica, računalnik). Če so delali v namiznih programih, so lahko nastalo gradivo preprosto prestavili v oblak prek sinhronizacije. Didaktična vrednost opisanega primera odprtega učenja je v prvi vrsti neodvisnost od časa in prostora. Zaradi načina dela je učenec bolj odgovoren za lastno znanje in opravljeni del svojih nalog oz. zadolžitev. Ob tem pa seveda razvija nove veščine uporabe IKT. V največji meri pa je takšno delo potrjeno z znanjem in zadovoljstvom učencev.

Abstract: When elementary school teacher meets with the problem »in the same place at the same time« open learning is a perfect solution. I met with this problem at the beginning of the school year, when I planned preparations for a competition in knowledge. We could not find a common time with the students of three different classes to prepare for the competition, which is in the second half of the school year. We have succeeded by working in the Cloud. In Office 365, we have created a website that served us as a kind of online classroom, place for our digital meetings, site of resources and storage of various materials and information. Using the Calendar and Mail, we planned our meetings live and online. Through the site, the students could access monthly to materials, which they then learnt and processed

using a variety of programs (Word, PowerPoint, OneNote). Because Office 365 lets you share documents, students have divided their work and established cooperative learning. They made common presentations of contents, glossary of new words, questions for revision... At this form of learning, the teacher's role is being a mentor. He can guide students at their work by using online comments. Due to cooperative learning, the students are active and responsible members of the group. The vitality to the site added a Chat room, which has particularly revived just before the competition, when the pupils were supportive to each other. Working in the Cloud enables automatic storage and easy access to a variety of materials, which are all in one place. Students can access it anywhere (at home, at school) and with different devices (phone, tablet, PC). If students were working in desktop applications, created materials could be easily moved in sync through the Cloud. Didactic value of the described example of an open learning is primarily independence of time and space. Because of the way of work, the learner is more responsible for his own knowledge and performed part of his duties. At the same time, he develops new skills using ICT. The knowledge and satisfaction of students especially confirms such work.

Pevski zbor in Orffov krožek se učita drug od drugega

Mutual learning between the choir and Orffs club

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Povzetek: Današnji čas je naravnan tako, da je v domačem okolju vse manj petja in so družine, v katerih skupaj zapojejo, prava redkost. Prav zato je velik pomen pevskega zbora na šoli v tem, da petje neguje, spodbuja in ohranja. Petje vpliva na počutje in razvoj otrok. Ob njem se sprostijo, postanejo ustvarjalni, razvijajo svoje glasovne, muzikalne sposobnosti, urijo glasbeni spomin, ne nazadnje se učijo tudi pravilno dihati, kar je osnova za pravilen in zdrav način govora. Zbor je prav posebno socialno okolje. To okolje posamezniku nudi prostor, v katerem je lahko uspešen, a se pri tem individualno ne izpostavlja, hkrati pa mu omogoča, da se dobro počuti in začuti »moč skupine«. Ni večjega zadovoljstva med pevci in pevkami od tega, ko po trdem delu na vajah, na nastopu, morda celo na tekmovanju zaslišijo bučen aplavz. Takrat je med njimi čutiti prav posebno energijo. Na podružnični šoli Orehovica že več let vodim pevski zbor in Orffov krožek. Interesni dejavnosti obiskuje 30 učencev (od 1. do 5. razreda), kar je skoraj polovica vseh učencev na šoli. Skupaj skrbimo za dobro delo pri pevskem zboru in Orffovem krožku tudi tako, da se učimo drug od drugega s pomočjo IKT. Na vajah se upevamo s pomočjo posnetkov učencev, ki izvajajo dihalne in upevalne vaje. Te vaje posnamemo z učenci različne starosti. Podobno starejši učenci posnamejo tudi melodijo in petje nove pesmi. Ob posnetku se nato skupaj učimo. Veliko nastopamo v šoli in kraju. Vse nastope snemamo in si jih kasneje na vajah pogledamo in analiziramo. To nam pomaga pri nadaljnjem delu. Na posnetih opazujemo vedenje nastopajočih, držo, mimiko, petje ... Pevski zbor in Orffov krožek se med seboj dopolnjujeta in nadgrajujeta. Pri Orffovem krožku uporabljamo računalniški program Sibelius 5 za pisanje enostavnih spremljav za pesmi, ki jih pri petju spremljamo na Orffova glasbila. Učenci se ob takem načinu dela veliko bolj zbrani, učinkoviti, motivirani in pripravljeni za delo. Delo je dinamično, razmišljujoče in aktivno se lahko vključijo vsi učenci. Tako učenje nima prostorskih in časovnih omejitev in se ne konča s šolskim letom, ampak se leto za letom dopolnjuje in utrjuje.

Abstract: In modern times there is less and less singing in the home environment and families that sing together have become rare. This is why the choir at our school is very important — it nurtures, encourages and preserves singing. Singing has an important influence on the childs well-being and development. It makes children relax, become creative, develop their vocal and musical competence, it trains their

musical memory and last but not least helps them learn how to breathe correctly, which is the basis of correct and healthy speech. The choir is a special social environment. It offers the individual the space to be successful, without being individually exposed and at the same time offers the opportunity to feel well and fell »group power«. There is no greater pleasure among the singers when, after working hard in rehearsals, they get a big round of applause at their performance. A special kind of energy can be felt among them. I have been leading the choir and Orff club at Orehovica branch school for several years. 30 pupils (from grade 1 to 5), which is almost half of all the students, participate in both activities. Together, we make sure that work is done well in the choir and the Orff club by learning from each other via ICT. At rehearsal, we tune in with the help of recordings of pupils performing breathing and tuning exercises. The exercises are recorded with pupils of various ages. Similarly, older students record the melody and singing for a new song. We all learn together following the recording. We often perform at the school and in the town. All performances are recorded and then reviewed at rehearsals. This helps us with our future work. We analyse the performers demeanour, body language, facial expressions, singing etc. in the recordings. The choir and Orff club interact and complement each other. The Orff club uses the Sibelius 5 computer programme to write simple song accompaniments, which are performed by Orff instruments. This type of work enables pupils to be much more concentrated, efficient, motivated and prepared for rehearsals. The work is dynamic and thought through, all the students can be actively included. This type of learning has no spatial or time limitations. It does not end with the school year, but is built on and reinforced year after year.

Skuhajmo nekaj zdravega in okusnega

Let us cook something healthy and savoury

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Povzetek: Pri oblikovanju prehranskih vzorcev otrok imajo zelo pomembno vlogo starši in vsi drugi, ki skrbimo za njihov zdrav razvoj. Ko smo se pri pouku pogovarjali o pomenu sadja in zelenjave, se je med prvošolci razvila prava razprava. Zagovorniki sadja in zelenjave so s svojimi izjavami spodbudili zanimanje tudi tistih otrok, ki zelenjave ne marajo. Pripravljenost otrok, da bi preverili trditve tistih, ki imajo zelenjavo radi – o njenem pomenu nam je spregovorila tudi medicinska sestra –, nas je vse skupaj pripeljala do izziva, da bi pripravili okusno zelenjavno kosilo. Ker smo poudarili pomen sezonske zelenjave in sadja, prednosti lokalno pridelanega izdelka, ki je zaradi zrelosti boljšega okusa in vsebuje več vitaminov in hranilnih snovi, smo se dogovorili, da doma vprašajo starše, ali so nam pripravljeni pomagati. Odzivi staršev so bili pozitivni, saj so nas povabili na svoje vrtove in nam ponudili pomoč pri kuhanju. Učenci so se doma pozanimali, kaj raste na njihovih vrtovih in katero zelenjavo bi lahko uporabili pri pripravi obroka. S pomočjo njihovih izkušenj, brskanja po spletu in predlogov staršev smo izbrali primerne recepte. Sledilo je iskanje potrebnih sestavin. Skupaj smo se odpravili do vrtov. Ob pomoči staršev so sami izkopali krompir, nabrali potrebno zelenjavo in sadje. V shrambah so poiskali pridelke, ki jih svežih še ni bilo na voljo. V trgovini smo kupili še preostale manjkajoče sestavine. V šoli so pod nadzorom mam pripravili kosilo. Sproti so poskrbeli za čisto delovno okolje. Med pripravo smo se pogovarjali, da je pravica vsakega otroka, da česa ne mara. Dobro pa je, da, preden ugotoviš, da ti kaj ni všeč, to poskusiš. Pri pripravi pogrinjkov smo poudarili, da k boljšemu počutju pri uživanju hrane pripomore tudi lep videz mize in obrokov. Pogovorili smo se o pravilih prehranjevanja in vedenja za mizo. Med kosilom je bilo vzdušje sproščeno in prežeto s ponosom nad opravljenim delom. Pripravljena hrana je teknila vsem, tudi tistim, ki so bili do zelenjave zadržani.

Abstract: A very important role in shaping childrens eating habits have the parents and everyone else partaking in their healthy development. When we were discussing in class the meaning of fruits and vegetables, a real debate arose among the first years. Defenders of consuming fruits and vegetables woke interest even in those children who dislike vegetables. Readiness of children to verify the claims of those who like vegetables, a lecture on their importance was given also by a nurse, brought us all to a challenge to prepare a savoury vegetarian lunch. Because one of our more stressed points was the importance of seasonal vegetables and fruits, with emphasis on the locally grown produce, which tastes better due to proper ripeness and also contains more vitamins and nutritional substances, we decided that children should ask at home their parents, if they were willing to help us. Parents

responses were most positive, for they invited us to their gardens and offered help with cooking. Children checked at home what grows on their gardens and which vegetables could they use for preparing a meal. Based on their experiences, searching on the internet and with the advice of the parents we chose the appropriate recipes. Following that was the acquiring of the necessary ingredients. Together we went into the gardens. With the assistance of the parents they dug out the potatoes themselves, and picked the needed vegetables and fruits. In their pantries they looked for foods that are not yet available fresh this year. In the shop we bought the rest of the missing ingredients. In the school they prepared the lunch under their mothers supervision. All the while they also kept clean working environment. During the preparation we discussed that it is every childs right to not like something. But it is wise to first try the thing before deciding that you dislike it. When setting the table we emphasized that a good presentation of the table and meals also contributes to the enjoyment of food. We also talked about table manners. During the lunch the atmosphere was relaxed and filled with pride over the performed work. The prepared food was to everyones taste, even to those who were more reserved towards vegetables.

Kdor ne MOOC-a, ni Slovenc!

If you don't MOOC you're not Slovenian!

Maja Vreča, Arnes, Ljubljana

Povzetek: MOOC kot oblika izobraževanja je zadnja leta v svetu dosegel pravi razcvet, predvsem na velikih svetovnih univerzah. Večina teh tečajev je postavljena na specializiranih platformah, kot so Coursera, Udacity in edX. Ker pa so v našem okolju zelo priljubljene učilnice Moodle, smo kot platformo za svoj MOOC uporabili te. Arnesov brezplačni odprti spletni tečaj MOOC-V temelji na evropskem kompetenčnem modelu DIGCOMP, ki postavlja smernice, kako postati kompetenten »e-državljan«, in pokriva celotno področje digitalne varnosti. Traja tri tedne, po zaključku pa se udeleženci srečajo tudi na eni od zaključnih »offline« delavnic, kjer rešujejo primere varnostnih zapletov, ki so se zgodili na naših šolah. Cilj tečaja je širjenje poznavanja varne rabe interneta s poudarkom na pedagoških delavcih. Osnovne vsebine so podane prek kratkih videoposnetkov, udeleženci rešujejo kvize, sodelujejo v forumih, na voljo je nabor dodatnih vsebin in povezav ter celo tematski »razvedrilni kotiček«. Za učitelje smo pripravili še tematska učna gradiva in vzorčne šolske ure, ki jim pomagajo pri delu z učenci. Majhna pilotna skupina nam je zelo pomagala pri tem, da je bil prvi MOOC veliko boljši od pilotnega, a nobena izvedba MOOC-a ni enaka prejšnji, saj vsebine ves čas nadgrajujemo. K sodelovanju redno vabimo zunanje strokovnjake, tako pri pripravi vsebin kot pri odgovarjanju na vprašanja v forumih. Poleg tega redno dodajamo nove funkcije in preoblikujemo obstoječe. Med letoma 2014 in 2016 smo izpeljali eno pilotno in štiri množične izvedbe, ki se jih je skupaj udeležilo nad 3000 ljudi. Več kot 65 % udeležencev je opravilo vse spletne aktivnosti (pri velikih svetovnih MOOC-ih se to število po navadi giblje med 5 in 10 %), 55 % udeleženih pa je obiskalo tudi eno od srečanj v živo. Struktura udeležencev je zelo raznolika, prevladujejo pa učitelji in študenti. Vključene so vse tri slovenske pedagoške fakultete; pri nekaterih je MOOC-V del študijskih obveznosti. Udeleženci so pretežno iz Slovenije, vendar kljub jezikovnim oviram tudi iz drugih držav – Hrvaške, Bosne in Hercegovine, Srbije, Makedonije in celo iz Argentine. V okviru tečaja gradimo skupnost, v kateri si udeleženci izmenjujejo izkušnje, pa tudi izvajalci se veliko naučimo od udeležencev. Letos smo postavili še dodatni forum, kjer si udeleženci lahko izmenjujejo izkušnje vse leto.

Abstract: As a form of education, in recent years MOOCs have positively flourished around the world, especially at major world universities. The majority of these courses have been set up on specialised platforms such as Coursera, Udacity and edX. And since Moodle classrooms are very popular in the Slovenian setting, we have used them as the platform for our MOOCs. The free ARNES 'MOOC-V' open online course is based on the European competence model DIGCOMP, which sets

guidelines for how to become a competent 'e-citizen' and covers the entire area of digital safety. It lasts three weeks, and once it is concluded the participants also meet in one of the concluding off-line workshops, where they solve cases of safety issues that have arisen in our schools. The aim of the course is to spread knowledge about safe use of the internet, with an emphasis on educators. The basic content is set out in short video clips, and participants solve quizzes and take part in forums, while there is a selection of additional content and links available, and even a thematic 'entertainment corner'. We have also put together study materials and sample lessons for teachers, to help them work with students. A small pilot group helped us a lot in making the first MOOC-V much better than the pilot version, but no version of a MOOC-V is the same as a previous one, since the content is being continually upgraded. We regularly solicit the cooperation of external experts, both in preparing content and in responding on forums. We also regularly add new functionalities and redesign existing ones. Between 2014 and 2016 we carried out one pilot and four mass versions, which saw the participation of more than 3,000 people in total. More than 65% of participants performed all the online activities (in the major world MOOCs this figure usually hovers between 5 and 10%), while 55% of participants joined one of the meetings in person. The structure of the participants is highly diverse, but teachers and students predominate. All three Slovenian faculties of education are involved, and at some, MOOC-V is a part of the study requirements. Participants are mainly from Slovenia, but despite the language barrier there are also some from neighbouring countries – Croatia, Bosnia-Herzegovina, Serbia and Macedonia – and even from Argentina. Within the course we are building a community where participants exchange experiences, and the providers also learn a lot from participants. This year we also set up an additional forum where participants can exchange experiences throughout the year.

Spletne goljufije

Online frauds

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Povzetek: Zdi se, da nas internet prehiteva; takšen vtis pusti hiter vpogled v statistiko incidentov nacionalnega odzivnega centra za omrežne incidente SI-CERT. V letu 2015 se je prvič, odkar od leta 2008 na SI-CERT beležimo statistiko prijav, zgodilo, da je število prijavljenih spletnih goljufij preseglo število prijavljenih tehničnih incidentov; izsiljevalski virusi, phishing napadi, prevare pri spletnem nakupovanju, izsiljevanja s skrivaj pridobljenimi intimnimi posnetki in druge goljufije, ki se najpogosteje širijo prav prek priljubljenih družbenih omrežij. Skrbi nas lahko dejstvo, da za izpeljavo večine teh goljufij napadalci niso potrebovali naprednega računalniška znanja, zadostovale so že preproste tehnike socialnega inženiringa. Davek za našo neozaveščenost, naivnost in nepoznavanje spletnih mehanizmov torej že plačujemo. Ogoljufani niso računalniški analfabeti, ampak povprečni uporabniki, ki ne upoštevajo priporočil za varno uporabo spletnih storitev, saj zase verjamejo, da se jim ne more nič zgoditi. Navdušeno uporabljamo družbena omrežja, nakupujemo prek spleta, uporabljamo spletne plačilne servise, servise za rezervacijo namestitev itd. Hkrati pa pozabljamo, da z velikimi tehnološkimi koraki, ki poenostavljajo naše delovne procese, prihajajo tudi velike odgovornosti. Spletni ponudniki in posredniki so odgovorni, da dostavijo storitve in omogočijo njihovo varno delovanje, na nas uporabnikih pa je, da spletne storitve uporabljamo v skladu s pravili in pogoji uporabe ter z nič manj previdnosti, kot smo doslej njihove nedigitalne predhodnike. Za primer vzemimo kartično poslovanje; na POS-terminalu zaščitniško zakrivamo PIN-številko, a takoj zatem svojo kreditno kartico zaupamo spletni trgovini sumljivega izvora. In če je res tako lahko uporabljati družbena omrežja, zakaj se največ goljufij začne prav tam? Upanje na pregon kriminalcev je skoraj brezpredmetno. Pristojnosti institucij pri reševanju spletnega kriminala se končajo na meji Evropske unije, kar s pridom izkoriščajo goljufi. Ti svoje spletne strani postavljajo na tujih strežnikih, skrivajo se za generičnimi elektronskimi naslovi, uporabljajo kriptirane plačilne valute, nas kontaktirajo iz lažnih profilov in pogosto prihajajo iz držav tretjega sveta, kjer njihova zakonodaja močno šepa in na možnost pregona lahko računamo le izjemoma. Za svojo varnost lahko največ storimo uporabniki sami. Internet je nenehno razvijajoča se dimenzija, ki počasi prevzema naloge in funkcije storitev v realnosti, podobna so tudi načela, ki jih moramo upoštevati za varno uporabniško izkušnjo; preudarnost, zdrava skepsa in previdnost.

Abstract: The internet seems to be speeding away from us; at least that is the impression you get from a brief glimpse at the statistics of incidents from SI-CERT, slovenian computer emergency response team. In 2015, for the first time since

2008 SI-CERT started recording reported incident statistics, the number of reported incidents of online fraud exceeded the number of reported technical incidents: extortion viruses (ransomware), phishing attacks, online shopping fraud, extortion using covertly obtained intimate images and other fraud that most commonly spreads through the popular social networks. We are also concerned about the fact that in order to carry out the majority of this fraud, the attackers did not need any advanced computer skills, all they needed was some simple social engineering techniques. So we are already paying a tax on our lack of awareness, naivety and ignorance of online mechanisms. Those who have been defrauded are not computer illiterates, they are average users who do not heed the recommendations for safe use of online services, imagining that nothing can happen to them. We enthusiastically use social networks, we shop online, and we use online payment facilities, services for booking accommodation and so on. At the same time we forget that great technological advances that simplify our working processes also bring with them great responsibility. Online providers and intermediaries are responsible for delivering services and enabling their safe operation, while it is up to us users to use web services in line with the rules and conditions of use, and with no less caution than we previously applied to their non-digital predecessors. Take card transactions, for instance; at a POS terminal we cover up our PIN protectively, but then immediately entrust our credit card to some online store of dubious origin. And if it is really that easy to use social networks, why is most fraud committed right there on them? Trusting that the criminals will be prosecuted is pretty much pointless. The jurisdiction of institutions to solve online crime ends at the borders of the European Union, and the fraudsters take full advantage of this. They set up their websites on foreign servers, hiding behind generic electronic addresses, they use encrypted payment currencies, contact us from fake profiles and are often based in Third World countries, where their legislation is seriously lacking and the possibility of prosecution is a distinct rarity. It is we users who can do most to protect our security. The internet is a constantly evolving dimension that is gradually taking over the tasks and functions of services in real life, and the principles we must heed for a safe user experience are similar: caution, healthy scepticism and vigilance.

Učenje treh jezikov hkrati z aplikacijo Duolingo učenci dojemajo kot igro

Learning three languages simultaneously with the Duolingo app students perceive as a game

Peter Grbec, Osnovna šola Antona Ukmarja Koper, Koper

Povzetek: Na osnovni šoli poučujem 20 šestošolcev esperanto v angleščini eno uro tedensko. Poučevanje poteka s pametno tablico in aplikacijo Duolingo (https://www.duolingo.com/). Prednosti? Večini učencem je materni jezik slovenščina. Ko se učijo esperanto v angleščini, morajo pri uporabi Duolinga razmišljati v treh različnih jezikih hkrati, zato morajo njihovi možgani hitro delovati. Zdaj bolje razumejo, kako deluje angleščina, kot pred tem. Ker je esperanto kot načrtovani mednarodni sporazumevalni jezik popolnoma pravilen (slovnica obsega samo 16 osnovnih pravil brez izjem in brez nepravilnih glagolov) učenci tako bolje razumejo, kako delujeta angleščina in slovenščina. Učijo se popolnoma samostojno. Sami morajo iz primerov razbrati slovnično pravilo. Kot učitelj jim pomagam samo, če me prosijo. Med sabo tekmujejo (Duolingo omogoča, da postanejo med sabo prijatelji, in tako lahko spremljajo, koliko točk so dosegli njihovi prijatelji). Prav tako Duolingo omogoča učitelju ustvariti spletno učilnico, kjer lahko spremlja napredek učencev (https://schools.duolingo.com) Poudariti je treba, da učenci dojemajo Duolingo kot igro s točkami in kot tekmovanje s sovrstniki ter ne toliko kot učenje tujega jezika (tujih jezikov). Učijo se brez časovnih in prostorskih omejitev, saj se večina uči esperanto doma po lastni želji s pomočjo Duolinga. Menijo, da se ne učijo nezanimivega tujega jezika, ampak da igrajo novo igro. Torej, učenci se učijo igraje. Po dveh mesecih učenja so odgovarjali na anketo: 92 % se jih je strinjalo ali popolnoma strinjalo, da je učenje esperanta s pomočjo tablice in Duolinga zabavno, 92 % se jih je strinjalo ali popolnoma strinjalo, da se raje učijo esperanto s pomočjo Duolinga kot pa s pomočjo učbenika ali delovnega zvezka, 76 % se jih je strinjalo ali popolnoma strinjalo, da bi se raje učili tudi druge tuje jezike s pomočjo Duolinga, 84 % se jih je strinjalo ali popolnoma strinjalo, da zaradi učenja esperanta v angleščini zdaj bolje razumejo angleščino. Kaj je bilo učencem najlepše (lahko so izbrali le en odgovor)? Največ, 38 % učencev je navedlo, da učitelj nič ne razlaga in stvari sam odkriva, 23 % jih je navedlo, da jim je najlepše to, učitelj pomaga samo, če ga kaj vprašajo, 15 % jih je navedlo, da jim je najlepše, da so lahko stalno aktivni in da lahko uporabljajo pametno tablico. Slabost poučevanja s pomočjo Duolinga je, da imajo narodni jeziki imajo veliko izjem, zato je velikokrat težko razbrati slovnično pravilo. Zato priporočam, da učitelj najprej razloži slovnico in šele nato naj učenci samostojno naredijo vaje s pomočjo Duolinga. Po polletni izkušnji verjamem v uspešnost učenja s pomočjo Duolinga. To potrjuje tudi znanstvena študija iz leta 2013. Nekatere države (Kostarika in Gvatemala) so

Duolingo vpeljale kot pilotni projekt v številne javne osnovne šole. In ne nazadnje: Duolingo je najbolj priljubljena izobraževalna aplikacija na Google Playu.

Abstract: I teach 20 eleven-year-old students Esperanto using English one hour a week in an elementary school with a tablet and the Duolingo app (https://www.duolingo.com/). Benefits? The mother tongue for the majority of students is Slovenian. When students learn Esperanto in English using Duolingo they must think in three different languages at the same time. Students now better understand how English works as before. Since Esperanto is completely correct (grammar comprises only 16 basic rules with no exceptions or irregular verbs) students better understand how work English and Slovenian. Students learn autonomously. Students must figure out by themselves the grammar rules from the excercises. As a teacher I help them only if they ask me. Students compete with each other (Duolingo allows students to monitor how many points achieve their friends). Duolingo also allows the teacher to create an online classroom where the teacher can follow the progress of the students It should be noted that students perceive Duolingo more as a game with points and competition with peers rather than learning (a) foreign language(s). Students learn without time and space limitations, since the majority of students learn Esperanto also at home by themselves using Duolingo.. Students think that they are not learning another uninteresting foreign language, but playing a new game on a tablet. After two months of learning, the students responded to a survey: 92% agreed or totally agreed that is funny learning Esperanto with the help of the tablet and Duolingo, 92% agreed or totally agreed that they prefer to learn Esperanto using Duolingo rather than using a textbook or workbook, 76% agreed or totally agreed that they would prefer to learn also other foreign languages using Duolingo, 84% agreed or totally agreed that now better understand English, What the students liked most (students were allowed to choose only one answer)? Most, 38% of students stated that they liked most that the teacher nothing explained and that they had to found out grammar rules by themselves, 23% stated that they liked most that the teacher helped only if they asked him, 15% stated that they liked most that they were continuously active and that they used a smart tablet. The main disadvantage of teaching national languages through Duolingo is that the national languages are incorrect and have a lot of exceptions so it is often difficult to figure out the grammatical rule. Therefore is recommended that the teacher first explains the grammar, and after that the students can make the exercises using Duolingo. After a half-year experience, I believe in the effectiveness of learning using Duolingo. This is also confirmed by a scientific study carried out in 2013. Some countries (Costarika and Guatemala) have begun teaching foreign languages using Duolingo as a pilot project in a number of public elementary schools. Duolingo is the also the most popular educational app on Google Play.

IKT – obogatitev dejavnosti v vrtcu

Using ICT to enrich activities at nursery school

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Povzetek: Otroci so pravi mali raziskovalci, ki jih današnja tehnologija spremlja na vsakem koraku. V vrtcu pa so seznanjeni z raznolikimi dejavnostmi, pri katerih lahko izrazijo svoje kompetence in hkrati pridobivajo nova znanja oziroma spoznanja. Določene dejavnosti v posamezni skupini so veliko bolj zaželene (npr. gibanje) in tudi aktivnost otrok je večja kot v preostalih (npr. naravoslovnih) dejavnostih. Z IKT sem želela obogatiti dejavnosti, za katere so se otroci manj zanimali, in jih hkrati spodbuditi k odprtemu dialogu ter večji aktivnosti. Na začetku sem se osredotočila predvsem na naravoslovne dejavnosti, kasneje pa tudi na druge. Dejavnosti smo večinoma izvajali na prostem z opazovanjem, raziskovanjem in pogovori, dopolnili pa smo jih v igralnici z ogledom posnetkov in fotografij na računalniku. S pomočjo interneta, računalnika in fotoaparata sem pridobila vpogled v interese in kompetence otrok, ki so večinoma ostajali v ozadju in se niso želeli izpostavljati. Omogočila sem jim uporabo digitalnega fotoaparata, tako da so lahko sami posneli fotografije in predstavili, kaj jih zanima ter kaj so opazili. Ob ogledu posnetkov, fotografij in s pomočjo interneta pa smo spoznavali raznolike stvari, ki so služile kot izhodišče za rešitve problemov ali nadaljnje raziskovanje tematike. Dejavnosti sem tako laže načrtovala ter tudi prilagajala zanimanju in kompetencam otrok. Hkrati pa sem lahko otrokom ponudila boljši pregled nad posamezno tematiko in posebnostmi, ki jih morda v bližnji okolici ali v vrtcu nismo uspeli ustrezno spoznati oziroma nas je potek dejavnosti pripeljal do novih vprašanj in tematik. Glede na kompetence otrok sem dejavnosti različnih področij obogatila s pomočjo uporabe IKT, kar se je izkazalo za pravilno odločitev. Otroci so pokazali večji interes za dejavnosti, ki so bile v skupini nekoliko zapostavljene in niso vzbudile večje aktivnosti. Otroci so se aktivneje lotili raziskovanja in reševanja posameznih problemov. V skupini so pogosteje izmenjevali mnenja o posamezni tematiki. Pogosteje so tudi samoiniciativno predlagali, da bi informacije poiskali s pomočjo IKT. Spoznala sem, da z IKT obogatene dejavnosti otroke in odrasle usmerijo h kakovostnejšemu in poglobljenemu učenju oziroma raziskovanju.

Abstract: Children are little explorers, who are accompanied by todays technology all the time. At nursery school children come across various activities with which they can show their competence and gain new knowledge at the same time. There are certain activities that are much more popular in individual groups (e.g. exercise) and the level of children's activity is thus higher than in other groups (e.g. natural science activities). Using the information and communications technology I wanted to enrich the activities, which are not very popular among children, to encourage

them to open the dialogue and to stimulate the activity within certain groups. At first I focused mainly on natural science activities which were followed by other activities. The activities were mostly carried out outdoors by means of observing, exploring, and communicating. They were upgraded in playroom by watching video footages and photographs on the computer. Using Internet, computer, and camera I gained insight into interests and competences of children, who mostly kept a low profile and did not want to stand out. I enabled them to use the digital camera so that they could take photographs themselves. Then they could present their interests and observations. Viewing the footages and the photographs and using the Internet we discovered various things, which served as a basis for problem solving and further examination of the subject. That made it easier to plan the activities and to adapt them to the interests and competences of the children. It also made it possible for me to offer children the broader overview on individual subject and its features which we failed to notice in close vicinity or at nursery school or if the course of action led us to now questions and subjects. Considering the children's competences I enriched the activities from various fields using ICT which turned out to be the right decision. Children showed more interest in activities that were earlier neglected and did not awake their curiosity. Children took active part in exploring and solving problems. They started exchanging views on a particular subject within a group. Children also started coming up with suggestions on their own initiative when looking for information using ICT. I learned that the activities, supported by ICT, lead the children and the adults towards quality and in-depth learning and exploring.

Uporaba e-učnih gradiv pri pouku matematike v posavskih srednjih šolah

The use of e-learning materials at Math lessons in secondary schools of the Posavje region

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Povzetek: Iz dolgoletnih izkušenj pri poučevanju matematike in informatike na srednji in višji šoli v Brežicah nekako naravno sledi ideja, da bi obe področji povezala. Pravzaprav sem v preteklosti že raziskovala uporabo IKT v slovenskem srednjem šolstvu, tokrat pa se nameravam osredotočiti na uporabo e-učnih gradiv s področja matematike. Ravno uporaba kakovostnih e-gradiv učencem omogoča učenje brez časovnih in prostorskih omejitev, tj. »odprto učenje«. Menim, da se učenci še vedno preveč oklepajo učitelja kakor ptički v kletki z odprtimi vratci, ki ne želijo ali pa si ne upajo vzleteti samostojno. Kako se lotiti učenja učencev za uporabo e-učnih gradiv, pa je še precej neraziskano. Ker nameravam v prihodnje tudi sama aktivno usmerjati učence v uporabo e-učnih gradiv, sem želela najprej raziskati obstoječe stanje. Cilj imam, toda kje smo trenutno? Da bi odgovorila na to vprašanje, sem sestavila vprašalnik o uporabi e-učnih gradiv pri pouku matematike, ki so ga izpolnjevali dijaki vseh srednjih šol posavske regije. V spletni anketi, ki so jo izpolnjevali marca letos, so odgovarjali na različna vprašanja s področja uporabe e-učnih gradiv, na podlagi analize odgovorov pa sem poskušala odgovoriti: • koliko so posamezna e-učna gradiva znana in koliko so dejansko v uporabi med dijaki; • kje poiščejo pomoč, kadar gradiva ne zadostujejo (npr. koliko je inštrukcij); • kateri način učenja matematičnih vsebin s pomočjo interneta jim je najljubši; • katere medije uporabljajo za učenje matematike. Na konferenci bom predstavila najbolj zanimive ugotovitve. Če pa povzamem – v slovenskem šolstvu smo še precej na začetku glede uporabe e-učnih gradiv, zato bi bilo dobro, ko bi si vsak učitelj vzel toliko časa, da bi raziskal najpomembnejša e-učna gradiva svojega predmetnega področja in z njimi seznanil tudi svoje učence. Z anketo sem namreč ugotovila, da jih učenci poznajo precej slabo. Še bolje bi bilo, če bi učencem ne le pokazali spletna mesta z e-učnimi gradivi, ampak bi jim dali tudi napotke, kako naj si z njimi pomagajo. Če želimo to doseči, pa moramo najprej nuditi podporo učiteljem, saj se v šoli vse začne in konča prav pri njih.

Abstract: In many years of teaching experience in the field of mathematics and informatics at the middle and high school in Brežice, the idea to put the two areas together follows somehow naturally. In fact, I have already made some research regarding the use of information and communication technologies in Slovenian secondary schools and this time I am focusing on the use of e-learning materials

in mathematics. The use of quality e-learning enables students to learn without time and space limitations i.e. »Open learning«. In my opinion students still depend on teacher too much, as birds in a cage with an open door, which do not want or do not dare to leave it. It is still quite unexplored, how to teach students to use e-learning materials. As I am intending to actively guide the students in the use of e-learning materials, I wanted to explore the existing situation first. I have a goal, but where are we now? To answer this question, I made a questionnaire on the use of e-learning materials in mathematics for students of all secondary schools of the Posavje region. The online survey, which was made in March, answered to various questions in the field of e-learning materials. Based on the analysis of the answers, I tried to find out:• how well are some e-learning materials known and how many are actually in use among students; • where do they find help when the material is not sufficient (ie. how many »instruction« do they have); • which types of mathematical contents on internet do they prefer; • which media students use to learn mathematics. At the conference I will present the most interesting findings. If I summarize, we are quite at the beginning in using e-learning materials in Slovenian schools. It would be a good idea if all the teachers took some time to explore the most important e-learning material of their subject area and present them to their students. The survey also showed, that the students are not very familiar with e-learning materials. It would be even better, if teachers wouldnt only show sites with e-learning materials, but also give them guidance on how to work with them. To achieve this, we must offer support to teachers in the first place, as the school begins and ends with them.

Terensko delo z uporabo pametnih telefonov

Field work with the use of smart phone

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Povzetek: Slovenski učenci in dijaki za komuniciranje s prijatelji vse bolj uporabljajo pametne telefone. Da bi telefone ali tablice izkoristili še za šolske namene, sva se jih avtorja prispevka odločila uporabiti pri pouku. Učenje pa lahko obrodi sadove šele takrat, ko tudi mladostniki pridobivanje znanja dojemajo kot svoj cilj v življenju in prostem času. Najin cilj je bil povezati dve različni skupini mladostnikov – osnovnošolce in srednješolce iz različnih okolij – mesto in vas – ter okrepiti prenos znanja med njimi. Cilj naloge je bil, da lahko telefone/tablice smiselno vključimo v pouk, ga obogatimo in s tem motiviramo udeležence. Od učencev in dijakov sva zahtevala uporabo različnih veščin (uporaba pametnih telefonov/tablic, različnih aplikacij, skupinskega dela ter uporaba lastne domišljije na terenu). Udeleženci so se, razdeljeni v manjše skupine, odpravili na orientacijski pohod. S pomočjo tablic/telefonov so spremljali interaktivni zemljevid (mesto oz. vas), izdelan z aplikacijo ScribbleMaps). Opraviti so morali določene naloge, ki so bile vezane na kurikuluma informatike/računalništva in športa. Naloge so bile predstavljene na različne načine (besedilo, slika, QR-koda). Vsebinsko so se nanašale na izdelavo fotografij, videa, zvoka in anaglidne (3D-slike), merjenje srčnega utripa (pred aktivnostjo, med njo in po njej) in opravljeno pot. Še pred reševanjem nalog so morali na svoje tablice/telefone naložiti različne aplikacije in jih testirati. Na označenih točkah so reševali naloge, ki spodbujajo uporabo in povezovanje znanja ter iskanje čim boljših rešitev. Rešitev je morala prikazati tudi opravljeno pot, število korakov (s pedometrom) in višinske razlike (uporaba tracker aplikacije). Rešene naloge so oddali v elektronski obliki neposredno prek spleta. Ugotovila sva, da uporaba pametnih telefonov oz. tablic ni le modna muha, ampak popestritev pouka, dobra motivacija za pridobivanje znanja in spodbuda za nadaljnje raziskovanje.

Abstract: Slovene pupils and students increasingly use smart phones for peer-to-peer communication. The authors of this article have decided to acknowledge this fact and extend the use of smart phones also to school education. In order to make this use fruitful for learning purposes, youth need to see explicit goals in everyday life and spare time. The purpose of this exercise was to connect peer groups – elementary school pupils and secondary school students from different living environments – city and town – and increase knowledge transfer between the groups. The goal was to make meaningful use of smart phones in education, thus enrich the learning process and motivate the learners. The learners were encouraged to use various skills, connected to use of smart phones (applications, team work, and

use of imagination in the field work). The learners were divided into small groups and directed to an orientation walk. They were following the path (city or village) by use of interactive application maps Scribble maps on their smart phones/tablets. Certain tasks were assigned to them during the walk, linked to the curriculum of ICT/computing and physical education. The tasks were delivered in different forms (text, picture, QR code). Contextually, the learners were required to produce: photographs, videos, sounds and anaglyphs (3D pictures), heart beat measurements (before, between and after activity) and measurements of the orientation path itself. The tasks required pre-loading and testing of different applications. To solve individual assignments, the learners were encouraged to use and link different skills and to find the optimal solutions to the faced challenges. The solution had to demonstrate the path, the number of steps (by using pedometer) and the altitude (use of tracker application).

Odprto učenje naravoslavja za konec tedna

Open learning natural Science for weekends

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Povzetek: V zadnjih šolskih letih smo na Gimnaziji Želimlje za dijake organizirali kemijske konce tedne. Pri tej pobudi za ohranitev kot tudi povečanje motivacije za učenje kemije in drugih naravoslovnih ved me je podprla šola. Kot somentorji na delavnicah in predavatelji so sodelovali bivši dijaki Gimnazije Želimlje, strokovnjaki s kemijske fakultete v Ljubljani in Inštituta Jožef Stefan ter učitelji kemije z drugih gimnazij. Program je bil usmerjen naravoslovno-tehniško: poleg kemijskih vsebin je vključeval tudi področja matematike, dentalne medicine in metalurgije. Potekal je ob petkih in sobotah. Vsakokrat se je začel s seznanitvijo udeležencev z vsebinami konca tedna in načrtovanimi dejavnostmi ter navodili za varnost. Pri pripravi programa nisem bila vezana na učni načrt ali dolžino šolske ure, skupine dijakov so bile manjše kot pri običajnem pouku, mentorjev pa več, kar je omogočalo časovno prilagodljivost, individualni pristop in medpredmetno povezovanje. Teme delavnic so bile aktualne in neposredno povezane z vsakdanjim življenjem ter privlačno predstavljene. Poleg matematične sposobnosti ter osnovnih sposobnosti v naravoslovju in tehnologiji so dijaki v različnem obsegu razvijali tudi druge kompetence za vseživljenjsko učenje, predvsem digitalno pismenost, učenje učenja ter medosebne in socialne kompetence. Primeri delavnic: dentalnomedicinska – sestava zob in ustrezna higiena, kemijska – kako čarati s preprostimi kemijskimi triki, kako doma izdelati bioplastiko, kovaška – kako iz vzmeti starega avtomobila skovati nož, matematična – s pomočjo Pitagorovega izreka izračunati kot med vezmi v molekuli, ki jo opišemo s tetraedrom. Primer predavanja: Kako je nastalo vesolje. Dijaki so izvedli poskuse, svoja opažanja, dognanja in izdelke pa prikazali v obliki plakatov, računalniških predstavitev in poročil v šolskem glasilu. Udeleženci kemijskih koncev tedna so vselej visoko motivirani za dejavno sodelovanje, saj v projektu sodelujejo prostovoljno. Po vsakem kemijskem koncu tedna zberem njihove vtise, pripombe in želje, kar je zlasti pomembno za načrtovanje naslednjih projektov.

Abstract: In the past school years Chemistry Weekends were organized for students of Želimlje High School (Gimnazija Želimlje). As the coordinator and mentor I was encouraged in my efforts to keep these events active as well as increase the motivation for chemistry and science in general. Ex-students of our high school, experts from the Faculty of Chemistry and Chemical Technology, Jožef Stefan Institute and chemistry teachers from other high schools participated as co-mentors and lecturers in my workshops. The programme was oriented towards natural sciences and engineering: in addition to chemistry related topics, it also included mathematics, dental medicine and metallurgical industry. It was carried out on Fridays and

Saturdays and each time the participants were first acquainted with the agenda, planned activities and safety precautions. Whilst preparing he programme, I was not limited by the curriculum or the length of the school lessons and there were more mentors than usually. Also, the groups of students were considerably smaller than during regular classes - due to all this, it was possible to establish cross curricular collaboration and be flexible in terms of timing, individualized approaches. The workshop contents were presented in a stimulating way - they were topical and immediately related to everyday life. Beside developing mathematical competence and other basic skills in science and technology, the students also developed other competences regarding lifelong learning; particularly digital literacy, learning to learn, interpersonal and social skills. Workshop samples: dental-medicine – tooth composition and suitable hygiene, chemistry – how to perform simple chemistry magic tricks, also how to create bioplastic at home, metallurgic – how to recycle old vehicle suspension into a knife, mathematics – using the Pythagorean theorem to calculate the angle between molecule bonds described by tetrahedral. Lecture sample: How the universe was created. The students conducted experiments and presented their findings with posters, computer presentations and reports in school magazines. The students at Chemistry Weekends are always highly motivated for active participation as they apply voluntarily. After each such event, their impressions, comments and wishes are gathered, which is of great importance when planning future projects.

Micka sem jaz in Micka si ti

I am Micka and so are you

Gordana Rodinger, Osnovna šola Pesnica, Pesnica pri Mariboru

Povzetek: Učno uro Micka sem jaz in Micka si ti sem v sklop Odprto učenje uvrstila zato, ker omogoča prikaz učne ure, ki umetnostno besedilo obravnava nekoliko drugače. Omogoča pestro predstavitev, pestra in dinamična pa je tudi učna ura. Pouk slovenščine, zlasti obravnava umetnostnih besedil, nam učiteljem omogoča, da lahko načrtujemo diferenciacijo in individualizacijo. Kadar gre za manjše učne skupne, ki so oblikovane heterogeno, to včasih uveljavljam po interesih, včasih po sposobnostih učencev, predznanju itd. Pri obravnavi umetnostnih besedil ugotavljam, da učenci najraje sodelujejo, kadar jim dam možnost, da to počnejo v skladu s svojimi interesi. Učilnica ni več prostor s stoli, klopmi, tablo in učiteljem, poveča se celo za šolski hodnik. Žal pa nas še vedno omejuje šolska ura, ki pa je pri tovrstnem delu manj moteča. V sklopu Odprto učenje bom predstavila učno blokuro v 8. razredu, in sicer obravnavo dramskega besedila Antona Tomaža Linharta Županova Micka. Skupina je heterogena, za dva učenca pa je zaradi nadarjenosti narejen poseben individualizirani program. Glavni cilji ure so, da učenci ob besedilu spoznavajo prvine gledališke predstave ter ob tem obnavljajo in povzemajo dogajanje v odlomku v berilu. Učenci se lahko po uvodnem skupnem delu pridružijo skupinam: Jaz sem Micka (kratka dramatizacija), Kako bi zvenela Micka danes (ustvarimo pesem), Kostumi pa to ..., Rad imam strip. Učenca, ki delata po posebnem programu, sta pripravila PPT-predstavitev »SHUPANOVA MIZKA, ena komedija v dveh akteh« (zgodovinski prikaz uprizoritve). Tovrstno delo je izziv za učitelja, saj se pričakuje, da bo delo načrtoval, nato pa učencem prepustil ustvarjanje in jih, po potrebi, le usmerjal. Prednosti tega so zagotovo v tem, da učenci pri uri počnejo stvari, ki so jim blizu, in da se učijo drugače. Slabosti so, da učitelj ne more predvideti vsega, kar se bo pri uri dogajalo, časovna omejitev, omejitve uporabe materiala ... Vendar pa učenci pri uri lahko uporabljajo tako moderno tehnologijo (računalnik, internet itd.) kot tudi papir, barvice, lepilo idr.

Abstract: I rankedt the lesson of I am Micka and so are you into the lot Open lesson, because it allows a presentation of lessons, which literature tackles in a very different way. It allows a thorough presentation of the lesson itself. During Slovene lessons, especially lessons about Slovene literature, the teacher helps us, to prepare the difference and individuality in various ways. When it comes to smaller groups, which are heterogenic, sometimes with self-interest, sometimes on the abilities of various students, foreknowledge... I notice that the students contribute the most, when given the chance, to do it in their own self-interest. The classroom begins to expand to the Hallway. Unfortunately the class time itself is still an issue. I wish to

present the drama Županova Micka by Anton Tomaž Linhart to the 8th graders, in the lot Odprto učenje. The groups are heterogenic, but two students have created a special individual program. The main goal here is, to make it so that the students understand the basic principles of a dramatically play and at the same time allow them to recite and rehires the play. The students can join multiple groups: Jaz sem Micka (a short play), Kako bi zvenela Micka danes (poetry writing), Kostumi pa to ..., Rad imam strip. The two students that work on an individual project have prepared a ppt presentation "SHUPANOVA MIZKA, ena komedija v dveh akteh" (a historical presentation) This is a challenge for a teacher, because it is expected of him, to prepare everything and then let the students create thing themselves. The good thing about this, is that the students are doing things which are close to their hearts and are learning in a new way. The bad part, is that the teacher cannot predict everything, what is going to happen, time constraint, lack of materials... But the students can always help themselves out with modern technology, as well as the good old fashioned paper, pencil, glue, etc.

Tudi slepi in slabovidni se igramo z IKT

Even the visually impaired can play with ICT

Tjaša Pečnik in **Grega Hribar**,
Zavod za slepo in slabovidno mladino Ljubljana, Ljubljana

Povzetek: V okviru javnega razpisa e-storitev in mobilnih aplikacij je bila izdelana spletna aplikacija z idejo, da bi osebam s posebnimi potrebami (v prvi vrsti slepim in slabovidnim) omogočili urjenje veščin tudi na bolj sodoben način – prek tablice, računalnika ali pametnega telefona. Glavni cilji so bili: • da bi bila aplikacija preprosta za uporabo; • možnost osebnih nastavitev aplikacij glede na specifiko primanjkljaja posameznika; • omogočena uporaba širši populaciji ter • polnejši vstop učencev s posebnimi potrebami v družbo. Pretežni del spletne aplikacije je namenjen vajam vida, spomina in fine motorike. Zajema raznolike igre spomina, razvrščanja, povezovanja slik, iskanja dvojic ter omogoča navigacijo predmetov s prsti oz. tipkami. Vse igre vsebujejo možnost osebnih nastavitev glede na posameznikovo predznanje, vrsto motnje vida, predznanja in sposobnosti reševanja posameznih nalog. Pozorni smo bili na kakovost slike, preprostost in jasnost oblik, kontrastnost in intenzivnost barv, debelino črt ter druge podrobnosti, ki za osebe brez primanjkljajev niti niso pomembne. V spletno aplikacijo (www.zaznajspoznaj.si) so vključene tudi aktivnosti za učenje slepega desetprstnega tipkanja ter poznavanja brajice, ki predstavljata temelj opismenjevanja slepih in slabovidnih učencev. Učenje tipkanja je namenjeno učencem, ki se jih postopoma nauči vse črke slovenske abecede, poznavanje brajice pa je v prvi vrsti namenjeno družini, učiteljem in prijateljem slepega otroka, ki bi se radi spoznali in naučili “temeljne kode” slepih. Učitelji lahko igre uporabijo pri učencih v vseh starostnih skupinah, saj so enostavne za uporabo. S spreminjanjem zahtevnosti iger postanejo te primerne tudi za starejše učence, čeprav je so namenjene predvsem predšolskim otrokom in otrokom prvega triletja. Igro lahko uporabijo za različna področja otrokovega razvoja: spoznavanje in usvajanje novih pojmov, širjenje besedišča, urjenje kratkotrajnega delovnega spomina, urjenje pozornosti in koncentracije itd. Aplikacija je zasnovana tako, da je obstoječe vsebine mogoče nadgrajevati in dodajati nove. S tem lahko učitelji poskrbijo za pestro dopolnitev učnega procesa, učenci sami pa tudi za kakovostno preživljanje prostega časa.

Abstract: In the context of the public tender of e-services and mobile applications a web application www.zaznajspoznaj.si (»detect and meet«) was designed. In order to enable persons with disabilities (primary visually impaired people) to train their skills in more modern way • using computer, tablet or smartphone. The main goals for the apiacation were: • to make it user friendly; • to have possibility to create personal settings due to specifics of ones disability; • to enable the use for the general population, and • to create accessible inclusion of pupils with special needs

in the society. The major part of the web application is designed to train vision, memory and fine motor skills. It covers a variety games of memory, sorting games, image understanding and description, pair identification and object navigation, all played with fingers or keys. All the activities include the possibility of personal settings depending on the individuals knowledge, range of vision disorders, previous knowledge and abilities to solve particular tasks. We were attentive to the picture quality, simplicity and clarity of forms, contrast and color intensity, the thickness of lines and other details • all very important for visually impaired people. Activities to learn typing and basic braille are also included in the web application (www.zaznajspoznaj.si • »detect and meet«). Both crucial for educational process of visually impaired pupils. Typing lessons are primary designed to learn all the letters of Slovenian alphabet step by step. Activities for braille learning are mostly designed for families, teachers and friends of a blind child, who would like to acquaint with the braille code. Games are primarily constructed for the kindergarten children and pupils of first grades of elementary school, even though we can rise the level of difficulty and make them suitable for older pupils. Many fields of child's development are covered: meeting and learning new concepts, expanding new vocabulary, short-term memory training, training of attention and concentration... Web application is designed for continual progress, and adding new contents is possible and expected. On one hand teachers can make learning process more colourful and diverse, on the other hand pupils can enjoy some quality free time on electronic devices. The application is free of charge.

Učenje angleščine prek izmenjave s šolo v Franciji

Learning English through the Exchange with the French School

Sabina Kavšek, Osnovna šola Brinje Grosuplje, Grosuplje

Povzetek: Današnji učenci obvladajo raznolikost internetnih orodij in večina med njimi si želi spoznavati svet in pogledati onkraj meja Slovenije. Mednarodni projekt izmenjave med slovensko in francosko šolo, katerega mentorica sem že 5 let, zagotavlja učno okolje za pristno učenje jezika in spoznavanje učencem neznane kulture, drugačnih navad in drugega šolskega sistema. To učno okolje vključuje načrtovane dejavnosti, ki jih vodi mentor, in samostojna komunikacija učencev z izbranimi vrstniki v Franciji prek različnih pisnih in pogovornih IKT-orodij. Ključni cilji izmenjave so bili izboljšati komunikacijske spretnosti naših in francoskih učencev v angleščini ter učencem približati komunikacijo s pomočjo elektronske pošte, Skypa, snemanja kratkih filmov in različnih socialnih omrežij (Facebook, Snapchat). Učenci so pri vsem tem različno spretni. Glavna motivacija in cilj za njih pa je gotovo tedenska izmenjava v Franciji, v mestu St. Chamond in v Grosuplju, ko se dopisovalci spoznajo in se nadaljuje še komunikacija v živo, tudi znotraj družin, saj je bivanje zagotovljeno v družinah sodelujočih učencev. Poleg rednega dopisovanja v začetku šolskega leta sodelovanje pri projektu začrtamo še tematsko. Teme, ki so navadno povezane z različnimi kulturnimi značilnostmi in posebnostmi Slovenije in Francije, sooblikujejo učenci, tako da oblikujejo kratke sestavke, bloge, kratke filme, pa tudi plakate in ročno izdelane čestitke. Vsaj delno skušamo kombinirati pisni in elektronski način komunikacije. Vsako leto učenci pripravijo PPT-predstavitev Slovenije, ki jo potem predstavijo med obiskom v Franciji. Enako naredijo francoski učenci. Dodana vrednost projekta je v tem, da se vsako leto za sodelovanje odloči več učno šibkejših učencev, ki jim angleščina ne gre tako dobro, v realni situaciji pa se je tudi že izkazalo, da se ti učenci znajdejo zelo dobro. Ugotovili smo, da so Francozi morda res šibkejši z vidika slovnične pravilnosti, vendar pa so zelo dobri v sami komunikaciji in naši učenci se pri njih učijo odprtosti, iznajdljivosti in postanejo bolj samozavestni v rabi tujega jezika. Kombinacija »Francija – Slovenija« se za nas kaže kot zmagovalna z vidika napredka pri elektronski in tudi v neposredni komunikaciji med najstniki v angleščini.

Abstract: Students today are skilful in using all various digital tools and most of them want to travel the world and look beyond the Slovenian Border. I am a mentor of the international exchange project between the Slovene and French school and this provides the learning environment for the language learning and for learning about an unknown culture, different habits and a different school system. Our

learning environment includes planned activities, which are guided by the mentor and independent communication between the peers by using different written and spoken information communication tools. The key goals of this exchange are improving English communication skills with the Slovenes and the French students and make them more familiar with communicating via e-mail, skype, making short films and using various Social Networks (Facebook, Snapchat). Students have different abilities in these skills. Their main motivation and goal is also one week long exchange in France (city St. Chamond) and in Grosuplje, when the penfriends meet and the communication becomes more direct, also within the families, since the accommodation is provided by the exchange students families. At the beginning of school year, next to regular correspondence, the exchange project cooperation is defined also by different topics. These are usually connected with different cultural characteristics and features of Slovenia and France and students mainly suggest them. They write different short compositions, write blogs, and make short films and hand-made posters and cards. We are trying to use written and electronic ways of communication. Every year students prepare a power point presentation of Slovenia, which they present during their visit in France. The French students do the same. An additional value of this project is in the fact that every year there are weaker students who decide to take part in the exchange. They are not that good at English in the classroom, but in the real-life situation, we can see that they manage very well. We found out that the French might be weaker from the grammatical point of view, but they are very good at the communication itself. Our students can learn from them their openness, inventiveness and this way they become more confident in using the foreign language. “France – Slovenia” has been a winning combination for us, especially from the point of view of electronic and direct communication in English between our teenagers.

Ustvarjalno-raziskovalni tabori

Creative-Explorative Camp

Lidija Grubelnik, Osnovna šola Sladki Vrh, Sladki Vrh

Povzetek: V prispevku bomo predstavili, kako pomembno je učenje v naravi zunaj okvirjev učilnic, predpisanih predmetnih področij in tem učnih načrtov. Na OŠ Sladki Vrh že skoraj desetletje izvajamo tridnevne tabore za nadarjene učence. Njihov namen je širitev in poglabljanje vseživljenjskih znanj ter preseganje ciljev učnih načrtov ne glede na predznanje otrok. Učenci v okviru taborov samostojno pridobivajo znanja v heterogenih skupinah pod mentorstvom učiteljev. Pri tem je izpostavljeno sodelovalno učenje med učenci. Tabore izvajamo zunaj šolskega okoliša, v CŠOD, kjer nam nudijo le nastanitvene možnosti. Učenci lahko tako sami izbirajo svoj delovni oziroma ustvarjalni prostor, tudi časovno niso obremenjeni kot v šoli. Delavnice pripravljamo učitelji sami. Vsako leto se trudimo najti skupno vodilno temo tabora, ki povezuje čim več predmetnih področij. Izpostaviti želimo eno izmed vodilnih tem taborov, zlati rez. Učenci so bili izzvani prepoznati čim več geometrijskih likov v enem najbolj znanih logotipov na svetu in poiskati zakonitosti med zapisanimi števili v njem. To jih je vodilo do zlate spirale in Fibonaccijevega zaporedja. Matematične zakonitosti so jim pomagale pri likovnem izražanju, ki jih je vodilo do enega največjih znanstvenikov in umetnikov, Leonarda da Vincija. Konkreten primer reševanja problema je pokazal, da lahko določeno vsebino obravnavamo z različnih predmetnih področij, tako naravoslovja kot družboslovja. Naloga učiteljev je bila le poudariti medpredmetno povezovanje znanj in učenje iz naravnih zakonitosti. Učenci so individualno odkrivali zakonitosti zlatega reza v naravi. S pomočjo fotoaparatov in informacijske tehnologije so prenesli slike narave na računalnik, nato so z merjenjem in izrisovanjem zlatih spiral preučevali zakonitosti zlatega reza s posnetkov v naravi. Učenci so navdušeni nad tovrstnimi metodami in oblikami dela. Otrokom mora biti postavljen izziv, možnost samostojnega načrtovanja učnega procesa in raziskovanja v naravi. Tako si nevede svoja znanja razširjajo že samo z natančnim opazovanjem narave. Z opisanim načinom dela ne želimo doseči le konceptualnih in proceduralnih znanj. Trajno znanje dajejo učencem prav problemska znanja. Informacijska tehnologija je pri tem samo orodje, ki učencem omogoča hitrejše in kakovostnejše doseganje ciljev. Zagotovo pa se tako ne more poučevati vseh učencev vsak dan.

Abstract: In the article we want to present the importance of learning in the nature, outside the classrooms and curriculum. At the primary school Sladki Vrh we are carrying out for over a decade a three-day camp for the gifted students. The main purpose of the camps is to broaden and deepen their lifelong skills and to exceed the goals of the curriculum no matter the prior knowledge. The students gain the knowledge independently in heterogeneous groups under the teachers'

supervision. The emphasis is on the collaborative learning. The camps are carried out outside the school environment, in CŠOD (Centre for School Activities), where only the accommodation is offered while activities are performed by students and their mentors. The students can therefore choose their own working and creative area and are not so time limited like at school. The workshops are prepared by the teachers where every year we try to find the common or leading topic of the camp to include most of the school subjects and fields. We wish to emphasise one of the main topics of the camps, golden ratio. The students were challenged to recognize as many as possible geometric shapes in one of the most famous logotype in the world and find the laws of nature between the written numbers in the logotype. This led the students to the golden ratio and Fibonacci sequence. Mathematical laws of nature helped the students at art, which led them to one of the greatest scientist and artist, Leonardo da Vinci. The actual example showed how a certain topic can be discussed through several fields such as science as well as sociology. The main task of the teachers is to stress out the link of different knowledge and learning from the nature. The students were individually revealing the laws of nature of the golden ratio on the field. With the help of camera and ICT they uploaded the photos on the computer and with measuring and drawing they were studying the laws of nature of the golden ratio from the photos taken on the field. The students are excited over such methods and work. They need to be challenged and given the opportunity to independently plan the learning process and be able to explore in the nature. With such work they unknowingly broaden their knowledge just with observing the nature and by the same time we do not want to achieve only conceptual and procedural knowledge. Knowledge that lasts can be achieved only with mathematical problems while ICT enables the students faster and more quality fulfilment of set goals. However, we are aware that it is difficult to offer the students such way of learning on daily basis.

Opismenjevanje s pomočjo androidnih aplikacij v Google Playu

Literacy using Android apps on Google Play

Suzana Oder, Osnovna šola Primoža Trubarja Laško, Laško

Povzetek: Generacije otrok, ki prihajajo v šolo, živijo v modernem svetu in so čedalje bolj spretne pri uporabi moderne tehnologije. Veliko je otrok, ki že v prvem razredu osnovne šole uporabljajo tablične računalnike in pametne telefone. Kot učiteljica razrednega pouka poskušam v pouk vpeljati IKT. V prispevku predstavljam delo z učencem, ki je imel bralno-pisalne težave in težave s pozornostjo. Hitro je obupal ob klasičnih vajah opismenjevanja. Imel je velike težave z grafomotoriko, ni slišal glasov in jih ni povezoval v besede. Redno se je udeleževal dopolnilnega pouka in s starši smo naredili načrt dela. Učenca sem seznanila z brezplačnimi androidnimi aplikacijami, ki se nahajajo na Google Playu. Predstavljeno mu je bilo zanimivo in z veseljem je obiskoval pouk. Predstavila bom tudi pomanjklivosti aplikacij.

Abstract: Generations of children, coming to school, live in the modern world and are becoming increasingly skilful at using modern technology. Many of the children in the first grade primary school are using tablets and smartphones. As a class teacher I am trying to introduce modern communication technologies into the teaching process . In this article I am presenting work with pupil who had difficulty with reading and writing and also with attention. Pupil has quickly gave up on traditional exercises. He had a big problem with voices , he did not combine letters into words. He attend regulary remedial teaching. We made a work plan with his parents. I presented him free android apps from Google Play. He was interesting and happy. I will also present the disadvantage of applications.

Povleci in deli z drugimi

Sliding to share

Erika Grosar, Osnovna šola Solkan, Solkan

Povzetek: Predstavila bom idejo odprtega učenja v okviru mednarodnega projekta Povleci in deli z drugimi. Učenje se je preselilo izza zidov učilnice v bližnjo okolico šole in kraja ter s podporo IKT prestopilo tudi državno mejo ter našo kulturo približalo sodelujočim. Projekt, v katerem so si učenci izmenjali informacije o jezikovnih, kulturnih značilnostih, glasbi in umetnosti svoje države, je povezal šole treh držav EU. Potekal je vzporedno s poukom in predstavljal del pouka na drugačen način. Ni bil omejen na predmete, urnik, dneve ter prostorsko vezan na razred in šolo. Odgovornost za učenje in ustvarjanje so prevzeli učenci, učitelj je postal mentor, koordinator in spodbujevalec. Odprto učenje je potekalo v treh fazah. Najprej je bilo treba načrtovati in zbirati gradiva. V tem delu so učenci izdelali načrt, kako, kje raziskati, poglobiti svoje znanje o šoli in kraju, ter si po skupinah razdelili vloge. Raziskovali so gradiva v knjižnici, pri krajanih in na svetovnem spletu. Sledil je postopek izdelave. Naredili so scenarij, kaj, kje in kako bodo ustvarjali ter katero tehnologijo bodo pri tem uporabili (tablica, aplikacije, splet idr.). Izdelke je učitelj objavil na portalu eTwinning, učencem pa so bili dosegljivi v spletni učilnici Moodle. To učno okolje jim je omogočalo časovno neomejeno dostopanje do učnih gradiv in izdelkov. Vključevalo je tudi njihove starše. Projekt Sliding to share je spontano ponudil možnost deljenja in izmenjave s partnerskimi šolami. Učenci so se najprej med seboj predstavili s pomočjo videa, nato pa predstavili šolo, kraj in državo. Sami so tudi ustvarili logotip projekta. Vključene šole so si vsa gradiva izmenjale na portalu eTwinning. Na koncu so učenci prejeli izdelke partnerskih šol, ki so jim bili dostopni v spletni učilnici. Izdelke so si pogosto ogledali tudi doma, se iz njih učili, jih komentirali, primerjali. Razvili so občutljivost za prepoznavanje in upoštevanje medkulturnih značilnosti ter poglobili spoštovanje do lastne kulture. Skozi opisan proces dela so se veliko naučili drug od drugega na medpredmetni ravni. Uporabljali so mobilno tehnologijo in postali učinkoviti iskalci ter uporabniki določenih informacij. Motivirani so bili za učne aktivnosti in prevzeli odgovornost za učenje. Učiteljeva vloga je bila prav tako pomembna, saj sem sproti preverjala dosežene učne cilje in učence po potrebi usmerjala k ustreznim aktivnostim.

Abstract: I am going to present the idea of open learning in the framework of the international project Sliding to share. Learning has moved beyond the walls of the classrooms into the school neighbourhood and the hometown, and with the support of ICT it also made known our culture to the partners' schools abroad. The project, in which pupils exchanged linguistic, cultural characteristics, music and art of own countries, brought together three schools from three EU countries. The project was

held in parallel with official lessons and formed part of the teaching in a different way. It was not limited to the school subjects, timetable, days and it was not bound to the classroom and the school itself. The pupils took responsibility for their learning and product creation and the teacher became a mentor, coordinator and facilitator. Open learning was conducted in three phases. The first task was to plan and collect materials. In this part, the students made a plan on how and where to explore and deepen their knowledge of their school and town, and they distributed their roles in groups. They searched for the material in the library, among the local citizens and the World Wide Web. Next, the process of creation phase followed. They prepared the plan about what, where and how to create and what technology to use in the process (tablets, apps, Internet ...). The teacher posted the products on the eTwinning portal, while for the students the materials were available in the Moodle. This learning environment enabled them unlimited access of the learning materials and products. Their parents were also involved. Our project Sliding to share spontaneously offered the opportunity to share and exchange products among partners' schools. Students first introduced themselves to each other by means of a video, and then presented their school, the town and the country. They also created the project logo. The schools shared the project products on the eTwinning portal. In the final phase, the students received the partners products, which were available in the Moodle. Products were often viewed and studied at home. Students learned from them, commented and compared the data. They have developed a sensitivity for the identification and consideration of cross-cultural characteristics and deepened their respect for their own culture. Through the process described above, the students learned a lot from each other in an cross curricula way. They used mobile technology and became efficient searchers and users of certain information. They were motivated for the learning activities and took responsibility for their own learning. The teachers role was also important, as I continuously verified the learning objectives, and if necessary, I guided them through the appropriate activities.

Kako učence navdušiti za branje Cankarjevih črtic

How to enthuse pupils about Cankars short stories

Lučka Drnovšek Pepelnjak, Osnovna šola Ivana Kavčiča, Izlake

Povzetek: Učni načrt za slovenščino v devetletni osnovni šoli predvideva, da učenci ob koncu 9. razreda pregledno poznajo književnika Ivana Cankarja in navedejo poglavitne značilnosti literarnega obdobja, v katerem je ustvarjal. Poleg tega je Cankarjeva črtica Bobi obvezno besedilo za obravnavo pri pouku. Čeprav so Cankarjeve črtice po svoji tematiki in sporočilnosti vedno aktualne za obravnavo pri pouku in spodbujajo k pogovoru o vsakdanjih vprašanjih tudi v današnjem svetu, pa lahko pri osnovnošolskih bralcih kaj hitro naletimo na odpor do prebiranja teh besedil. Zato je izjemno pomembno, da učitelj izbere učinkovite učne oblike in metode za doseganje učnih ciljev. Kako torej vzpodbujati radovednost, samostojnost, sodelovanje ter hkrati Ivana Cankarja in njegova besedila čim bolj približati devetošolcem? Obravnavo učnega sklopa smo začeli z najavo knjige za domače branje Moje življenje. Čeprav je v šolski knjižnici zaloga teh knjig precejšnja, sem učence obvestila, da lahko črtice prebirajo tudi prek Wikivira. Povezavo do zbirke Moje življenje na Wikiviru sem hkrati z vprašanji, ki so jih učenci dobili pred začetkom branja, objavila v spletni učilnici za slovenščino. Pisatelja, pesnika in dramatika Ivana Cankarja sem predstavila s pomočjo prosojnic, ki sem jih pripravila v programu PowerPoint. Naslednjo šolsko uro je uvodna motivacija potekala s pomočjo tabličnih računalnikov, s katerimi so si učenci skenirali QR-kodo, ki je skrivala nadaljnja navodila za delo. Sledilo je branje črtice Bobi. Kljub temu da je celotno besedilo v šolskem berilu, so se vsi učenci raje odločili za branje s tabličnih računalnikov. Sledila je analiza besedila. Vprašanja so učenci ponovno dobili s pomočjo QR-kode. Za preverjanje in utrjevanje znanja pa sem uporabila program Nearpod, v katerem so v dvojicah s pomočjo tabličnih računalnikov reševali različne tipe nalog. Obravnavo sklopa smo sklenili s pisanjem scenarija in posneli film po predlogi ene izmed njegovih črtic v programu Movie Maker. Z uporabo IKT sem Ivana Cankarja nekoliko bolj približala učencem, ki so rojeni v svetu informacijske tehnologije. Ti pa so bili med obravnavo izjemno motivirani za delo, med seboj so sodelovali, bili so ustvarjalni, ob koncu pa zelo zadovoljni z rezultatom lastnega dela.

Abstract: During Slovenian lessons, nine graders get to know Ivan Cankar and his works. Short stories, because of their topics and messages, encourage pupils to talk about everyday questions and hardships but unfortunately coming across resistance when reading these texts is a too frequent occurence. So it is very important for the teachers to choose effective teaching methods when dealing with Cankars texts. How to encourage curiosity, independence, cooperation and at the same time make Ivan Cankar and his works interesting to nine graders? We started with

Ivan Cankars Moje življenje. The book is available on Wikivir. Before reading, pupils were given questions which were published in the web classroom. I introduced Ivan Cankar, a writer, a poet and a playwright, to the pupils by using Powerpoint. The next lesson was done with the help of computer tablets. The pupils received the instrucions via QR code. Next we read Ivan Cankars Bobi. Despite the fact that the whole text was in their school books, the pupils decided to read the text on their tablets. The questions for analysis were again given via the QR code. To test their knowledge, I used Nearpod programme, in which pupils in twos were doing different types of exercises on their tablets. We finished the lesson by writing a script and shooting a film according to one of Cankars short stories in Movie Maker programme. By using IKT I managed to make Ivan Cankar a bit more interesting for pupils who were born in the world of information technology. The pupils were highly motivated for work, they worked together well and were in the end very pleased with the results of their work.

Sestavljanje 3D-tiskalnika v inovativnem učnem okolju

Building a 3D printer using an innovative learning environment

Mojca Borin, Osnovna šola Draga Kobala, Maribor

Povzetek: Prispevek predstavlja učni proces, ki je potekal zunaj okvirjev časovno omejenega dela med poukom, zunaj meja šolskega prostora, v sodelovanju z zunanjimi strokovnjaki in z učenci v vlogi glavnih akterjev, ustvarjalcev v procesu pridobivanja znanja, veščin in kompetenc. Glavni cilj je bil sestaviti 3D-tiskalnik, preostali ključni cilji so bili spoznavanje osnov 3D-modeliranja in 3D-tiskanja, razumevanje principa delovanja 3D-tiskalnika, načrtovanje postopka sestavljanja 3D-tiskalnika ter priprava in izvedba celotnega projekta. Učenci so v okviru pouka izbirnih predmetov računalništva obravnavali osnove 3D-modeliranja in princip delovanja 3D-tiskalnika. Nato jim je bil predstavljen glavni cilj projekta: sestaviti 3D-tiskalnik. Oblikovala se je skupina sedmih učencev 8. in 9. razreda. Učni proces je potekal večino časa v FabLabu, kar je kratica za fabrication laboratory ali odprt, nekomercialni prostor za ustvarjanje, kjer lahko posamezniki uporabljajo tehnologije, ki se uporabljajo tudi v industrijski proizvodnji, in je platforma za izobraževanje, medgeneracijsko povezovanje in ustvarjanje. V FabLabu, so učencem najprej predstavili tehnologijo 3D-tiska in programe za modeliranje in tiskanje, učenci so se aktivno vključili in nastali so preprosti izdelki. Nato se je začel proces načrtovanja in priprave. Učenci so aktivno sodelovali tudi pri iskanju ponudb za nabavo potrebne elektronike. V FabLabu so nam priskočili na pomoč s pripravljenim prototipom tiskalnika, ki je vseboval tudi načrte za izdelavo lesenega ohišja, in pri dejanski izvedbi nabave vseh potrebnih sestavnih delov. Ob mentorstvu in pomoči strokovnjakov je počasi nastajal 3D-tiskalnik. Vse, kar je bilo možno, so učenci izdelali sami. Za proces načrtovanja, sestavljanja in testiranja delovanja 3D-tiskalnika smo se sestali šestkrat po štiri ure. Tiskalnik smo nazadnje prinesli v šolo, kjer smo ga namestili in ponovno testirali. Učenci so ves čas zahtevnega tehnološkega procesa aktivno sodelovali in bili ustvarjalni v vseh fazah projekta. Izkoristili smo odprto tehnološko okolje – FabLab, ki nudi optimalne, spodbudne in varne pogoje za izvajanje tovrstnih projektov in seveda strokovno podporo. Slabost takega načina učenja so bila popoldanska srečanja po končanih rednih šolskih aktivnostih, organizacija prevozov ipd. V vseh pogledih smo presegli tako prostorske kot časovne okvirje običajnega pouka in učencem omogočili samostojno učenje in ustvarjalnost.

Abstract: In this article we present an experience on how to organize learning process without time and classroom limitation, and in collaboration with external experts and students in the role of the main actors and creators in the process of acquiring knowledge, skills and competences. The prime objective was to draw up a 3D printer. Other objectives were to learn the basics of 3D modelling and 3D printing, understanding the principle of how 3D printer works, to design process of assembling the printer and the preparation and implementation of the entire project. During the Computer course students discussed the basics of 3D modelling and principle of operation of the 3D printing. Later the prime objective was presented to them, and that was how to construct a 3D printer. A group of seven 8th and 9th grade students was formed. The learning process was carried out most of the time in the 'fabrication laboratory' (FabLab). FabLab is an open, non-commercial space to create and to use technology, which is used in industrial production. It is also a platform for education, intergenerational interaction and creativity. Experts in FabLabu at first presented students the 3D printing technology and programs for modelling and print. Students were actively involved all the time, they designed and printed some simple products. Then the process of planning and preparation began. Students participated also in the search of the necessary electronics. FabLab experts helped us with ready prototype printer, which included plans for the manufacture of wooden printer case, and with the actual implementation of the purchase of all necessary components. With mentoring and assistance of experts, students slowly constructed the 3D printer. Everything that was possible, students created by themselves. For the entire process of planning, assembly and testing the 3D printer we met six times for four hours. The printer was recently brought to the school, where we placed and re-tested it. Students were constantly actively participating and were creative in all phases of the technologicaly very complex project. We used open technological environment - FabLab, which is equipped to offer optimal, stimulating and safe conditions and professional support. A disadvantage of this method of learning were afternoon meetings; after regular school activities, organizatin of transport, etc. We organized learning process without time and space limitations and we enabled students to learn independently and to be creative.

Priprava razredne prireditve v Oblaku

Preparation of the class event in the Cloud

Mateja Frece, Osnovna šola Dobje, Dobje

Povzetek: Prispevek sem umestila v tematski sklop Odprto učenje, saj so imeli pri ustvarjanju scenarija za razredno prireditev učenci vse niti v svojih rokah in so jo lahko ustvarjali ob kateri koli uri ter kjer koli. Kar so potrebovali, so bili računalnik oz. pametna naprava, račun za dostop do Oblaka 365 in internetna povezava. Učitelj je bil samo moderator in svetovalec v primeru težav. V natrpanem načrtu šolskega dela velikokrat zmanjka časa za ustvarjanje dogodkov, ki so za učence tako izobraževalni kot tudi vzgojni. Eno izmed takih prireditev so učenci 5. razreda oblikovali ob koncu šolskega leta za celotno razredno stopnjo. Pri eni izmed ur pouka sem porabila minuto časa in jim povedala, da sem v Oblaku 365 ustvarila Wordov dokument in ga dala v skupno rabo z njimi. Dobili so navodilo, da vanj zapišejo scenarij za razredno prireditev. Z urejanjem v Oblaku 365 se je zbral širok nabor najrazličnejših idej, ki so jih učenci lahko sočasno vpisovali tudi od doma, saj se dokument nenehno sinhronizira in vsi takoj vidijo vnesene spremembe. Pri naslednji uri oddelčne skupnosti so nato z usmeritvami učitelja izpilili scenarij. Delo učencev je bilo ves čas pod budnim očesom mentorja – učitelja, ki jih je prav tako lahko spremljal ves čas. Najprej oddaljeno z vpisovanjem komentarjev v Wordov dokument, nato v živo pri uri oddelčne skupnosti. Učenci so tako lahko pokazali svojo inovativnost in iznajdljivost, obenem pa so se urili v zapisovanju in upoštevanju slovničnih pravil. Ko je bil scenarij oblikovan, so začeli s skupno pripravo predstavitve v PowerPointu, in sicer znova v dokumentu, ki ga je učitelj delil z učenci, ti so ga oblikovali in dopolnjevali. Po izpeljani prireditvi so učenci v Swayu oblikovali povzetek prireditve za vso šolo. Tak način dela predstavlja inovativno rešitev tako za učitelja kot tudi za učence. Za učitelja z vidika organizacije pouka, kjer priprava razrednih prireditev ni predvidena, za učence pa z vidika organizacije njihovega dela, saj so lahko ideje vpisovali takrat, ko so jim prišle na misel, svoje delo so povzeli v predstavitvi in ga evalvirali, obenem pa so nehote podrobneje spoznavali tudi Microsoftova programska orodja.

Abstract: The article is a part of the Open learning theme section. After all, learners were able to construct the script of the class event whenever they wanted and wherever they wanted. All they needed were a computer or a smart device, a Cloud account and a web connection. The teacher was only a moderator in case of trouble. There is a lack of time to create events that have both educational and moral value. One of them was made by the 5th graders at the end of the school year. I needed only a minute to explain the children about the document in the Cloud that was available to all of us. After the instructions for making a script were given, children were obliged to write as many different options they thought of in the Cloud. In this way

several ideas were brought together. Students could add ideas at home and at the same time the ideas were available to all users, including the teacher. Later on the teacher helped them to improve the script by giving suggestions and comments and putting them in the collaboration space. They also talked about it at school in the class. Activity like this encouraged learners to show their innovativeness and inventiveness, besides they also had to write complete and grammatically correct sentences. After the script had been improved, learners built a presentation in Power Point and put it in the collaboration space. After the event learners made a short summary of the happening in Sway. The method described above is an innovative way of working for both – teachers and learners. It is useful for a teacher because preparation of class events is not an intended event. But it is also useful for children because they can insert ideas at any time they want, they can also evaluate their work and meanwhile they work with Microsoft tools.

Ko so učenci učitelji

When pupils are teachers

Maja Jelenko, Zavod za gluhe in naglušne Ljubljana, Ljubljana

Povzetek: Z željo, da bi učenci medvrstniško sodelovali, so se tretješolci in petošolci povezali v projektih eTwinninga. V sklopu projektov smo odšli v predsedniško palačo in obiskali predsednika Slovenije, Boruta Pahorja. Ker se je medvrstniško sodelovanje izkazalo kot odlična ideja, se je sodelovanje nadaljevalo tudi pri izbranih urah pouka. Učenci 5. razreda so pripravili PowerPoint predstavitev o Sloveniji (zanimivosti, geografske značilnosti, zgodovina) in jo pokazali učencem 3. razreda. Pričakovalo se je, da se bodo pri podajanju in prejemanju učne snovi pojavile težave, saj imajo učenci naše šole, Zavoda za gluhe in naglušne Ljubljana, zaradi svojih specifičnih težav (govorno-jezikovna motnja, avtizem, gluhota) velikokrat težave s komunikacijo, javnim nastopanjem, pozornostjo in koncentracijo. Strahovi so bili odveč. Starejši učenci so nastopili samozavestno, mlajši pa so jih zbrano poslušali. Za povratno informacijo o podani učni snovi so učenci petošolci za tretješolce izdelali kviz v spletni aplikaciji Kahoot. Kviz se je odvijal v računalniški učilnici. Kljub temu da niso vsi tretješolci vešči dela za računalnikom, s kvizom niso imeli težav. Z rezultati so bili zelo zadovoljni. Učenci niso bili le pasivni prejemniki znanja, ampak so gradili znanje in veščine skozi interakcije z okoljem. Pridobili so vsi, tako učenci, ki so poučevali, kot tisti, ki so se učili.

Abstract: We wanted pupils to be in eTwinning projects. We included the 3rd and 5th graders. Within the project we went to the Presidential Palace and to visit President of Slovenia, Mr Borut Pahor. Since the peer collaboration proved to be an excellent idea the cooperation continued also in classes. 5th graders have prepared a PowerPoint presentation of Slovenia (points of interest, geographic features, history) and presented to 3th graders. We expected some problems with pupils, because of their specific problems (speech and language disorders, autism, deafness). They are children with special needs and they have problems with communication, public speaking, attention and concentration. All fears were pointless. Older pupils performed their work with confidence and younger pupils listened very carefully. As feedback on given learning material, the 5th graders made in internet aplication a quiz named Kahoot. Quiz took place in the computer classroom. Despite the fact that not all the 3rd graders have skills in computer, we had no problems. The results were very good. In this activity pupils were not just passive recipients of knowledge, but they build knowledge and skills through interaction with the environment. This was win – win for both sides, for pupils that tought and for pupils who were thougt.

Svetlobno onesnaževanje v Oblaku

Light pollution in the Cloud

Valentina Maver, Gimnazija Bežigrad, Ljubljana

Povzetek: Tema raziskovanja je bilo svetlobno onesnaževanje, saj se s tem ukvarjamo pri uporabi elektronskih tabel in prižiganju luči v razredu, zato smo se odločili, da bi osvetlili še druge vidike svetlobe in ustvarili spletni časopis, ki bi bil uporaben učni pripomoček tudi preostalim oddelkom na šoli. S tem smo povečali ustvarjalnost in (samo)kritičnost do snovi in načina učenja. Ob samem raziskovanju so dijaki izdelali tudi več kvizov, premetank in križank. Pridobili in uredili so elektronske informacije, podatke in pojme v mediju spletni časopis. Z nevihto možganov na padletu smo najprej ugotovili, kako sta povezana svetloba, svetlobno onesnaževanje, geografija. Na podlagi teh spoznanj smo razdelili dijake v skupine po 3 in določili okvirni datum, do katerega bomo zbrali osnovne informacije. Ob izmenjavi informacij prek Moodla smo se v vmesnem času testirali s kvizi, premetankami in križanko, da smo obnovili poznavanje pojmov, ki smo jih preučevali. Učitelj kot mentor postane svetovalec posameznikom/skupini. Svetlobnemu onesnaževanju ni posvečena posebna tema v učnem načrtu, sem jo pa uvrstila v temo trajnostnega razvoja. Z izsledki raziskave sem zelo zadovoljna, osnovne pojme smo uvrstili v pisno preverjanje in ocenjevanje. Pripomočki, ki smo jih uporabili, za dijake niso dovolj verodostojni, še zlasti zato, ker svojim sovrstnikom ne zaupajo o resničnosti in uporabnosti informacij, ki so jih nanizali v spletnem časopisu.

Abstract: Light pollution was chosen due to the use of smart boards and lights in classrooms and because of the need to illuminate other aspects of light and create an internet newspaper which would serve as a learning tool for other school users. By doing so creativity and a (self)-critical approach towards the topic and learning methods were enhanced. During the investigation process students have created numerous quizzes, puzzles and cross-words. Students develop the ability to gain and organize electronic data and use them as a medium- internet newspaper. Brain storming with the use of padlet gave answers to the connection between light, light pollution, geography and other fields, included in our investigation. Based on these data, students formed groups of 3 and set the deadlines for gathering information, which was shared via moodle. The use of quizzes and crosswords on Moodle enabled us to test our basic knowledge of the investigated notions. The teacher–mentor functions as the advisor of the student/group. Light pollution is not specifically determined in the curriculum but it is now included in our topic of sustainable development. I am extremely satisfied with the results of our research and the basic notions were also assessed in written tests.

The internet newspaper was used as a learning tool in other classes. The tools were rated as untrustworthy since students do not trust their peers regarding the usefulness and trustworthiness of the presented data but the understanding of complex geographical notions and importance of individual contribution was clearly evident.

Z Oblakom do znanj o potresih in vulkanih

Learning about Earthquakes and Volcanos in the Cloud

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Povzetek: Pri pouku geografije povsod najdemo povezave med vsakdanjim življenjem in učno snovjo. Ker neverjetna moč narave, obravnavali smo namreč potrese in vulkane, učence vedno pritegne, sem se odločila za odprto učenje, saj lahko učenci na svetovnem spletu poiščejo ogromno dodatnih informacij in se tako tudi veliko naučijo. Uporaba sodobne tehnologije se jim zdi zanimiva, jih motivira za delo, zato sem želela, da se moja vloga »vira informacij« spremeni v usmerjevalko poteka dela ter posredovalko novih načinov pridobivanja informacij in znanj. Proces izvajanja pouka je potekal v Oblaku 365, kjer so bili učenci vključeni v OneNote Classbooku. Potek učne ure sem načrtovala na podlagi učenčevega samostojno pridobljenega predznanja. Že doma so si ogledali pripravljena videoposnetka ter fotografije o potresih in vulkanih ter odgovorili na vprašanja. Delo v šoli se je nadaljevalo na računalnikih, kjer so v zvezku v o365 reševali delovni list s pomočjo predznanja ter samostojnega iskanja informacij na svetovnem spletu. Učno uro smo končali s pripravljenimi interaktivnimi vajami, kjer so učenci z različnimi Microsoftovimi orodji povezovali, vrisovali, označevali na karte in slike različne pojme, povezane s potresi in vulkani. Za utrditev snovi so rešili še kviz, ki sem ga ustvarila v programu Microsoft Forms. Opisani način dela učence navaja na samostojno delo, s tem pa na odgovornost za lastno znanje. Pri učni uri se je pokazalo aktivno sodelovanje, razmišljanje, postavljane številnih vprašanj. Sama sem imela vpogled v delo otrok, predvsem pri predznanju, saj sem lahko preverila, kdo je naredil posamezno nalogo in kdaj. Dobila sem tudi hitrejše povratne informacije. Učenci so si svoje delo po lastni želji časovno organizirali in tudi vsebine so jim bile na voljo na vseh mobilnih napravah, tudi kadar niso bili povezani s svetovnim spletom. Hkrati so tudi podrobneje spoznavali Microsoftova programska orodja. Pouka geografije si sploh ne predstavljam več brez uporabe sodobne tehnologije, saj ga je ta močno popestrila, učenci pa so postali bolj kritični, vedoželjni in samoiniciativni.

Abstract: Learning about Earthquakes and Volcanos in the Cloud There are many parallels between everyday life and subject matters at geography lessons. Talking about volcanos and earthquakes in a classroom offers learners many opportunities to look for information on the internet. Thus open learning is established. Using modern technology motivates learners and meanwhile turns a teacher instead of being a source of information into a moderator of the learning process and a mentor of using new methods at the same time. The learning process went on in the

Cloud 365. All the learners were logged in the OneNote Class Notebook. The lesson was planned on the basis of learners' independent work. They watched two videos about volcanos and earthquakes at home and they answered the questions afterwards. At school learners were obliged to log in the digital notebook and solve the worksheets. The questions referred to the two videos they had watched at home. They could also use the internet to find necessary information. The lesson ended by interactive exercises I had prepared at home. The learners were using Microsoft tools for matching, drawing, labeling pictures and maps, ... different concepts connected to the theme. Revision included some quiz questions, made in the Microsoft Forms. The method described above encourages students to work independently and to feel responsible for their own knowledge. At the lesson students were actively involved in the process, they were asking questions. I had an insight into their work and prior knowledge. After all the collaboration work enabled me to check who did the job and when. I found out that quickly. Students organised their time individually. All the materials were also available on their mobiles, even when they were not connected to the internet. At the same time, students could also get to know the Microsoft tools. I cannot imagine to plan a geography lessons without using modern technology. After all it has improved the lessons in many ways: learners are more critical, eager to learn and self-initiative. Key words: open learning, earthquakes and volcanos, the Cloud 365, OneNote Classroom, Microsoft Forms

Medgeneracijsko spoznavanje kulturne dediščine

Cultural heritage through intergenerational learning

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Povzetek: Odprto učno okolje pomaga na ustvarjalni poti do trajnega znanja, ki ga učenci dosegajo s sodelovanjem pri načrtovanju učenja. Sem zagovornica vseživljenjskega učenja, zato vsa leta v učni proces vključujem medgeneracijsko sodelovanje. Uspešno učenje in osebnostni razvoj otrok sta povezana z družino. Na naši šoli vsako leto poteka Teden evropske kulturne dediščine. Učenci z različnimi dejavnostmi ves teden raziskujejo in spoznavajo dediščino svojega kraja. Ta se pojavlja v učnem načrtu in je za učence v 1. triletju precej abstrakten pojem. Zato je družinsko spoznavanje z odprtim učnim okoljem najprimernejše. Učenci to dosežejo kot izkušnjo, jo povežejo s svojim okoljem in so jo sposobni v kasnejših obdobjih negovati in nadgrajevati. V prispevku predstavljam letošnjo temo Prazniki in praznovanja, kjer so učenci 3. razreda v odprtem učnem okolju spoznavali belokranjski običaj, godovanje ob martinovem. Celoten učni proces je potekal po strategiji VŽN. V računalniški učilnici so učenci s pomočjo interneta raziskovali o sv. Martinu, iskali pregovore, anekdote, običaje in priložnostne jedi. Bert je povabil dedka Martina in babico Martino v učilnico, kjer sta pripovedovala, kako sta nekoč godovala. Tanja je s pametnim telefonom posnela staro godovno pesem, ki jo je zapele njena babica in kmečke žene. Besedilo pesmi so zapisali v Wordu, naučili se ga na pamet, z dedkom Martinom pa zapeli ob spremljavi harmonike. Z Bertovo mamico sva na njihovi kmetiji pripravili prikaz voščila nekoč z dvema različnima besediloma. Učenci so z improviziranimi zvočili presenetili spečega slavljenca (učenca), ki je spal v slamnati postelji. Izrekli so mu voščilo: »Sem deklica mlada, voščila bi rada, voščiti ne znam, pa rokco podam.« Spečemu dedku so zvezali noge ter ga zbudili z recitacijo: »Dragi tata dns vam je god, Bog vam daj sreče povsod. Da bi iše drugo leto živeli, da bi si sveta nebesa zaslužili.« Vse dejavnosti smo fotografirali, izdelali PowerPoint predstavitev, naredili knjižico ter v Wordu zapisali scenarij za nastop. Pripravili smo splet o naučenem in doživetem godovanju, s katerim so učenci z dedkom Martinom nastopili v Kulturnem centru Semič. Na roditeljskem sestanku smo staršem predstavili videopredstavitev dejavnosti, izdelano z aplikacijo Picasa.

Abstract: Intergenerational learning has played an imporant part throughout all my teaching career since I strongly consider it a tool for successful learning and personal developement. Belokranjskega odreda Semič Primary School has been organizing European Cultural Heritage Week for a number of years ; through intergenerational interaction pupils research and highlight cutural heritage of their hometown and are able to nurture and perpetuate the experience. I will present this years theme Holidays and Festivals, where third grade pupils did a research in open learning

environment on the Feast of St. Martin celebrations in Bela Krajina. Firstly, pupils looked for anectodes, proverbs, customs about St. Martin and typical dishes for St. Martins day via the internet. Bert invited his grandfather Martin and his grandfather Martina to school and they talked about how they celabrated their names day. Tanja used her smartphone to videotape an old names day song sung by her grandmother and some village women. The lyrics were written down, learned by heart and sung together with grandfather Martin playing his accordion. At Berts farm, his mother and I prepered a congratulation sketch with two different traditional wishes. A boy and his grandfather were woken up from their beds made of straw and the congratulations were recited to them. Throughout the entire learning process KWL learning strategy was used. All activities were photographed, a Power Point presentation and a booklet were made, a scenario was written down. Together with grandfather Martin third grade pupils prepared a performance at the Cultural Hall in Semič. A video created in Picasa was also shown.

Preprostost, ki jo je treba usvojiti: spletne učilnice za širjenje učenja zunaj šolskih zidov: primer uporabe Google Classroom

Simplicity that needs to be mastered: web-based platform for spreading the knowledge outside the school: a case study of the use of Google Classroom

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Povzetek: Tehnologij, ki učno snov podajajo zunaj šolskih prostorskih in časovnih okvirov, je mnogo. Izbrati najprimernejšo, na prvi pogled deluje lažje, kot je v resnici. Pri izbiri spletne učilnice je treba upoštevati snov, tipe nalog za učence ter ustvarjati kontinuiteto in jasnost uporabe kanalov učenja med učenci. V nasprotnem primeru lahko namesto navdušenja, sprožimo val odpora. Google Classroom je spletno orodje, ki se najhitreje razvija, četudi še ni najboljše na trgu – vendar gre v tej smeri. Kljub nekoliko zahtevnejši prvotni vzpostavitvi je njegova uporaba neverjetno preprosta in intuitivna, med učenci pa nadvse dobro sprejeta. Zgornje trditve podajamo na podlagi testa, ki smo ga izpeljali na OŠ Videm pri Ptuju z učiteljicami angleškega jezika. Po njihovih zahtevah je računalnikar vzpostavil najprimernejše orodje, ki dovoljuje individualizirano urejanje dela, ter v njem med poletnimi počitnicami izuril sodelavke in spremljal potek testa. Ideja o preklopu na spletno orodje je bila odgovor na željo po dodatnem oknu dostopa do podajanja znanja. Učencem nudi več dodatnih virov in načinov za urjenje angleškega jezika, prek povezav do zanimivih zgodbic, primernih videovsebin in nalog različnih tipov. Test je potekal celotno šolsko leto, učenci pa so ta način posrednega šolskega dela v 90 % jemali kot dodatno motivacijo. Uživali so v odkrivanju pripravljenih povezav, česar v večini primerov niso dojemali kot delo, ampak kot zabavo, že zaradi samega, za zdaj še neformalnega in novega načina podajanja. Nagrada za aktivne učence je znanje, ki so ga s tem pridobili – ne le na nivoju angleškega jezika, ampak tudi na nivoju urjenja v odgovorni uporabi IKT. S tem sta povezana dom in šola, saj so uporabljene vsebine in delo v prostem času v šoli analizirali, dodali vrednost domačemu delu in aktivnosti posameznikov ter jih medsebojno povezali s predstavitvami. Ta način dela torej poteka na dveh nivojih – izobraževalnem in zabavnem –, obenem pa je odlično orodje za formativno spremljanje. Za vse prihodnje uporabnike spletnih učilnic priporočamo test, kjer odločitev o najprimernejšem orodju prilagodijo glede na predmet, učitelje in odzive učencev. Na primeru OŠ Videm pri Ptuju se je Classroom izkazal za daleč najprimernejše orodje med vsemi.

Abstract: There are many technologies that enable the learning experience outside the school premises and time frames. Selecting the most suitable seems easier at first glance, than it actually is. When choosing the right virtual classroom, a subject matter, type of tasks for pupils and creation of continuity and clarity of the use of channels of learning should be considered. Otherwise, we can trigger a wave of resistance instead of excitement. Classroom is a fast developing online tool. Despite the somewhat demanding initial establishment, its use is incredibly simple and intuitive, very well received among the pupils. The above arguments are given on the basis of the test, which was carried out at the OŠ Videm pri Ptuj with the English teachers. According to their requirements IT teacher set up the tool, which allowed individualized editing work. He trained the other teachers with the entire progress of the test. The idea of switching to a web-based tool was a response to the request for additional access window to pass on knowledge. It provides students with a number of additional resources and ways to practice English through links with interesting stories, appropriate video content and tasks of different types. The test took place the whole school year. Students were extremely motivated to do the task. They enjoyed discovering prepared links, which in most cases were not perceived as work, but as entertainment, informal and a new way of feeding. They were awarded with extra knowledge and they learned to use the new ICT. This way school work and free time are more connected. This kind of work takes place on two levels - educational and entertaining at the same time, it is an excellent tool for formative assessment. We recommend this test for all who want to use online classrooms in the future. Among all different tools this kind of classroom was proven best at the above mentioned school.

Pobeg iz učilnice biologije

Escape from the Biology classroom

Marjeta Kolbl, Osnovna šola Brinje Grosuplje, Grosuplje

Povzetek: To, da se mlajši učenci radi igrajo in nevede usvajajo znanje skozi igro, je vsem dobro znano. Tudi učenci višjih razredov se zelo radi igrajo, pa vendar zelo malo učiteljev poučuje ali utrjuje znanje skozi igro. Sama pri svojem delu zelo rada posežem po didaktičnem gradivu, ki ga izdelujem sama. Velik poudarek zadnje leta posvečam didaktičnim igram. Večina teh je po navadi namenjena predvsem utrjevanju znanja določenega učnega sklopa. V letošnjem šolskem letu sem učencem pripravila igro *pobeg iz učilnice biologije*, ki zajema znanje biologije od 6. do 9. razreda. Igra je podobna *lovu na skriti zaklad*. Namenjena je devetošolcem, lahko pa jo igrajo tudi osmo- in sedmošolci, saj lahko pri reševanju uporabljajo spletne strani na internetu. Učenci, v skupini jih je največ pet, z namigi iščejo rešitve iz naloge v nalogo. Zaradi varnosti učencev je v razredu prisoten učitelj, ki pa ima le vlogo nadzornika in ne moderatorja igre. V razred bi namesto tega lahko postavili tudi več kamer. Mentorja ni v sobi, je pa v »pripravljenosti«. Ura se odvija po pouku, zato učenci niso časovno omejeni. Med igro morajo mentorici poslati sliko gesla, ki jo posnamejo med igro, si ogledati posnetek z geslom in zapis na zastarelem mediju –videokaseti. Med drugim morajo preko interaktivne table in spletne strani Flash-Gear sestaviti sestavljanko z novim namigom, uporabiti kamero mikroskopa, ki je povezan z USB-priklopom na računalnik in drugo. Kadar koli med igro lahko za pomoč uporabijo splet. Enkrat lahko za pomoč prek e-pošte ali klica zaprosijo mentorja. Kadar igro igra več skupin, se nekaj gesel lahko zamenja ali pa se učence motivira z nagrado, da ne bi prihajalo do posredovanja rešitev med skupinami. Ker se tudi sama rada igram, vem, da je igra nekaj, kar učence popelje v znanje, ne da bi se tega sploh zavedali. Za igre so vedno motivirani tudi tisti s šibkejšim znanjem in sposobnostmi, katerim se lahko igra priredi z lažjimi ali več namigi. Glede na izkušnje so tako učenci za pouk bolj motivirani, priprava iger pa od učitelja zahteva veliko časa in energije.

Abstract: It is well known that younger students like to play and unknowingly they are capable of acquiring knowledge through play. Also older student love to play, but there are only few teachers who decide to teach or reinforce the knowledge through play. I, personally, really like using the didactic materials which I make by myself. For the last few years, I have put great emphasis on didactic games. Most of these games usually focus mainly on reinforcing the knowledge of a specific part of the lesson plan. For this school year I prepared the game called “Escape from the Biology classroom” for my students and it includes Biology knowledge from class 6 to 9 in Primary School. The game is similar to the “Treasure hunt” game. My game is intended for the 9th graders, but only 8th and 7th graders can play it, because

while playing, they can use several webpages on the Internet. In a group there are maximum 5 students and by reading specific hints they are trying to find a solution from one exercise into another. Due to safety reasons, there is a teacher in the classroom, but his role is only to supervise and not to moderate the game. The mentor is not in the room, but he is “on alert”. This lesson is carried out after regular lessons finish, so that the students are not under time pressure. While playing, the students have to make a photo of the password and send it to the mentor. They also have to watch a recording with the password and another recording on the old-fashioned media – the VCR (video cassette recorder). The students can use the help of the Internet anytime during the game. They have one chance of using the help by writing an e-mail or making a phone call to the mentor. When there are more groups playing this game, some passwords can be changed or the students can be motivated by offering them a reward, this all with a reason that there would be no exchanging of solutions between the groups. Because I like playing, I know that a game is something that takes the students into the knowledge without them being aware of it. Students with lower knowledge and lower abilities are always motivated for games and for them the game can be adapted by providing easier hints or more hints. Talking from my personal experience, students are much more motivated for the lessons if taught this way, but it is true that for the teacher preparation of these games takes quite some time and energy.

Špageti s paradižnikovo omako

Spaghetti with tomato sauce

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Povzetek: Medpredmetno povezati tri predmete (nemščino, naravoslovlje in gospodinjstvo), je bilo osnovno vodilo načrtovanja učnega sklopa Špageti s paradižnikovo omako. To je tudi razlog, da je delo potekalo na različnih lokacijah in z različnimi pripomočki. Začelo se je s teoretičnim delom v učilnici za tuji jezik, nadaljevalo z eksperimetrianjem v šolskem laboratoriju in končalo s kuhanjem v učilnici za gospodinjstvo. Učenci so v učnem sklopu svoje delo načrtovali in izvajali v veliki večini samostojno oziroma ob vzpodbudi učiteljev tujega jezika, kemije in gospodinjstva. Glavno vodilo do cilja je bilo vzajemno sodelovanje skupine, kajti le tako so/smo lahko opravili celotno pot od načrtovanja prek izvedbe do analize. Cilji učnega sklopa so bili poiskati jed, ki je najbolj priljubljena med mladimi v Evropi, zapisati sestavine s hranljivimi snovmi, poiskati na spletu, kako vsebnost le-teh dokažemo z različnimi ekperimenti, eksperimentirati in nato to jed seveda tudi pripraviti in pojesti. Učitelji smo pri delu sodelovali kot moderatorji in pomočniki pri izvajanju eksperimentov. Učencem smo naloge s pomočjo IKT predstavili, nato pa je bilo vse odvisno od posameznika in sodelovanja celotne skupine, ki je odgovorna za nadaljnje delo. Pomemembne prednosti našega »eksprimenta« so, da smo dokazali, da tuji jezik ni ovira za delo na drugih predmetnih področjih, da so učenci z dobro usmeritvijo sposobni sami načrtovati in izvajati določene eksperimente in da so tudi v kuhinji uspešni, če sta med njimi dobro razvita sodelovanje in komunikacija.

Abstract: Integration of three courses (German, natural sciences and home economics) was the basic guidance at the planning of the unit Spaghetti with tomato sauce. That was also the reason, that the work took place at different places in the school with different accessories. It begun with the theoretical part in the classroom for German language, it was continued in the school laboratory and it ended with cooking in the classroom for home economics. The task of the pupils was to plan their work and carry it out in majority independently only with the impulse of the teachers. The task could only be managed, when the group was working together. The goal was to find a dish, that the majority of European teenagers like the most. To write down the ingredients of that dish with its nutrients. Find on the Internet with which experiment this nutrients can be proofed and make the experiment. And at the end to cook spaghetti with tomato sauce. The teachers were omoderators and helped with the experimenting. We introduced the tasks on and with different tools and than the responsibility was lying in the hands of each individual and the whole group. The important precedence of our “experiment” were,

that we proofed, that a foreign language is not an obstacle at work in different subjects, that the pupils are capable, with a good guidance, to plan and experiment individually and to cook a good dish. The most important thing at this kind of work is a qualitative communication and cooperation of all partners at work.

Od meritev do obdelave podatkov z uporabo IKT

From measuring to data processing with ICT

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Povzetek: Prispevek govori o samostojnem učenju učencev, saj večina izmed njih poleg učitelja potrebuje za doseganje znanja tudi matematične pripomočke, ki so povezani z IKT – slednji namreč omogoča samostojno učenje zunaj pouka. V ospredju poučevanja ni več učitelj, saj ta ustvarja le učne situacije, v katerih dodeli učencem individualno vlogo za posamezno nalogo, ki jim pomeni izziv. Namen prispevka je opisati eno izmed možnih poti do usvojitve znanja merjenja in obdelave podatkov s pomočjo IKT. Opozorili bova na kakovost, ki jo v pouk vnaša uporaba IKT in njegove morebitne pomanjkljivosti. Z izvedeno dejavnostjo sva želeli učencem prikazati možnost samostojnega učenja, preveriti uporabo naučenega in prikazati uporabo tehnologije v učne namene. Učitelj v dejavnosti nastopa v vlogi mentorja, ki učence usmerja pri njihovem usvajanju znanja. Njegova vloga se je iz edinega vira informacij spremenila v spodbujevalca, inštruktorja in spodbujevalca, ki ima veliko znanja, da lahko učni proces prilagaja zmožnostim, potrebam in interesom učencev. V okviru naravoslovnega dne so učenci s pomočjo spletne strani E-um spoznali vse o zbiranju, urejanju in prikazovanju podatkov, ob tem pa so samostojno naredili zapiske. Nato so usvojeno znanje prenesli na konkretno dejavnost, tako da so s pomočjo delovnega lista zbrali, uredili in prikazali svoje podatke, obdelane v Excelovih preglednicah in grafih. Za zaključek dneva dejavnosti sva preverili njihovo novo znanje s pomočjo interaktivnega preverjanja, učenci pa so samostojen način učenja ovrednotili s spletno anketo. Tak način učenja učencu v primerjavi s klasičnim poukom omogoča individualno razporeditev obdelave učne snovi v lastnem tempu. Učenje z e-gradivi nekatere učence bolj motivira, slikovni prikaz, ki se pri tem uporablja, pa jim olajša učenje. Prilagajajo se jim učni stili in raziskovalni pristop k učenju. Na drugi strani pa delo z računalnikom vpliva na usmerjeno koncentracijo pri učenju. Sposobnost daljše usmerjene pozornosti omogoča tudi sočasno delo na več elektronskih medijih hkrati, zato lahko uporaba računalnika služi kot dober motivator, če učenec ni notranje motiviran za aktivno učenje in se zato raje ukvarja z oblikovanjem zapiskov, izdelavo miselnih vzorcev in predstavitev. To se je pokazalo tudi pri tistih učencih, ki imajo izrazite težave z učenjem matematike.

Abstract: This paper belongs to the open learning section of the conference because it deals with autonomous learning. The students need the teacher as well as mathematical ICT tools in order to acquire knowledge. These tools enable them to learn autonomously outside class. The teachers are not at the forefront of teaching since they only create the learning environment where each student gets an individual role for a specific and challenging task. This paper focuses on one of the

possible ways of how to teach students measuring and data processing with the help of ICT. We will focus on the advantages and disadvantages of using ICT tools. We wanted to show the students how to become autonomous learners, we wanted to evaluate what they have already learnt and show how to effectively use ICT tools. In this way the teacher assumes the role of a mentor who directs the students' learning. The role of the teacher changes from the source of information to a mentor and a tutor who is flexible about the learning process and adapts it according to the students' abilities, needs and interests. As a part of a science day, the students learnt about collecting, processing and presenting data with the help of E-um web page. They transferred the knowledge gathered there to a specific situation. They used their own notes to collect, process and present data in MS Excel and different charts. At the end of the day we checked the students' knowledge by means of interactive exercises. The students' themselves evaluated autonomous learning process with the help of a web questionnaire. Autonomous learning helps the students to individually manage their own learning process. E- learning material along with the pictorial support it provides is very motivating for students, since they can use different learning styles and a research approach to learning. Using ICT tools also directs students' attention. By focusing more and longer it is easier for the student to work with several devices at a time. Working with e-tools proved to be motivating for students with learning difficulties since it enables them to work on different kinds of subject matter, such as forming notes, mind maps and presentations.

Od ideje do izvedbe lutkovne predstave v nekaj urah

From an idea to a performance in a few hours

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Povzetek: V prispevku bom prikazala, kako lahko tudi dijaki, ki se izobražujejo v strokovnih in poklicnih programih, v štirih urah ustvarijo lutkovno predstavo in jo zaigrajo v javnosti. V Srednji trgovski šoli Maribor sem se odločila izpeljati projekt Naše gledališče. Priznati moram, da so se ideje mnogi učitelji ustrašili in večina je bila prepričana, da dijaki zaradi velikega izziva ne bodo opravili vseh nalog. A smo bili na koncu tega dne vsi učitelji in ravnateljica prijetno presenečeni ob javnih izvedbah lutkovnih predstav, ki so jih ustvarili vsi dijaki naše šole. Dijaki so namreč na začetku tega dne dobili navodila, kako bo potekalo delo. Končni cilj je bil, da čez 4 ure pred občinstvom izvedejo lutkovno predstavo, kar pomeni, da morajo v tem času sestaviti ali preoblikovati dramsko besedilo, izdelati lutke in sceno, se naučiti zaigrati in izvesti predstavo. Na voljo so imeli material za izdelavo, dostop do spleta, učitelja mentorja, ki jih je samo usmerjal, ter svojo domišljijo. Po skupnem delu se je začelo tekmovanje, kjer je vsak razred v večjem prostoru s pripravljeno kuliso izvedel svojo lutkovno predstavo pred občinstvom vseh dijakov in učiteljev ter ocenjevalno komisijo. Rezultat je bil vrhunski. Dijaki so s pomočjo izčrpnih navodil za delo, nenehnega medsebojnega sodelovanja, brskanja po spletu z željo, čim hitreje pridobiti nove izvirne ideje za igro, ustvarili od pet- do desetminutne lutkovne predstave, ki so navdušile gledalce, prav tako pa tudi same nastopajoče, od katerih so nekateri prvič nastopili v javnosti. Najboljši razredi so bili nagrajeni z lepimi nagradami. Ob koncu projektnega dne so dijaki izrazili željo, da bi to še kdaj ponovili. Ob delu, pri katerem so se dijaki tudi zabavali, so bili poleg končnega rezultata izpolnjeni tudi drugi cilji: medsebojno sodelovanje, ustvarjanje besedne umetnosti, razvijanje kreativnosti in ročnih spretnosti, spoznavanje različnih tehnik dramske igre, uporaba spleta za hitro pridobivanje koristnih informacij in javno nastopanje. S tem smo dokazali, da lahko dijaki poklicnih in strokovnih programov kakovostno in samostojno izvedejo marsikaj, če le imajo izčrpna navodila, odlične mentorje in veliko dobre volje.

Abstract: The article demonstrates the ability of technical and vocational students to put on a puppet show and act it out in front of an audience. The project “Naše gledališče” (i. e. Our Theater) was carried out at the Commerce Secondary School in Maribor. The idea itself frightened many teachers and most of them were convinced that the tasks assigned to the students presented too much of a challenge. At the end of the day, public performances of all the students pleasantly surprised the teaching staff as well as the headmistress. Having arrived at school, students received instructions on how work would proceed. The ultimate goal was to put on a puppet show in four hours and at the end of that time to carry it out in front of an

audience. This included drafting or modifying a dramatic text, making puppets and scenery, and rehearsing the performance. The resources they had at their disposal were making material, a teacher – mentor to guide them, access to the Internet, and of course their imagination. The day concluded with a performance competition. Each class performed their show in front of other students, teachers and the evaluation committee. The results were excellent. Students followed detailed work instructions, cooperated with each other, browsed the Internet for innovative ideas, and at the end created five to ten minute puppet shows, fascinating the audience and each other. For many of them this was the first opportunity to perform in public. The best were rewarded with special prizes. The project day ending, students expressed their desire to repeat it. Working while still having fun accomplished, in addition to the final goal, also other objectives: cooperation, creating literary art, developing creativity and manual skills, learning about different dramatic techniques, using the internet as to quickly obtain useful information, and performing in public. Our project proves students of technical and vocational secondary education are under detailed guidance, with the help of excellent tutors and with a lot of goodwill more than capable of creative and independent work.

Vrtimo se na vrtu

Rolling in the garden

Urška Bučar, Osnovna šola Dolenjske Toplice, Dolenjske Toplice
Katja Jenko, Druga osnovna šola Slovenj Gradec, Slovenj Gradec

Povzetek: V šolskem letu 2015/2016 smo odprli eTwinning projekt VRTIMO SE NA VRTU, v njem pa smo sodelovali tri šole iz Slovenije ter dve šoli in en vrtec iz Hrvaške. Vanj so bili vključeni otroci, stari od 5 do 13 let. Sprva je bil naš namen, da si izmenjujemo izkušnje z vzgojo vrtnin in oblikovanjem šolskih vrtov, kmalu po predstavitvi skupin pa se je porodila ideja o skupnem oblikovanju mesečnega časopisa, v katerem bi predstavljali naše delo, si izmenjevali izkušnje in sestavljali skupna gradiva. Učitelji smo za dogovarjanje glede naših aktivnosti uporabili zaprto skupino Facebooka, učenci pa so prek deljenega dokumenta v oblaku oblikovali mesečni časopis. Vrteti smo se začeli najprej s pomočjo klasične pošte, s pošiljanjem paketov semen. Nato smo uporabili sleherni kotiček šole za ugodne pogoje za vzgojo sadik, izvajali skupno načrtovane poskuse, tudi v hladilniku in na zunanjih policah šolske stavbe. Rezultate naših poskusov smo primerjali med seboj in ugotavljali, kaj moramo narediti, da bodo boljši. Na temo vrta smo likovno ustvarjali, širili besedno domišljijo. Medsebojno smo si izmenjevali ideje za delo. V pomladnih mesecih se je delo začelo tudi na vrtu, urejali smo nove gredice, izvedli vrtno jogo. Izdelovali smo slovarje vrtnin, pripomočkov, živali, pri tem pa smo si pomagali s spletom in veliko tudi sami narisali. Na obisk smo povabili strokovnjake za vrtnarstvo. Proti koncu šolskega leta smo učilnico spremenili v kuhinjo in z drugimi delili in ustvarjali recepte. Vrtnine so bile okusne tako sveže kot pripravljene v kakšnih posebnih zelenjavnih specialitetah. Vsak korak našega dela so učenci fotografirali in dnevno oblikovali članke za spletni časopis. S prijatelji projekta smo se pogovarjali prek Skypa in bili presenečeni, da se lahko vidimo. V spletni učilnici smo tudi objavljali animacije rasti rastlin in videovonik za oblikovanje visoke grede. V projektu smo oblikovali šest obširnih številk skupno oblikovanega mesečnega časopisa, ki smo jih objavili v TwinSpaceu projekta. Uporabljali smo varna okolja deljenih dokumentov. Naš projekt je lahko zgleden primer, kako lahko učenje v naravi in s pomočjo IKT združimo s predpisanimi učnimi vsebinami in pri tem odpremo zidove učilnice.

Abstract: In school year 2015/2016 we started a project Rolling in the garden. Involved in the project were three schools from Slovenia and two schools and a kindergarten from Croatia, with children from 5 to 13 years old. At first our goal was exchanging experience in gardening and creating school gardens, but soon after establishing our group an idea appeared of common monthly newspaper containing our work presentations, exchanging experience and creating worksheets. Teachers used closed Facebook group for exchanging ideas and with children they

created pages in our newspaper through shared document in the cloud. We started “rolling” through classic mail with exchanging packets of seeds. After that we filled every corner appropriate for sprouting seeds and did controlled experiments, including sprouting seeds in the fridge and outside the school. We compared results and determined best way for good sprouting. We also created art pieces themed garden and enriched our vocabulary. We exchanged work ideas. In spring outside work started. We created new plots, did garden yoga and created garden dictionary using internet and drawings. We invited gardening experts. As the school year was ending we transformed our classroom into a kitchen and created meals with our own garden products. We also exchanged and created recipes. Vegetables were tasty fresh and also prepared in gourmet dishes. Every step of our work was documented by pupils with photographs and published in our monthly newspaper. Children were thrilled to see and talk to our project friends through skype. In our TwinSpace we published plant growth animation and video guide for creating raised beds. Throughout the project six numbers of monthly newspapers were published and released in TwinSpace. We used safe environment for shared documents. Our project is an example of entwining outside learning with ICT, using regulatory curriculum and moving school process outside school walls.

Prvošolci poiščejo svoj dom s pomočjo aplikacije Google Street View

Firstgraders find their home with the help of Google Street View

Urška Hribernik, Osnovna šola Toma Brejca, Kamnik

Povzetek: Google Street View je odlično odprto učno okolje za samostojno učenje. Z njegovo pomočjo lahko učenec v 1. razredu doseže naslednje cilje: - orientira se v svojem okolju – SPO - se premika po prostoru (levo, desno, nad, pod, gor, dol) – MAT - govorno nastopi z vnaprej pripravljeno temo – SLJ - predstavi se z osnovnimi podatki (ime, priimek, naslov) – SPO. Učenci 1. razreda so pri pouku dobili navodilo za delo. Doma so se morali pripraviti na govorni nastop, v katerem so predstavljali sebe. Med drugim so morali povedati tudi svoj naslov, ga odtipkati na računalniku in ga poiskati s pomočjo Google Street Viewa. Učenec je bil na neki način tudi v vlogi učitelja in se je počutil zelo pomembno. Preostali učenci so prek projekcije spremljali dogajanje na tabli. Aktivno so se vključevali in spremljali dogajanje. Učenca, ki je nastopal, so tudi ocenili. Kriterije smo napisali na tablo. Vsakega učenca so po nastopu ocenili z eno barvo: Zelena barva – učenec je bil pri svojem delu samostojen, natančen in ni potreboval pomoči. Rumena barva – učenec je potreboval nekaj pomoči. Rdeča barva – učenec je potreboval veliko pomoči učitelja in pri svojem delu ni bil samostojen. Učencem, ki so imeli težave pri tipkanju, sem pomagala. Najbolj mi je bil všeč odziv učencev, ko so zagledali svoj dom. Nekateri so se zelo vživeli ter pokazali okno svoje sobe, kje ima njihov pes hiško, kje živi babica itd. Preostali učenci pa so se tudi priključili z izjavami: »Levo je pa moja hiša, na desni strani je trgovina, mimo te hiše grem pa vsak dan mimo ...« Ker se je pripomoček Google Street View izkazal za izjemno zanimivega ter privlačnega za učence, sem ga uporabila še pri nekaterih dejavnostih (npr. pri spoznavanju domačega kraja in ogledu znamenitosti). Prednosti: Google Street View je brezplačen, za otroke in odrasle izjemno zanimiv, saj lahko »obiščejo« destinacije, kjer nikoli niso bili ali nikoli ne bodo. Popestri pouk ter ga slikovno obogati. Primeren je tudi že za šestletnike. Slabosti: Nekaj naslovov nismo našli, saj takrat, ko so snemali Google Street View, nekateri deli še niso bili pozidani. Mogoče nakateri svojega doma ne želijo pokazati prek računalnika, zato je učencem treba dati možnost izbire.

Abstract: Contribution I placed it in a set of Open Learning, as Google Street View Open an excellent learning environment for self-learning. With Google Street View in the first grade can pupils reach the following objectives: - Orient in their environment - Moving around the place (left, right, above, below, up, down) - Speak in front their classmates with a ready-made theme - Present the basic information

(name, address) Students in first grade get instructions for work. At home they had to prepare for the oral presentation, where they represented themselves. Among other things, they should also tell their address, type it on the computer and find through Google Street View. The pupils was in some way in the role of teacher and they felt very important. Other students watch projection on the board. They were actively involved and monitored the situation. Student who has performed, are also evaluated. Criteria were written on the blackboard. Each student was assessed by the occurrence of one color: Green - pupil was in its work independent, accurate and did not need assistance. Yellow - a pupil hed needed some help. Red color - a pupil needed a lot of help from the teacher and was not independent in its work. Students who have trouble typing, I helped. The most I liked the response of pupils, when they saw their home. Some of them show window of their room, where they have a dog house, where his/her grandmother lives ... Other students gave some declaration: »Left is my house, right is the store, I past this house every day ... » Since the device Google Street View has proved to be very interesting and attractive to pupilss, I have used for some other activities (eg. To get to know their hometown and sightseeing). Advantages: Google Street View is free of charge, for children and adults is extremely interesting, because you can »visit« the place where you never have been or never will be. Enriches teaching and enrich the image. It is also already suitable for six-year olds. Disadvantages: Some titles were not found, because when they filmed Google Street View, some parts have not yet been rebuilt. Maybe some pupils does not want to show where they live through the computer, so pupils should be given the choice.

Mali podjetniki s projektom in robotom po svetu

Junior entrepreneurs with their project and robot around the globe

Žan Močivnik, I. osnovna šola Celje, Celje

Povzetek: Se lahko učenci družijo s 400 otroki z vsega sveta in predstavljajo svojo podjetnost in inovativnost? Našim učencem je to uspelo letos s projektom in robotom v sklopu programa First Lego League – FLL. S tem smo razvijali kreativnost, radovednost, sodelovalno učenje in skupinsko delo. Pri delu so učenci z drugačnimi metodami spoznavali koncept STEM (Science, Technology, Engineering and Math) ter na zabaven in učinkovit način spoznali sodobne tehnologije za uporabo v humane namene. Delo je bilo razdeljeno v 3 sklope: vrednote, projekt (Poti smeti – Smetko sledko) in robotski del (izdelava in programiranje robota, tehnična dokumentacija). Skupina učencev je izbrala problem neločevanja odpadkov v skupnosti, kjer bi nadzorovali smeti posameznikov. V sklopu projekta so izdelali sistem pametnega ekološkega otoka, ki vsebuje komunikacijsko napravo med smetnjakom in čitalnikom črtne kode – tako so vsi smetnjaki zaklenjeni; nova vrečka za smeti je prilagojena tudi posameznikom s slabšim vidom in barvno slepoto; informacijski sistem nadzora uporabnikov. S pomočjo kompleta Lego EV3 so izdelali delujočo maketo ekološkega otoka. Med raziskovanjem so sodelovali s strokovnjaki za plastiko, inžinirji pametnih sistemov, s podjetem National Instrument in podjetjem Simbio – regionalnim centrom za ravnanje z odpadki ter drugimi strokovnjaki. Njihov projekt je bil predlagan za nominacijo Global Innovation Award, kjer med vsemi projekti izberejo 20 najboljših in jih nato predstavijo v Ameriki. Poleg projekta so s kompletom Lego EV3 izdelali lastnega robota, ki je bil s svojim spretnim programiranjem in nastavki eden izmed najboljših na svetu na robotski tekmi. Programiranje in sestavljanje je potekalo dobre 4 mesece. Učenci so se s svojimi odličnimi rezultati uvrstili na odprto evropsko prvenstvo v Španiji, kjer je sodelovalo 89 ekip iz 40 držav in s 5 celin. Učenci pri projektu delajo samostojno, učitelj je le mentor, ki jih spodbuja in spremlja njihovo delo. Takšen način dela je precej drugačen od našega šolskega sistema in od učencev zahteva drugačno delo – samostojnost, delo na daljavo, pisanje dnevnika idr. Učitelj ima tako več dela s sprotnim poročanjem, ampak učenci postanejo po koncu šolanja samostojnejši in si pridobijo izkušnje z delom v manjših skupinah. Razlika med učencem in podjetnikom postane zelo majhna, kakovost znanja pa se z izkušnjami izjemno poveča.

Abstract: Can pupils interact with 400 children from all around the world and present their entrepreneurship and innovation? Our pupils made it happen this year – using their project and robot under the First Lego League – FLL programme. The project developed creativity, curiosity, cooperative learning and teamwork.

Pupils got to know the STEM concept (science, technology, engineering and math) through different methods and were introduced to modern technologies in a fun and effective ways to use them for humane purposes. The pupils work was divided into three parts: core values, project (Trash Trek – Smetko sledko) and robot part (composing the robot, programming it, preparing technical documentation). A group of pupils chose the problem of non-sorting of the waste in communities. Their solution was to monitor the sorting of the trash of individuals: making a smart waste disposal zone system which contains a communication device connecting the trash to the barcode scanner, locking the trash bins, using a new trashbag which is also adapted to people suffering from poor eyesight or colour blindness, monitoring the users though an information system. EV3 Lego software was used to create a working model of a waste disposal zone. During their research the pupils met with different plastic experts, smart systems engineers, National Instruments company, the regional waste management centre Simbio and other experts. Their project was nominated for the Global Innovation Award, where only the top 20 best projects compete and present themselves in the USA. Besides the project the pupils used the EV3 Lego set to create their own robot that was one of the best in the world in the robot game together with its skilful programming and attachments. The programming and composing took 4 months to complete. Excellent results qualified the team for the Open European Championship in Spain where 80 teams from 40 countries and 5 continents took part. Pupils work on the project independently, the teacher is only their mentor who encourages them and follows their work. This method is different from our educational system and demands different type of work from pupils – independence, remote work, writing a journal etc. The teacher has more work with constant reports, but the pupils become more independent and acquire experience in working in smaller teams. The ratio between the pupil and the entrepreneur becomes very small, with the quality of knowledge greatly increasing through experience.

Ali smo pozabili na slepo 10-prstno tipkanje kot osnovo sodobne informacijsko-komunikacijske tehnologije?

Have we forgotten blind 10-finger typing as a basis for modern ICT?

Mira Gujt, Srednja ekonomska šola Maribor, Maribor

Povzetek: V času, ko je uporaba IKT nujna, opažam, da ima vse manj otrok, ki se vključujejo v srednješolsko izobraževanje, pomanjkljiva temeljna znanja za delo z računalnikom. Pri svojem delu se soočam z nepravilno uporabo tipkovnice in pomanjkljivim znanjem oblikovanja različnih Wordovih dokumentov, kot so: osebni dopisi (prijava na razpisano delovno mesto, življenjepis), poslovni dopisi (ponudba, povpraševanje, naročilo, vabilo, zapisnik). Na šoli izvajam v okviru obveznih izbirnih vsebin in interesnih dejavnosti tudi tečaj obvladovanja tipkovnice. V letošnjem šolskem letu sem se odločila, da organiziram tečaj slepega desetprstnega tipkanja za osnovnošolce. V preteklih letih sem usposabljala tudi osebe, ki jih je poslal Zavod za zaposlovanje RS. Ker sem organizatorka praktičnega usposabljanja pri delodajalcih doma in v tujini, opažam, da so ta znanja nujno potrebna pri delu v podjetjih. Oblikovanje dopisov se je pokazalo kot nujno potrebno tudi pri sami prijavi za opravljanje prakse v tujini. Zaradi vsega naštetega sem prepričana, da bi morali že v osnovni šoli poučevati tehniko tipkanja in oblikovanje dokumentov. Izkazalo se je, da imajo pri učenju slepega desetprstnega tipkanja več težav tisti dijaki, ki so samouki oz. pišejo, kot so se priučili. Prepričana sem, da ima znanje slepega desetprstnega tipkanja veliko prednosti pri delu, na primer: napredovanje v hitrosti, avtomatizem pri tipkanju, estetski videz, pričakovanja delodajalcev, manj naporno delo, natančnost in zanesljivost pri delu ter samonadzor opravljenega dela. Tehnike tipkanja se učimo v programu Mootyper, ki je razširitveni dodatek v spletni učilnici. Vsebuje 4 dele: 1. VSE O TIPKANJU – kjer imamo različna besedila s temami, ki so povezane z učenjem tipkanja, kot so: pravilni položaj prstov, pravilna drža telesa ipd. 2. 16 LEKCIJ – kjer imamo 384 vaj za posamezne prijeme. 3. VAJE ZA UTRJEVANJE – kjer imamo dodatne vaje za delo dijakov doma. 4. OCENJEVANJE ZNANJA. Vse to učitelju omogoča formativno spremljanje dijakovega napredka – njegov samonadzor in predvsem spremljanje njegovega dela doma.

Abstract: In the time when ICT using is necessary, I notice that there are less and less children, who are included in the middle school education and have insufficient knowledge of forming of different Word documents, such as: personal reports (job application to advertised workplace, CV), business reports (offer,

enquiry, order, invitation, record). At our school, I also teach a course for mastery of keyboard for the students obligatory optional contents. I have decided to organize a course for blind 10-finger typing for primary school pupils. I have also taught persons from the Employment Office RS. Because I am also an organizer of vocational training at employees in Slovenia and abroad, I notice that this knowledge is necessary for work in companies. To know how to form a report is necessary when students apply for practice abroad. Because of the stated, I am sure that the technique of typing and forming documents should be taught already in primary school. It has been proven that when learning 10-finger blind typing, students with their own way or self-taught have more problems when they want to master the correct technique. I am sure that knowledge of blind 10-finger typing has a huge advantage at work, for example: advantage in improvement of speed, automatic typing, aesthetic appearance, expectations of employees, less difficult work, accuracy, and reliability at work, and self-control of the work done. The technique of typing is learnt in the program Mootyper, which is an extensional addition in the web classroom. It includes 4 parts: 1. ALL ABOUT TYPING – where we have different texts about the topics connected with learning of typing, such as: correct position of fingers, correct body position, etc. 2. 16 LESSONS – where we have 384 exercises for every position. 3. EXERCISES FOR REVISING – where we have additional exercises for students homework. 4. EVALUATION OF KNOWLEDGE. All the above mentioned enables the teacher to assess students work formatively, his self-control, and especially his work at home. Keywords: - Formative assessment, - Mastering, - Practicing - Self-control.

Ekskurzije, ki jih organizirajo in oblikujejo dijaki sami

Excursions planned and organized by students

Klavdija Podlesnik, Gimnazija in srednja kemijska šola Ruše, Ruše
Sanja Obaha, Srednja trgovska šola Maribor, Maribor

Povzetek: Kot učiteljici, organizatorki strokovnih ekskurzij in spremljevalki dijakov si prizadevava, da bi strokovna ekskurzija bila izlet, na katerem bi dijaki z veseljem odkrivali neznano, sprejemali nova znanja skozi popotniške oči in v veliki meri doživljali svet okrog sebe. Prikazali bova 2 vrsti ekskurzij, na katerih so imeli dijaki glavno besedo pri organizaciji in izvedbi, rezultat pa jih je pripeljal do mnogih novih življenjskih spoznanj, ob katerih ni manjkalo zabave in smeha. Prva vrsta ekskurzije je izlet, ki so ga organizirali, pripravili in izpeljali dijaki sami ob pomoči učitelja, ki je bil le opazovalec in usmerjevalec. Sami so si tudi določili cilje in načine, kako uresničiti svoje zamisli. Na ekskurziji so dijaki vedeli o lepotah narave in čudovitih stvaritvah človeka mnogo več kot sicer, saj so ves mesec prej sami iskali informacije o določenih krajih ter izbrali popotniške cilje, ki so jih pritegnili. V vseh fazah svojega dela so bili zelo motivirani, razred je deloval kot celota pri pripravah in na sami ekskurziji. Druga vrsta ekskurzije je primer medgeneracijskega sodelovanja. Dijaki prostovoljci so s pomočjo mentorja načrtovali, organizirali in izpeljali ekskurzijo. Odločili so se, da organizirajo ekskurzijo na Primorsko in si ogledajo dom starostnikov na drugem koncu Slovenije. Imeli so kratko predstavitev prostovoljne dejavnosti šole ter krajši kulturni program, ki so ga sestavili sami. Hkrati pa smo se še sprehodili skozi primorsko turistično mesto Portorož, ogled so vodili dijaki. Tako smo vključili prostovoljne vsebine, medgeneracijsko sodelovanje s kulturno-turističnimi in geografskimi značilnostmi Primorske. Delo so si morali dijaki razdeliti, predvideti časovno načrtovanje in upoštevati znanje in sposobnosti posameznega prostovoljca, ki je sodeloval na ekskurziji. Dijaki so dobili nova znanja in izkušnje pri organizaciji ekskurzije ter se seznanili z življenjem starostnikov v domu za ostarele, varovancem doma pa so s kulturnim programom in druženjem polepšali en dan njihovega domskega življenja. Povzameva lahko, da lahko dijaki z delom v skupini, ki ima pred sabo isto pot, presežejo vse cilje, ki si jih je zadal učitelj, saj so ob zabavnem učenju pridobili tudi veliko izkušenj, ki jih bodo spremljale vse življenje.

Abstract: As teachers and organizers of school excursions, our goal is to make an excursion a trip, where students keenly explore the unknown, gain first-hand knowledge through traveller's eyes, and actually experience the world around them. We present two types of excursions planned and carried out by students themselves who learned many life's truths through laughter and fun. The first type of an excursion is a trip, planned, organized, and carried out by students under teacher's control and guidance. Students also set goals and ways how to achieve them by

themselves. The result showed that students knew more about beauties of nature and creations of men than on other occasions, since they were the ones looking for information about certain places attracting their attention for a whole month before the trip. Students were highly motivated through all stages of their work, cooperating with each other while planning the excursion and showing more unity as a class. The second type of an excursion is an example of intergenerational cooperation. Students/volunteers planned, organized, and carried out the excursion with the help of a mentor. They decided to organize a trip to the Primorska region and to see the retirement home on the other end of Slovenia. Students made a short presentation of school's volunteering activity, followed by some cultural acts and performances. Later, we went on a walk around the touristy town of Portorož, the sightseeing also organized by students, thus ending our excursion by connecting volunteering activities and intergenerational cooperation with the natural and cultural tourist attractions of the Primorska region. Students had to divide the work, think about the scheduling and take into account the knowledge and skills of each participating volunteer. They gained new knowledge, organizational experiences, and an insight into the life in a retirement home, while brightening senior citizen's everyday lives by performing and socializing. It can be concluded that students working in a group with the same objective surpass all of the goals set by a teacher, because while having fun they also gain experiences that will stay with them for the rest of their lives.

Ljubljana – moja učilnica

Ljubljana - my classroom

Katja Koprivnikar, Zavod za gluhe in naglušne Ljubljana, Ljubljana

Povzetek: Tema spoznavanje glavnega mesta Slovenije in hkrati mesta, kjer stoji naša šola, se mi je zdela enkratna priložnost, da učno okolje razširim zunaj učilnice in tako obogatim učni proces. Z učenci 3. in 5. razreda smo se podali na sprehod po Ljubljani. Učenci so bili zadolženi za fotografiranje, sprehod pa sva vodili učiteljici. Učence sva opozarjali na pomembnejše ustanove in kotičke mesta ter med pogovorom podajali informacije. Učence sva vzpodbujali k raziskovanju kotičkov, ki so jim bili všeč, in tako se je naša pot kreirala sproti. Nekaj dni po sprehodu smo zbrali fotografije, jih pregledali in jih oblikovali v programu za urejanje fotografij Kizoa. Učenci so med pregledovanjem in oblikovanjem fotografij obnavljali znanje o Ljubljani. Sledila je predstavitev Ljubljane (PowerPoint), v kateri smo združili pridobljene informacije o mestu. Ker so učenci sami izbirali pot in fotografirali, so jim informacije, ki sva jih ob tem podajali učiteljici, ostale v spominu, tako da je bila predstavitev pravzaprav le ponovitev že znanega. Ko je bilo znanje utrjeno, smo skupaj oblikovali spletno igro – Map Treasure Hunt (Ljubljana – moje mesto). Učencem 3. razreda so pri tem pomagali učenci 5. razreda, ki so bolj vešči uporabe spletnih orodij. Za konec smo odšli v ljubljansko mestno hišo, kjer smo se srečali z županom Zoranom Jankovičem in z njim posneli kratek intervju. Intervju smo oblikovali s programom Movie Maker in ga objavili na spletni strani naše šole. Po obisku smo se z vzpenjačo povzpeli na Ljubljanski grad in si mesto ogledali še iz ptičje perspektive. Učenci so samoiniciativno iskali točke, ki so jih fotografirali oz. jih spoznali med spoznavanjem Ljubljane. Z opisanimi dejavnostmi so učenci Zavoda za gluhe in naglušne Ljubljana (govorno-jezikovna motnja, gluhota, avtizem, ADHD) pridobivali znanje multisenzorno, kar je za njih nujno potrebno. Učenci so bili v učnem procesu ustvarjalni, samoiniciativni in sproščeni. Znanje, ki so ga pridobili, je zagotovo usvojeno. S tem načinom sem jih želela vzpodbuditi, da bi izrazili svojo ustvarjalnost, vedoželjnost in da bi spoznali, da je učilnica lahko le prostor, kjer ustvarimo sintezo informacij, izkušenj in znanja.

Abstract: The theme of getting to know Slovenias capital city Ljubljana, where our school is situated, has been a great opportunity to broaden our learning environment outside the classroom and to enrich the learning process. We took the pupils of 3rd and 5th grades for a walk around our city. The pupils were responsible for taking photos. The teachers were leading the way. We drew attention to the important institutions and buildings around the city and shared the information about them during the conversation.The pupils themselves chose the parts of the city they wanted to explore according to their interests. A few days after the walk we collected

photos, reviewed and edited them in the program for editing photos Kizoa. While viewing and creating photos, the pupils were revising their knowledge of Ljubljana. This was followed by the presentation of Ljubljana by PowerPoint, where we used the obtained information. As the students themselves chose the path and took photos, the information they obtained from the teachers, has been easily memorized, so the presentation was actually just a revision of what was already known. Consolidating the knowledge the pupils and one of the teachers created an online game - Treasure Hunt Map (Ljubljana - my town). 3rd grade pupils were assisted by 5th grade pupils who are more skilled in the use of online tools. Finally we visited the Town Hall in Ljubljana, where we met with the Mayor of Ljubljana, Mr. Zoran Janković and recorded a short interview with him. The interview has been processed by the program MovieMaker and posted on the website of our school. After the visit we ascended to Ljubljana Castle by the funicular, and took a birds perspective of our city.The pupils looked for the sites that had been photographed by them. The pupils were gaining knowledge in a multi-sensory mode, which is essencial for the pupils at the Ljubljana centre for the Deaf and Hard-of-hearing, attended also by pupils with ASD, ADHD, etc. During the learning process the pupils were creative, proactive and relaxed. The knowledge they have acquired is definitely deeper and more settled. By this approach I intended to to encourage my pupils to express their creativity, curiosity and, above all, to realize that the classroom may serve just as a space to create the synthesis of information, knowledge and experience.

Odprt za splet

Open to the web

Sonja Strgar in **Katarina Šulin**, Osnovna šola Vide Pregarc, Ljubljana

Povzetek: Spoznavanje vsebin varnega interneta v obliki naravoslovnega dne v 6. razredu kot oblika odprtega učenja. Zakaj? Učenci so na podlagi pogovora in vedenja o spletnih pasteh razvijali zmožnost argumentiranja danih trditev. Mnenja so oblikovali po skupinah, doseči so morali soglasje, ki je bilo reprezentativno za celotno skupino, in ga kot takega tudi predstaviti. Pomembno je, da so bili kar se da odprti za raznolikost mnenj, vključevali so se glede na svoj izkušenjski svet, kjer so morali upoštevati pomen individuuma. Nadalje so v računalniški učilnici samostojno raziskovali spletne strani na izbrano temo. Izbrali so vsebine, ki so jih vključili v dejavnosti po lastni izbiri. Tako so s pomočjo še nepoznanih programov, ki jih ponuja splet, ustvarili svoj strip na temo moja identiteta in zasebnost na spletu, izdelali filmček o družabnih omrežjih, pripravili zgibanko o tem, kako preprečiti mobilno in spletno trpinčenje, sestavili kviz za sošolce o varnem internetu ter izdelali piktograme vsebine dneva dejavnosti. Način, kako bodo udejanjili naloge, je bil prepuščen njim. Tako so spoznali in uporabljali različna orodja, ki jih ponuja IKT. Pri tem so bili samostojni, učitelj se je vključeval v delo po potrebi z usmerjanjem ali nasveti, saj so si učenci medsebojno pomagali in tako krepili medosebne odnose. Cilji dneva dejavnosti so bili spoznavanje pasti, ki jih predstavlja splet, in ustrezno ravnanje v primeru morebitnih neprijetnih doživetij v zvezi z njim, spoznavanje različnih spletnih okolij, ki jih ponuja IKT, uporaba le-teh v širše namene in ne le za potrebe šole, spodbujanje inovativnosti, znajdenja in sodelovanja. Meniva, da je tak pristop k obravnavi določene teme za učence zanimiv in privlačen, saj se je izkazalo, da so bili pri iskanju orodij ali programov, ki jih lahko s pridom uporabijo tudi v svojem prostem času ali pa v šolske namene, zelo inovativni. Niso bili pasivni prejemniki znanja, saj so samostojno gradili svoje znanje in veščine, ki so jih predstavili sošolcem. Ob tem jim učno okolje, časovna omejitev in prostor niso predstavljali omejitev. Ravno nasprotno – samostojno učenje v okviru šolske dejavnosti je le osnova za uporabo tehnološkega okolja v vsakdanjem življenju.

Abstract: Secure internet content can take place as a science day as a form of open learning for students in 6th grade. Why? Students developed the ability to argue the given argument on the basis of discussions of the Internet. Options were formed in groups, groups formed and presented consensus which represented the entire group. It was important that the students were open to diversity of opinion. They were included, depending on their own experience. They also took into account the importance of individual. Then they independently investigated web sites on a chosen topic in the computer lab. Students chose the content and they included

them in the activities of their choice. Using unknown applications they created their own comic book on the topic my identity and security online. They produced a short movie about social networks and made a leaflet which talks about preventing maltreatment online. Finally, they compiled a quiz for classmates and created pictograms from the selected content. The methods of implementation were chosen by students and by doing that they learned about ICT tools. As the students worked independently, the teacher was involved by providing advice and guidance. Thus, students could develop their interpersonal relationships. The objectives of the activities were: learning about pitfalls of the Internet, an appropriate action in the case of abuse, learning about the different online environments, the use of ICT in everyday life, promoting innovation, cooperation and the search for solutions. Such an approach is very interesting for the students. It turned out that the children were very innovative in finding programs which can be used not only in the school purposes but also in the free time. Students were not just passive recipients of knowledge. They have built the knowledge and skills and they presented their work to the classmates. Learning environment and the time limit did not constitute a restriction. Just the opposite – an independent learning in the context of school activities is the basis for the use of the technological environment in everyday life.

Slovenščina na daljavo v manjših učnih skupinah

Slovene at a distance learning in small groups

Katarina Perič, Osnovna šola Staneta Žagarja Lipnica, Kropa

Povzetek: Prispevek govori o primeru pouka slovenščine na daljavo v manjših učnih skupinah. Ta sicer ustaljeno poteka individualno deloma v živo prek Skypa, deloma pa v spletnih učilnicah Moodle. Gre za primer učenja jezika (slovenščine) zunaj klasične učilnice, s pomočjo IKT, ki pomaga premostiti razdalje in časovne pasove med učiteljem in učenci po svetu. Slovenščina na daljavo je namenjena otrokom staršev s slovenskimi koreninami v tujini, ki zaradi prevelike oddaljenosti kraja bivanja nimajo možnosti, da bi se priključili kateri od skupin, ki jih poučujejo v tujini delujoči učitelji slovenščine. Ti učenci zato nimajo možnosti izkušnje učenja slovenščine v skupini vrstnikov. Prav to smo jim želeli omogočiti tudi pri pouku na daljavo, prostor srečanja pa smo ustvarili s pomočjo sodobne tehnologije. Oblikovali smo manjšo učno skupino učencev glede na njihovo starost, raven znanja slovenščine ter časovni pas bivanja. V spletni učilnici smo vnaprej pripravili gradivo in aktivnosti za učence, nato pa del pouka v skupini izpeljali v živo preko Skypove konference, nekaj dejavnosti pa so učenci izvedli po povezovanju v živo ter svoje naloge oddali v spletni učilnici, kjer so dobili tudi učiteljeve povratne informacije. Predstavljena oblika poučevanja slovenščine na daljavo omogoča večjo interakcijo med vrstniki, ki so vključeni v program. Je priložnost, da se spoznajo in povezujejo, delijo svoje izkušnje, morda izhodišče za siceršnje povezovanje in tkanje novih prijateljstev. Tovrsten pouk omogoča delo v dvojicah, skupini, sodelovalno delo med učenci in tako postane bolj podoben pouku v klasični učilnici. Izkazalo se je, da pri sicer individualnem poučevanju ta način učencem predstavlja močan motivacijski element za učenje slovenščine. Tako je mogoče po obravnavanem tematskem sklopu pripraviti nove naloge, ki zahtevajo uporabo naučenega, preverjanje znanja, testiranje dosežkov itd. Kot ena glavnih ovir za združevanje učencev v manjše skupine se je izkazala časovna razlika zaradi velikih razdalj med njihovimi kraji bivanja. Problem pogosto predstavljajo tudi ovire tehnične narave, ki jih ni mogoče predvideti (šumenje, slabe povezave oz. občasni izpadi le-teh, nedelujoči programi ipd.), posledično pouk traja dlje kot je bilo prvotno načrtovano. Učenec, ki želi sodelovati pri taki obliki pouka, mora biti seveda vešč samostojno uporabljati IKT.

Abstract: The article discusses the case of Slovenian language classes at a distance learning in small groups. These are mostly individual classes following the established practice using either Skype or Moodle. It is an example of learning the slovene language outside the traditional classroom, with the help of information and communication technology, which helps to bridge distances and time zones between teachers and students around the world. Slovene at a distance learning

includes the children of parents with Slovenian roots that live abroad. Due to the huge distance of their place of residence they are unable to attend any of the groups taughtby the Slovene native speakers. These students therefore have no possibility experiencing learning the Slovenian language in a group of peers. This is exactly what we want them to enable with these classes. We have created their meeting space with the help of modern technology. We formed a small learning group students according to their age, level of knowledge of the Slovenian language and according to the time zone of residence. In the online classroom students can find the pre-prepared materials and activities. Part of the classes were then carried out through skype conference. Some of the activities were done after the conference, students posted their works to to online classroom and later on they received the feedback. The presented form of teaching Slovene at a distance learning allows a greater interaction between peers involved in the program. It is an opportunity to learn and connect, share their experiences, perhaps looking for the amenities of integration and weaving new friendships. Such lessons enable to work in pairs, groups, collaborative work between students and become more like lessons in classical classroom. This way of teaching has proved to be a highty motivating factor for learning the slovene language. The method also enables to prepare further tasks using the learned knowledge including its evaluating and testing. One of the main obstacles of grouping students in to smaller groups is certainly time difference due to the large distances between their places of residence. Technical obstacles can also be a problem especially the ones we cannot predict such as noise, poor internet connection, programms not working properly etc.). Consequently the classes sometimes last longer than planned. Of course, a student wanting to participate this form of learning must be skilled to use ICT independently.

Novo kolo na vseh šolah

New bicycle in every school

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Roman Čuk, Arnes, Ljubljana

Povzetek: V šolskem letu 2015/2016 je bil v vse osnovne šole vpeljan nov informacijski sistem – Kolesar, ki se je razvijal na odprti osnovi in z agilnim razvojem. Da je bil prehod na nov sistem kar se da enostaven in bo njegov nadaljnji razvoj cenejši, smo za osnovo uporabili sistem za upravljanje učnih vsebin Moodle, ki je v šolah že razširjen. Za prijavo v sistem smo uporabili enotno identiteto AAI, s tem se je na šolah sočasno vpeljeval sistem za upravljanje identitet mdm.arnes.si. V procesu smo upoštevali tudi želje uporabnikov in sistem stalno nadgrajevali. Da bi vpeljevanje potekalo čim bolj gladko, smo skozi celotno leto v okviru projekta e-Šolska torba izvajali dve različni delavnici. Prva je bila namenjena računalnikarjem in je posredovala znanja s področja pomena enotne identitete AAI, pristopov k vpeljavi in praktične rešitve za čim hitrejše ustvarjanje računov z orodjem mdm.arnes.si; druga pa je bila namenjena mentorjem. Izvedenih je bilo 37 delavnic Kolesar in 26 delavnic za uporabo sistema mdm.arnes.si, skupaj se jih je udeležilo kar 852 udeležencev. Na delavnici so se udeleženci naučili vključiti svoje učence v spletno učilnico Kolesar, z njimi opravljati simulacije, izpite in tekmovanja. Pri vpeljevanju smo se srečali z mnogovrstnimi težavami, različno usposobljenimi učitelji, raznoliko opremljenimi šolami, mnogimi usmeritvami s strani vpletenih institucij, številnimi tehničnimi in organizacijskimi izzivi. Posledično so bili tudi odzivi vpletenih zelo raznoliki in zanimivi. Modul za prijavo na izpite, ki je bil razvit za potrebe kolesarskega izpita, uporabljajo in dalje razvijajo tudi tuje ustanove. Ob prehodu v novo šolsko leto bo izvedena nadgradnja sistema, s tem pa bo vpeljanih več pomembnih zmožnosti. V enem letu se je v spletno učilnico Kolesar vključilo in jo uporabljalo 21.000 učencev, tekmovalcev, računalnikarjev in učiteljev mentorjev. Udeležencem je bila vedno na voljo tudi spletna podpora na naslovu podpora@sio.si. V roku enega leta je podporna ekipa rešila približno 800 zahtevkov, ki so se nanašali na vzpostavitev sistema za določeno šolo, na težave ob prijavi v sistem, uporabo več različnih računov s strani istega uporabnika ipd.

Abstract: In the 2015/16 academic year a new information system called Kolesar (»Cyclist«) was introduced in all elementary schools. The system was developed on an open basis using an agile development methodology. In order to make the transition to the new system as simple as possible and reduce the costs of further development, we used the Moodle learning management system, already widely deployed in schools, as a basis. System login was via a unified AAI identity, while the mdm.arnes.si identity management system was simultaneously introduced in

schools. Throughout the process we took into account the wishes of users and the system was constantly upgraded. In order to ensure that the roll-out of the system would be as smooth as possible, we ran two different workshops over the course of the year as part of the »e-Schoolbag« project. The first workshop was aimed at IT technicians and provided information on the importance of a unified identity AAI, approaches to deployment and practical solutions for speedy account creation using the mdm.arnes.si tool. The second workshop was aimed at mentors. A total of 37 Kolesar workshops and 26 workshops on the use of the mdm.arnes.si system were held. Together, they were attended by 852 participants. Workshop participants learned how to enrol their students in the Kolesar online classroom and how to run simulations, tests and competitions with them. A variety of problems were encountered during roll-out: teachers with different levels of training, differently equipped schools, great numbers of guidelines from the institutions involved, and numerous technical and organisational challenges. As a result, the responses from those involved were also varied and interesting. The module for test registration, developed for the needs of the cycling proficiency test, is also being used and further developed by institutions in other countries. The start of the new academic year will see a system upgrade that will introduce a number of important functionalities. Over the course of one year a total of 21,000 students, competition entrants, IT technicians and teachers/mentors signed up for the Kolesar online classroom. Online support was constantly available to participants at podpora@sio.si. Over the course of the year, the support team dealt with approximately 800 requests relating to setting up the system for a specific school, problems with login, the use of multiple accounts by the same user, etc.

E-pravljica

E-fairy tale

Katja Gajšek, Osnovna šola Hruševec Šentjur, Šentjur

Povzetek: Pogosto slišimo besede e-gradiva, e-učbeniki, e-knjiga ipd. Kaj pa e-pravljice? Ker so se učenci pri neobveznem izbirnem predmetu umetnost v 5. razredu že naučili izdelati animacijo, jo sinhronizirati, zmontirati in s pomočjo starejših učencev izdelati tudi kot e-knjigo, sem se to leto odločila, da bodo svoje znanje povezali in sami animirali svojo prvo e-pravljico. Kot izhodiščno gradivo sem uporabila pravljico, ki jo je napisala moja mama Majda Kamenšek Gajšek in ki sem jo pred leti sama tudi že ilustrirala. Z učenci smo skupaj naredili načrt snemanja animacije. Sami so pravljico nato v skupinah posneli in sinhronizirali. V procesu je sodelovalo več učencev, zato sem pravljico razdelila na različna poglavja. Delo je potekalo v skupinah. Vendar to še ni pomenilo zaključka projekta. Sodelavka je pravljico prevedla še v nemščino. Prevod so učenci natančno predelali pri neobveznem izbirnem predmetu nemščina. Nato so na pomoč priskočili starejši učenci, ki so že obvladali oblikovanje e-knjige, in ti so besedila in animacije uredili v primerni obliki. Tako je nastala e-pravljica, ki vsebuje besedilo in animaciji v dveh jezikih. Namen projekta je bil, da učenci celostno povežejo znanje tujega jezika, likovnega izražanja in obvladovanje tehnologije ter samostojno izdelajo uporabno gradivo za druge učence. Gradivo je uporabno pri branju in učenju tujega jezika na nov in zanimiv način. Bralec lahko ob animaciji in poslušanju zgodbe bere tako v slovenščini kot tudi v nemščini. Prav tako sliši izgovarjavo besed in ob animaciji laže razume besedilo. Učenci so se v procesu učili drug od drugega, si med seboj izmenjevali znanje in veščine ter bili aktivni udeleženci v celotnem učnem procesu. Pri tem je zelo pomembno, da je na koncu procesa nastal uporaben izdelek, ki ga lahko delijo drug z drugim. Tovrstno celostno timsko projektno delo zahteva veliko sodelovanja, usklajevanja in načrtovanja, zato sem kot izhodiščno besedilo izbrala pravljico, ki je že bila napisana. V prihodnje vidim velik potencial tovrstnega dela v tem, da lahko učenci tako oblikujejo in ustvarjajo lastne e-pravljice. Na šolah lahko učence z različnimi interesi in sposobnostmi, ki sodelujejo celostno, združimo in tako uporabijo vse svoje sposobnosti v skupnem projektu ter se naučijo sodelovati v timu, ki zmore ustvariti unikatno e-pravljico.

Abstract: We often hear words like e-sources, e-textbooks, e-book ... How about e-fairy tale? The students in the fifth grade that took part in the elective course Art have already learned how to make an animation, synchronize it, create movie editing and thus design an e-book with the help of older students. I decided that the students should combine their knowledge and make their first e-fairy tale. As a source material I used the fairy tale that was written by my mother Majda Kamenšek Gajšek. I also illustrated the fairy tale a few years ago. A film animation was planned

together with the students. Then they produced the animation and voiceover in groups. Since there were many students in the class, we divided the story into different chapters so that each group could work on. But that wasn't all. A colleague translated the story into German. The classmates then read and analysed the story in the elective German course. With the help of older students that have already learned how to make an e-book, they designed the story and animation in e-book form. That is how the e-fairy tale that contains animation and is actually bilingual was made. The purpose of the project was that the students combine their knowledge of the second language, art expression and technology and thus independently produce a very useful material for other students. E-fairy tale can be used as a reading material or as an aid in the learning process of the second language through storytelling. During animation the readers can read in both languages, Slovenian and German. They can also hear the pronunciation of words and understand the meaning of the story more easily. The students learned from each other all the time and they were active participants in the learning process. It is very important that there is a useful product at the end of the project so they can share it with the other students. Because this type of a group activity requires a lot of planning and coordination, I decided to use a story that was already written. In the future I see a big potential in such activities for the students to make their own e-fairy tales. At schools, the students can combine their interests and knowledge and work together, they learn how to collaborate in the process and become a team that can produce a unique e-fairy tale.

Učenje v naravi brez časovnih in prostorskih omejitev

Learning in nature without time and space constraints

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Povzetek: Življenjski slog narekuje hiter tempo življenja. V ta tempo smo nehote vključeni vsi, tudi otroci. Zaradi pomanjkanja časa in pogosto zaradi pretirane skrbi za varnost otroci dobijo premalo priložnosti za dejavnosti, ki bi jih vodile k večji samostojnosti. Spoznavanje in spoštovanje narave nas vodi do učenja za življenje in sobivanja z naravo. Zaradi vsega naštetega sem se odločila, da prispevek uvrstim v tematski sklop Odprto učenje. Odprto učno okolje brez časovnih in prostorskih omejitev je nujno za kakovostno samostojno učenje otrok in doseganje učnih ciljev. Pri načrtovanem učnem procesu sem želela doseči aktivno vlogo otrok s poudarkom na samomotivaciji (učni proces je prirejen učnim tipom otrok – vizualni, avditivni, kinestetični) in samostojnosti. Z aktivno vlogo otrok pri samostojnem učenju sem želela doseči usvojitev ciljev učnega načrta Z učenci 1. razreda smo spoznavali življenjska okolja v okolici šole (mlako, potok, travnik). Starostna stopnja otrok zahteva premišljeno načrtovanje. Učni proces smo načrtovali integrirano, tako da smo se izognili časovni in prostorski omejitvi. Z bralno učno strategijo VŽN smo začeli učni proces. Kaj že vem? Z možgansko nevihto in pogovorom smo ugotovili, kaj že znamo o življenjskih okoljih. Kaj želim izvedeti? Učenci so sami predlagali, česa se želijo o tej temi še naučiti in kaj izvedeti. Spoznavali so različna življenjska okolja, ki so v okolici šole, prek konkretnega dela v naravi so spoznavali, poimenovali, primerjali življenjska okolja, rastline in živali v njih. Pri delu so uporabljali pripomočke (lupe, lopatke, knjige, računalnik z aplikacijo Spoznajmo okolja (https://podpora.sio.si/spoznavajmo-okolja/), spletne strani s fotografijami živali in rastlin, filme in posnetke življenjskih okolij. Kaj sem se naučil? Pridobljeno znanje smo preverili z gibalno igro *dan, noč*, prilagojeno obravnavani temi, z didaktično gibalno igro *kje živim*, z razvrščanjem sličic živali in rastlin v pravo življenjsko okolje, z delovnimi listi in računalniško aplikacijo Spoznajmo okolja. V učnem procesu so pri konkretnem delu delali v dvojicah. Pri nekaterih se je izkazalo, da težko sodelujejo v paru, različno dolga koncentracija otrok oz. različno zanimanje za posamezne aktivnosti sta predstavljala težavo. Pozitivni so bili samomotivacija učencev, sodelovanje in pomoč v dvojicah, sprejemanje oz. nesprejemanje drugega mnenja, preverjanje trditev in skupno iskanje pravilne rešitve. Učitelj je usmerjevalec učnega procesa.

Abstract: Social lifestyle leads to quick tempo of life. Due to lack of time and because of safety concerns, children are given a lack of opportunities for activities that would lead to greater independence. Learning about the nature and respecting it,

leads to learning for life and coexistence with nature. Open learning environment without time and space constraints is essential for quality independent childrens learning and achievement of learning aims. When taking into consideration the learning process, I wanted to achieve active role of children with the focus on self-motivation (learning process is adapted to the learning-types - visual, auditory, kinaesthetic) and autonomy. With the active role of children in self-directed learning, I wanted to achieve the adoption of the aims of the curriculum at the highest level. With the students of first grade we learned about habitats in the vicinity of schools (pond, stream, meadow). The learning process was integrated, so we avoided the time and space constraints. By brainstorming and discussion, we found what we already know about living environments. The pupils themselves proposed what they wanted to learn on this subject. Pupils learned about different habitats, which are in the vicinity of schools. Through concrete work in nature they became acquainted with different habitats, they compared habitats, plants and animals in them. The acquired knowledge was checked with a motion game, by sorting frames of animals and plants in the correct environment, and by worksheets and PC application. Students in the learning process worked in pairs. Some of them didn't cooperate well in pairs, some of them had problems with concentration, and different interests lead to different troubles. On the other hand self-motivation of pupils was a positive thing, also cooperating and the help of some students in pairs. The good thing was also acceptance or rejecting a second opinion, the verification of claims and how to find the correct solution in a group.

Razvijanje kreativnega pisanja pri nadarjenih učencih s pomočjo programa Storybird

Developing creative writing capacities in gifted students using Storybird programme

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Povzetek: Nadarjeni učenci so učenci, katerim moramo omogočati, da svoje znanje in sposobnosti razvijajo tudi zunaj pouka. Sama sem delala z nadarjenimi učenci 5. in 6. razreda. Svoj prispevek sem uvrstila v ta tematski sklop, ker želim predstaviti, kako lahko nadarjenim učencem popestrimo delo tudi zunaj fizične učilnice, in sicer v odprtem učnem okolju. Odprto učno okolje je spletna učilnica, ustvarjena v programu Storybird. Storybird je program, s katerim ustvarimo slikanico. Učenci sproti dodajajo slike in pišejo besedilo. Z ustvarjanjem spletne učilnice sem nadarjenim učencem omogočila, da so dobili medij, s katerim so lahko izrazili svoje kreativno pisanje in domišljijo. V programu so na voljo različne ilustracije, ki jih lahko vzamejo kot osnovo za pisanje zgodb. Ključni cilji, ki sem jih želela doseči, so: • razvijanje ustvarjalnosti; • spodbujanje samostojnosti ter svobodne izbire učencev; • izboljšanje besedišča; • izboljšanje pisanja. Najprej sem se registrirala v program in ga preučila. Nato sem ustvarila svojo spletno učilnico z učenci. Učencem sem nato pri urah za nadarjene predstavila spletno aplikacijo za pisanje zgodb in jim razložila potek dela. Vsak je dobil spletno geslo, s katerim je dostopal do te aplikacije. Natančno sem jim predstavila vse oblike dela in nato z njimi šla skozi te različne oblike dela, ki jih ponuja program Storybird. Učenci so nato v šoli vadili pisanje zgodb in z delom nadaljevali doma. Dobili so različne naloge, ki so bile podlaga za pisanje zgodb. Prednosti, ki jih vidim pri delu s tem programu, so: • zelo kakovostne ilustracije, ki jih učenci lahko uporabijo pri svojem pisanju; • delo z računalnikom in programom; • zabava in hkratno učenje; • notranja motivacija za delo; • hkratno učenje slovenščine in angleščine (medpredmetno povezovanje). Slabosti pa so: • pomanjkanje časa za delo (obremenitev učencev z drugimi dejavnosti); • pomankanje možnosti, da bi učitelj učencem sproti popravljal besedilo, v besedilo, ki ga oni napišejo. Ta oblika dela predstavlja učencem drugačno obliko pisanja zgodb, ki jim je bliže, saj pri tem uporabljamo IKT. Učencem pa je tovrstno delo zabavno, saj se učijo na način, ki je današnjem času njim blizu. Lahko so videli zgodbe drug drugega, zato so se med seboj primerjali, si pomagali in sodelovali. Nekatere zgodbe so objavili, nekatere pa napisali le zase. Osebno ali v obliki komentarjev, ki jih omogoča aplikacija, sem jim nudila povratno informacijo.

Abstract: Gifted students are the ones, which we have to allow their knowledge and skills developed outside of school. I myself have worked with the gifted students of the 5th and 6th grade. I placed my article to this thematic set, because I want to present how we can diversify learning outside the classroom, namely in an open learning environment. An open learning environment is a virtual classroom, created with Storybird. Storybird is a program in which we create a picture book. Students can simultaneously add pictures and write text. By creating a virtual classroom, I enabled a medium by which gifted students can express their creative writing and imagination. The program itself contains various ilustrations that can be taken by students as a basis for writing their stories. The key objectives that I wanted to achieve with the students are: • enhancing creativity; • promotion of the indepence and the freedom of choice of students; • improving the vocabulary; • improving the writing. Firstly, I registered into the program and examined it in detail. Then I created a virtual classroom for the students. During the lessons for gifted students I presented the online application for writing stories and explained the course of work. Each pupil was given an online password by which he could access this online application. All forms of use were presented to the students in detail and additionally we went through various forms of use of the application together. Students started practicing at school and continued their work at home. They were given a variety of tasks, which were the basis for writing stories. There are many advantages with this approach to work, namely: • high quality ilustrations that may help students in their writing; • working with the computer and the program; • entertainment and learning at the same time; • intrinsic motivation to learn; • learning Slovene and English simultaneously. However, I have also identified some disadvantages, namely: • lack of time (students have many other activities); • teacher is not able to promptly correct the text. To the students, this form of work represents a different way of writing stories due to use of information communication technology. This way, the students can work and learn in a manner that is nowadays more close and attractive to them. Students were able to read and compare each other stories and they also helped each other. Some of the stories were published and some students wrote merely for themselves. I provided feedback to the students through comments that are enabled in the application.

Z videoigrami do teoretičnega znanja pri športu

With video games to the theoretical knowledge in sport

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Povzetek: Šport je poseben predmet v urniku vsakega učenca. Že samo tekanje do telovadnice, preoblačenje, glasnejše pogovarjanje in smejanje povejo vse. Učenci razumejo šport kot sprostitev, zabavo, igro, druženje ipd., nikakor pa ne kot sedenje in poslušanje teorije. A vendarle ni vse tako preprosto. Žal učni načrt za šport predvideva tudi usvojitev nekaterih teoretičnih znanj. Smernic, kdaj le-te posredovati učencem ter koliko in kako, je ogromno. A ko dejansko pride do tega trenutka, se velikokrat z učenci znajdemo na različnih bregovih. Vzdihovanje, zavijanje z očmi, takšni in drugačni komentarji so takrat stalnica. Teoretično znanje sicer posredujem z razlago ali s plakatom, a sem ugotovil, da so besede premalo. Treba je narediti korak naprej. Suhoparna razlaga teorije očitno ne pride več v poštev. Ko sem pred kratkim učencem razlagal osnovna pravila malega nogometa, jih je nekaj povedalo, da trenutno doma igrajo videoigro, ki ima enaka pravila. Prišli smo na idejo, da bi pravila nogometne igre lahko razložili na primeru videoigre. Naredili smo načrt, da učenci videoigro doma posnamejo, v šoli pa smo posnetek nato obdelali s programsko opremo za urejanje filmov. Končni rezultat je uporabno e-gradivo, ki bo v pomoč tako učencem kot meni. Glavni cilj, ki sem si ga zastavil, je bil, priti nasproti učencem z uporabo medija, ki jim je blizu in jih pritegne. Poleg zabave lahko videoigre v prilagojeni obliki uporabimo tudi v šoli, pri pouku, za učenje. Učencem tako teoretične vsebine naredim bolj razumljive, privlačne in zanimive. Že v času nastajanja e-gradiva mimogrede usvojijo potrebno teoretično znanje športa. Zaradi nazorno prikazane vsebine je učenje lažje in hitrejše, doseganje ciljev pa učinkovitejše. Delo je tako naravnano na tempo vsakega posameznega učenca ter časovno in prostorsko neomejeno. Vključevanje e-gradiv v učni proces pripomore k boljšemu razumevanju in osmišljenju teoretičnih učnih vsebin ter posledično k večji motiviranosti učencev. Dodana didaktična vrednost novonastalega videoposnetka z večjo dinamiko, animacijami in interaktivnimi elementi tako ustvarja učinkovitejše in spodbudnejše učno okolje. Slabosti, ki jih trenutno vidim, so vsekakor zmanjšanje intenzivnosti telesne vadbe, pomanjkanje časa in novost, na katero se morajo učenci navaditi in jo tudi sprejeti.

Abstract: The sport is certainly a special subject in the schedule of each pupil. Even just running to the gym, dressing up, louder talking and laughing, says it all. The pupils understand the sport as a relaxation, fun, play, socializing ... but certainly not as sitting and listening to the theory. Yet its not all that easy. Unfortunately, the curriculum for sport provides the conquest of certain theoretical knowledge.

The guidelines, when, how much and how they convey to the pupils are huge. But when it actually comes down to that moment, we find each other on different banks. The sighing, rolling eyes, and different comments are a permanent fixture at the time of lessons. Theoretical knowledge is communicated with the interpretation or the poster, but I found out that words are not enough. It is necessary to take a step forward. Dull interpretation theory apparently does not apply anymore. Recently, when I was explaining the basic rules of football to the pupils, some of them said that they currently play at home a video game with the same rules. We came up with the idea that the rules of the football can be explained in the case of the video game. We made a plan with the pupils to record their playing video game at home and recording was then analyzed at school with software for editing movies. Our final result is useful e-learning material, which will help both pupils and me as a teacher. The main objective, which I have set for myself was to get across to pupils through the media that is close to and attracts them. In addition to the fun, we can use video games in a modified form in school, in the classroom, for learning. I make so the theoretical content for the pupils more understandable, attractive and interesting. Already during the formation of e-learning materials, the pupils acquire the necessary theoretical knowledge of the sport. Due to the clearly displayed contents, learning is easier and faster, and more effective achievement of the objectives. The work is so oriented to the pace of each individual pupil and temporal and spatial unlimited. The integration of e-learning materials in the learning process can contribute to a better understanding and making sense of theoretical learning contents and consequently to higher motivation of the pupils. The added didactic value of the newly created video with greater dynamics, animations and interactive elements, thus creating more efficient and more stimulating learning environment. Disadvantages, which I currently see are certainly a reduction in the intensity of the exercise, lack of time and a novelty on which pupils need to get used to it and also accept it.

Jaz zmorem, ti zmoreš, midva zmoreva več

I can, you can, we can do much more

Dimitrij Banda, Osnovna šola Naklo, Naklo

Povzetek: Prispevek predstavlja primer ustvarjanja pozitivnega šolskega okolja, ki želi tako pri učencih kot učiteljih uzavestiti pomen delujočega, preventivnega vzgojnega delovanja, predvsem pa jim ponuditi spodbudno učno okolje. Pri učencih smo spodbujali urjenje socialnih veščin, pri čemer smo izhajali iz pozitivne psihologije in predpostavke, da se teh veščin ne da naučiti samo v razredu, ampak morajo postati način življenja. Cilj je bil zmanjšati vse neželene situacije, poudariti čustveno inteligentnost in socialne veščine ter ustvariti ugodno šolsko klimo. Na Osnovni šoli Naklo smo v šolskem letu 2015/2016 v povezavi s šolami iz Italije, Turčije in Litve v okviru projekta Erasmus+ začeli slediti ciljem pozitivne psihologije in pozitivnih šol, saj smo na podlagi anket na šolah zaznali manjše zadovoljstvo učencev, staršev in učiteljev na področju vzgojnega delovanja šole. Najprej smo želeli izboljšati kompetence učiteljev na vzgojnem področju, jih opolnomočiti za učinkovito in primerno ter enotno delovanje na vzgojnem področju. Pri učencih smo želeli izboljšati socialno in čustveno inteligentnost, povečati pozitivno naravnanost staršev do vzgojnega delovanja ter izboljšati zadovoljstvo s šolo pri vseh ciljnih skupinah. V enem šolskem letu smo tako na vseh sodelujočih šolah v projektu izvajali številne dejavnosti, ki so povezale učitelje, učence in starše. Pri razrednih urah smo učence prek delavnic učili o empatiji, čustveni inteligenci, sodelovanju, sinergiji, prepoznavanju čustev, nato pa vse to povezali še z realnimi situacijami. Učence, učitelje in starše smo povabili v igro deljenja dobrih dejanj. V okviru treh dni povezanosti so učenci praznovali ob dnevu Zemlje, dnevu ljubezni in dnevu Evrope. Pripravljali in zbirali so svoje najljubše verze, univerzalna sporočila o ljubezni ter misli v različnih jezikih Evropske unije, plesali, se igrali. Na dnevu odprtih vrat so razredi v skladu z izhodišči sinergičnega delovanja pripravljali program za starše. Potegovali so se za nagrade ter si prislužili sodelovanje na prireditvi, na kateri smo se spomnili vseh uspehov. Ob koncu leta smo s primerjavo začetne in končne spletne ankete, ki so jo izpolnjevali učenci, starši in učitelji, ugotovili, da s premišljenim, teoretičnim in izkustvenim učenjem ter enotnim jezikom v šoli in doma lahko dosežemo pozitivno šolsko klimo. Prihodnje leto bomo delovanje le še nadgradili.

Abstract: Paper addresses example of creating and nursing positive school environment for pupils and teachers, based on preventive educational upbringing program. The main goal stressed in the field of positive psychology was to encourage pupils to work on their social skills, but not just in the classrooms, also as a way of living. Our idea was to decrease all the unwanted events, enhance emotional intelligence and social skills and to create better school climate. In school year

2015/15 Primary school Naklo and schools from Italy, Turkey and Lithuania cooperated in Erasmus+ project, connected with ideas of positive psychology and positive schools. According to questionnaires we noticed lower satisfaction with our ways of upbringing among pupils, teachers and parents. First we wanted to elevate the competence of teachers in the field of educational upbringing, acquire power for the teachers in order to act efficiently and appropriately. With pupils we wanted to improve social and emotional intelligence, increase positive attitude of parents towards educational upbringing and improve satisfaction with the school in all target groups. In one school year all in the project involved schools prepared several activities, that connected teachers, pupils and parents. During lessons we had several workshops for pupils about empathy, emotional intelligence, cooperation, synergy, recognizing emotions, later we connected this with real life situations. We invited pupils, teachers and parents to do acts of kindness. In three bonding days pupils celebrated Earth day, love and friendship day and Europe day. They prepared their best verses, universal lines about love and friendship, and thoughts in different European languages, they danced and played. On the school open day each class proved power of synergy and prepared program for parents. They tried to win a reword and opportunity to attend the final celebration party, where we celebrated our success. At the end of school year we compared beginning and final questionnaire, done by pupils, parents and teacher and we realised that we managed to make a difference – with thoughtful, theoretical and on situation based learning and speaking the same language in school and at home we created positive school climate. Next year we will upgrade our work.

Vreme nas povezuje

Weather unites us

Polona Vodičar, Osnovna šola Vransko, Tabor

Povzetek: Na naši šoli sodelujemo z različnimi evropskimi državami v projektu Head in the clouds. V okviru projekta poglabljamo znanja o vremenu. V preteklem šolskem letu so se učenci 3. razreda tri mesece ukvarjali z vremenom. Najprej smo ugotavljali, kaj vse že znamo o vremenu, in se spraševali, kaj nas zanima. Izdelali smo preproste merilne instrumente za merjenje vremenskih pojavov. Na internetu smo poiskali navodila za izdelavo preprostega termometra, anemometra, izdelali smo vetrovnico in preprost vlagomer. Z učenci smo 3 tedne (v različnih mesecih) merili vremenske pojave z lastnimi instrumenti, s kupljenimi instrumenti, spremljali vremensko napoved na Accu Weather in rezultate primerjali z izmerjenimi podatki, ki smo jih dobili z Netatmo vremensko postajo na https://www.netatmo.com/en-US/weathermap/bounds/46.278954964156306/15.018614127502588/46.22001684963453/14.853819205627588. Z učenci smo spremljali tudi vreme v dveh državah, s katerima sodelujemo v projektu, Španiji in v Latviji. Vreme smo spremljali prek bloga projekta http://cloudserasmus.blogspot.si/p/activities.html. Učenci so postavili hipoteze, ki so jih ob koncu projekta potrdili oziroma ovrgli. Zbrane podatke so zapisovali v preglednico in jih s pomočjo PowerPointa tudi grafično prikazali. Ob koncu projekta je nastala predstavitev vseh hipotez, ki smo jih podkrepili z grafi. S pomočjo grafov smo hipoteze zavrgli oziroma potrdili. Učenci so se v projektu naučili natančno meriti vremenska stanja, opazovati in beležiti. Spoznali so korake raziskovanja, učili in se postavljati hipoteze in jih s pomočjo zbranih in obdelanih podatkov ovreči oziroma potrditi. Večina tretješolcev zna sama predstaviti podatke in pripraviti grafično predstavitev v PowerPointu. Prav vsak je grafično v PowerPointu predstavil podatke, ki jih je zbiral v okviru projekta. V okviru projekta so spoznali internetno mesto netatmo.com, kjer lahko spremljajo vreme na različnih koncih sveta, spoznali in naučili so se na internetu iskati po koristne informacije, internet so začeli uporabljati za iskanje novih znanj, spoznali so druge evropske države. V okviru projekta so znanja, ki so jih že imeli, in nova znanja povezali, dopolnili. Vsekakor so letošnji učenci presegli z učnim načrtom predpisane standarde znanja, ki govorijo o vremenu in postopkih. S pomočjo projekta so tretješolci pridobili koristna znanja, ki jih bodo uporabili v kasnejšem življenju.

Abstract: Our school participates with some other European countries in an international project Head in the clouds. The project enhances our knowledge about the weather. Third graders studied the weather for three months in the previous school year. At first we found out what we already knew about the weather and what we were interested in. We developed some simple instruments for measuring

meteorological phenomena. We found the instructions for making a simple thermometer and a simple anemometer on the internet. We also made a windmill and a simple hygrometer. We were measuring different meteorological phenomena with our own weather instruments and with the instruments we bought for three weeks (in different months). We were also watching the weather forecast on accu weather and comparing our results with the results measured by Netatmo weather station on https://www.netatmo.com*. We were also monitoring the weather in Spain and Latvia because these two countries are in our project too. We were monitoring the weather via project blog http://cloudserasmus.blogspot.si/p/activities.html. At the beginning pupils wrote some hypotheses that were accepted or rejected at the end of the project. Pupils wrote the collected data into a chart and used PowerPoint to present them graphically. A presentation of all hypotheses shown also by graphs was made at the end of the project. The hypotheses were accepted or rejected by the help of these graphs. Pupils learned how to measure precisely, how to observe and how to make notes. They got to know the research steps, how to make hypotheses and how to accept or reject them. Most of third graders know how to present data graphically and how to prepare a PowerPoint presentation. Each pupil made a graphical PowerPoint presentation with the data collected within the project. The website netatmo.com was presented to the pupils. They could monitor the weather in different parts of the world there. They also learned how to get some useful information by surfing the net. They learned a lot about other European countries. Within the project pupils connected and completed the knowledge they already had and the new knowledge. Pupils exceeded the weather and procedures learning standards compared to the ones prescribed by the curriculum. Third graders gained useful knowledge through this project. They will use it later in their lives.

Priprave na Lego FLL-tekmovanje kot odprto učenje

FLL Lego competition preparations as open learning

Miha Miklavc, Osnovna šola Vransko, Tabor

Povzetek: Ker živimo v dobi visoke tehnologije in vstopamo v robotsko dobo, smo na naši šoli pred tremi leti začeli z aktivnostjo lego robotika. Pri delu želimo na poučen in zabaven način spoznati delovanje robotov. V lanskem šolskem letu smo se prijavili na lego tekmovanje (FLL), ki poteka na regijski in državni ravni. Naslov lanske teme tekmovanja je bil Poti smeti. V ekipi roboVRANI je sodelovalo 7 učencev od 7. do 9. razreda. Tekmovanje je sestavljeno iz štirih delov – iz tekme robotov, predstavitve projekta, tehničnega intervjuja in vrednot ekipe. Najbolj intenzivne priprave so potekale za tekmo robotov. Učenci so morali najprej sestaviti lego robota iz robotskega seta MINDSTORMS EV3 Education. Sledilo je programiranje v računalniškem okolju MINDSTORMS EV3 Education, in sicer na tekmovalnem FLL-poligonu. Pri reševanju programerskih težav sem z učenci obiskal strokovnjaka na Fakulteti za računalništvo. V drugem sklopu, tj. projektu, so morali učenci poiskati inovativno rešitev konkretnega problema (smeti in onesnaževanje). Tudi pri izdelavi projekta smo koristne informacije poiskali pri strokovnjaku za odpadke in obiskali lokalni zbirni center odpadkov. Naš odpadek – žvečilni gumi – smo reciklirali in naredili čisto pravo lego pnevmatiko, ki so jo učenci poimenovali ŽČguma. Učenci so ves čas priprav izdelovali tudi tehnično knjigo, v kateri so nazorno predstavljali potek sestavljanja robota in programe za njegovo avtonomno delovanje. V knjigi so predstavljene izboljšave, modifikacije, prednosti in slabosti. Na lego FLL-tekmovanju ni pomembno le tehnično znanje, temveč tudi ekipni duh in sodelovanje. Zato so se učenci med pripravami veliko družili, se spoznavali in igrali tako športne kot tudi socialne igre. V zadnji fazi priprav so pripravili tudi celostno podobo ekipe, in sicer so izdelali predstavitveni plakat, majice oz. kape in druge navijaške rekvizite. Omenjeni način učenja presega meje razreda in šole ter nasprotuje klasičnemu načinu poučevanja učitelj – učenec. Učenci aktivno sodelujejo pri raziskovalnem učenju, mentor je predvsem pomočnik in usmerjevalec. Naši delovni pripomočki niso le učbeniki in knjige, temveč tudi IKT, svetovni splet in strokovnjaki s ciljnih področij. Priprave na lego tekmovanje kot odprto učenje potekajo v več fazah. Najprej morajo učenci tekmovalno nalogo analizirati, sledi razumevanje problemov in iskanje rešitev. Glavne kompetence, ki jih učenci pridobivajo pri pripravi na lego tekmovanje, so razvijanje domišljije in prostorske predstave, pripovedovanje, matematično-tehnološka znanja, programiranje, spoznavanje različnih računalniških tehnologij, sodelovanje s strokovnjaki in medsebojno izkustveno učenje, razvijanje kreativnosti ter kritičnega razmišljanja in reševanje problemov. Ekipa roboVRANI je dokazala, da so priprave na LEGO FLL-tekmovanje zabavno odprto učenje.

Abstract: Since we are living in the world of high technology and entering the robotic era our school started with Lego robotics activity three years ago. We wanted to get to know more about the functioning and operating of robots. In the previous school year we applied for the FLL Lego competition, which is organized on a regional and the national level. The competition theme was “Poti smeti”. Seven pupils from 7thto 9th grade took part in the team called roboVRANI. The competition is divided into four parts - a match of the robots, a presentation of the project, a technical interview and team’s values. The match of the robots required the most intensive preparations. Pupils had to construct a Lego robot from the robot set MINDSTORMS Education EV3. This was followed by programming in a MINDSTORMS Education EV3 computer’s environment at a competitive FLL polygon. We visited an expert at the Faculty of Computer Science who helped us to solve some programming problems. In the second part - the presentation of the project pupils had to find an innovative solution of a problem (rubbish and pollution). We got some useful information for our project when we visited the waste consultant and the local waste collection center. Our waste - chewing gum - was recycled and we made a real Lego tyre that was named ŽČguma by the pupils. Pupils were writing a technical book all along in which they presented the course of constructing the robot and the programmes for its autonomous operating. The improvements, modifications, advantages and disadvantages are presented in this book too. Not only technical skills, but also team spirit and cooperation are important on the FLL Lego competition. Therefore pupils spent a lot of time together during the preparations, they got to know each other well and they played sport and social games. In the final preparation stage pupils prepared the complete team image – a poster, T-shirts, caps and other cheerleading props. This way of learning exceeds the boundaries of class and school and opposes the traditional teacher-pupil method. Pupils participate in collaborative learning actively, mentor is primarily an assistant and guide. Our work accessories are not only textbooks and books, but also modern ICT, internet and the target areas’ experts. Lego competition preparations as open learning consist of several stages. The pupils have to analyse the task, recognize the problem and find a solution. The main competences gained during this process are the following: imagination development, spatial visualization ability, story-telling, Math and know-how knowledge, programming, learning about new computer technologies, mutual experiential learning, creativity development, critical thinking and problem solving. Team roboVRANI proved the FLL Lego competition preparations as open learning are amusing.

Arnes Učilnice – spletno učno okolje

Arnes Classroms - LMS as a Service

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Povzetek: Arnes Učilnice je storitev, ki omogoča nove načine uporabe spletnega učnega sistema Moodle, ki jih večina posamičnih postavitev Moodlov v vzgojno-izobraževalnih zavodih ne omogoča. V zadnjem desetletju so bili v slovenskem izobraževalnem prostoru narejeni veliki koraki pri uvajanju informacijskih tehnologij. V tem času je v svetu prišlo tudi do velikih sprememb na področju samih tehnologij; predvsem različni »oblaki«, spletne storitve in mobilne naprave. Posledice teh sprememb se odražajo v naših pričakovanjih v načinu komunikacije, sodelovanja, poleg tega pa s seboj vnašajo tudi nove izzive, ki jim včasih stežka sledimo. Ne nazadnje nam prav pestra izbira orodij velikokrat otežuje sodelovanje, ker smo se skozi naše delo priučili različnih programov in storitev. Model gostovanja 1 Moodle okolje na šolo se je izkazal za nevzdržnega v smislu virov za tehnično podporo iz strani Arnesa. Nekaj podobnega se je zgodilo tudi na strani računalnikarjev v vzgojno-izobraževalnih zavodih, kjer se je pozornost s poglabljanja uporabe Moodla v pedagoškem procesu velikokrat preusmerila le na sodelovalno delo med učitelji (npr. E-zbornica). Ob odločitvi za združevanje več Moodlov v enega samega zaradi učinkovitejše podpore in vzdrževanja so se odprle tudi druge neslutene možnosti in priložnosti, predvsem na področju sodelovalnega in projektnega dela med različnimi vzgojno-izobraževalnimi zavodi. Ravno tako so se zaradi odločitve o nujnosti AAI-prijave v Učilnice pojavile nove poti v smislu preverjanja znanja (ki se je že obneslo pri izvajanju kolesarskih izpitov na Moodlu Skupnosti SIO). Pomanjkljivosti Arnes Učilnic v primerjavi s prejšnjim modelom gostovanja Moodlov se odražajo predvsem v vidnosti uporabnikov in predmetov iz »sosednjih« organizacij. Omejitve Učilnic občutijo predvsem skrbniki organizacij, saj Moodla ne morejo prirediti po željah članov lastne organizacije. V tem smislu lahko primerjamo uporabo posamičnega Moodla šole in Arnes Učilnic kot selitev iz samostojne hiše v stanovanjski blok. Tako se storitev Arnes Učilnice skuša umestiti kot vozlišče različnih učnih spletnih storitev in okolje za sodelovalno delo. Slovenski učitelji bodo lahko v tej Arnesovi storitvi našli najnižji skupni imenovalec, na katerem lahko gradijo stabilno ter sodobno učno okolje v digitalni dobi.

Abstract: Arnes Classrooms is a service which enables new ways of using Moodle that are not possible in the current Moodle setups among the educational institutions in Slovenia. There were great steps made at introducing IT in Slovenian educational sphere in the last decade. There were also many changes in the IT field itself – various cloud and web services and mobile devices. The implications of those changes reflect in out expectations in communication and collaboration. On the other hand, they are bringing new challenges which we can sometimes hardly

keep track of. And many times the very plethora of tools makes our collaboration difficult since weve learned to use so many different applications and services. The paradigm »1 Moodle environment per school« proved to be unsustainable because of lack of resources for technical support from Arnes. Something similar has happened with the support within schools where focus from using Moodle in-depth within classroom shifted towards collaboration and communication among coworkers. By deciding to merge the many Moodles into a single one to better manage our support and maintenance, other unforeseen options and opportunities opened up, especially in the area of collaboration and projects among different educational institutions. Additionally, because of our decision to limit user authentication to federated (AAI) login only, new paths for exams within Moodle were enabled (this was already successfully implemented for cyclist exams in Moodle of SIO Communities). The shortcomings in Arnes Classrooms in comparison with a previous model of Moodle hosting come mostly from visibility of users and courses of neighboring institutions. The limitations of Classrooms are mostly felt by the institutions Moodle administrators which were able to tailor their previous Moodle installation by the demands of their colleagues. In this sense we could compare a single Moodle installation and Arnes Classroom as moving from a single-family detached house to an apartment building. Thus the Arnes Classrooms service tries to position itself as a nexus for different educational web services and an environment for collaboration. The Slovenian teachers will be able to find their lowest common denominator upon which they will be able to build a stable and contemporary learning environment for a digital age.

Projektno učno delo pri kemiji v nemščini

Chemistry project - based learning in German

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Povzetek: Projektno učno delo pri kemiji v nemškem jeziku Posodobljeni učni načrt za kemijo je zasnovan tako, da omogoča uresničevanje ključnih kompetenc za vseživljenjsko učenje, ki so opredeljene kot kombinacija znanj, spretnosti in odnosov, ki ustrezajo okoliščinam. Prednostno pri kemiji razvijamo temeljne kompetence v naravoslovju in tehnologiji, matematično kompetenco in digitalno pismenost. Pri tem učni načrt za kemijo omogoča še uresničevanje številnih sestavin preostalih ključnih kompetenc za vseživljenjsko učenje, med katerimi so tudi socialne in državljanske kompetence ter sporazumevanje v tujih jezikih. V želji po kakovostnem naravoslovnem znanju si učitelji prizadevamo pri dijakih razvijati interes za naravoslovne vsebine, pri čemer posebno skrb namenjamo razvoju razumevanja učencev vsebin naravoslovnih predmetov. V procesu usvajanja znanja z razumevanjem ima pomembno vlogo uporaba t. i. aktivnih pristopov učenja, med katerimi je tudi projektno delo (Ferk Savec, 2011). Projektno učno delo je učni pristop, v katerem učenci usvajajo znanje s preučevanjem zanimivih problemov oz. pojavov iz vsakdanjega življenja. Ob njem delu učenci pridobivajo in nadgrajujejo svoje znanje, razvijajo spretnosti, zmožnosti in talente ter krepijo svoje socialne spretnosti. V projektno učno delo pri predmetu kemija so bili vključeni dijaki 2. letnika progama tehniška gimnazija, Šolskega centra Novo mesto, Srednje elektro šole in tehniške gimnazije. Časovno je bilo projektno učno delo uvrščeno v mesec junij, ko so dijaki že pridobili vse ocene pri predmetu in zato pri sami izvedbi niso bili časovno omejeni.

Abstract: The updated curriculum for chemistry is designed to enable the realization of key competences for lifelong learning, which are defined as a combination of knowledge, skills and co-relations related to the context. What is of key importance in chemistry is the development of basic competences in science (science) and technology, mathematical competence and digital literacy. Furthermore, the curriculum for chemistry enables the implementation of a number of components of other key competences for lifelong learning, which include social and civic competences and communication in foreign languages. The desire for quality science knowledge makes teachers work with students to develop an interest in science content, paying particular attention to developing pupils understanding of the content of science subjects. In the process of acquiring knowledge with an understanding of the content plays an important role the use of so-called active learning approaches, including

the project work (Ferk Savec, 2011). Project based learning is a teaching approach in which students acquire knowledge by studying interesting problems and defects. phenomena of everyday life. Upon learning project work the students acquire and upgrade their knowledge, develop skills, abilities and talents and strengthen their social skills. In the chemistry project work students from the 2nd year programme of Technical gymnasium Novo mesto were included. The project work took place in June when students had already acquired all the reviews on the subject and therefore the implementation was not time limited. The aim of the project work was to produce a summary and presentation of a selected topic in Slovenian and German language. Students used both, books and electronic resources, which were in Slovenian and German language. The starting point for the exploration of each topic was represented in the interactive textbook of Chemistry in the 2nd year, which was developed under the project »E-books focused on sciences in primary schools.« The transversal linking of chemistry with German enabled students to learn the chemistry content of selected areas of the properties of elements and compounds in biological systems, while advanced technologies enhanced team spirit, developed competence of learning to learn and work independently with the given resources. In addition, students were taught the correct and appropriate use of monolingual dictionary, as well as other reference literature in German lessons.

Ali lahko izvedemo maturo s pomočjo računalnika – računalniškega sistema?

Can we use computers or information system for final exams in computers technical schools?

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Povzetek: Zaključni izpit in matura predstavljata zadnje dejanje v srednjem poklicnem in tehničnem izobraževanju. Že vrsto let potekata po ustaljenem preverjenem postopku. Zadnji dve letu smo v sodelovanju s Centrom RS za poklicno izobraževanje in skupnostjo Elektro in računalniških šol Slovenije poenotili naloge in že dvakrat izvedli poizkusno preverjanje s pomočjo računalniškega sistema. Ideja je da se zaključno preverjanje znanja izvede s pomočjo računalnika, uporabo tistih programskih orodij, ki so jih uporabljali v času šolanja. Preizkus zadnjih dveh let nam daje boljše rezultate pri uporabi računalnika – računalniškega sistema. Dijaki rešujejo zahtevane naloge s pomočjo računalnika in s programskimi orodji, ki so jih uporabljali pri učno vzgojnem procesu. Tako smo za izvedbo uporabili koncept Virtualizacija aplikacij. Ta omogoča dostop do aplikacij na računalniku v pisarni, domačem prenosniku, tablici ali pametnem telefonu. Deluje ne glede na operacijski sistem, hkrati pa še vedno zagotavlja varen dostop. Vsaka šola pri učno-vzgojnem procesu predvsem pri strokovno-teoretičnih predmetih uporablja različna programska orodja. Pri zaključnem preverjanju – poklicni maturi so naloge sestavljene ne glede na izbrano okolje ali programski jezik, vendar iz točno določenih modulov – predmetov, katerih znanje se preverja. Izkazalo se je, da z uporabo računalnika pri reševanju dijaki dosegajo na predmaturitetnem preizkusnem preverjanju boljše rezultate. V zadnjem šolskem letu 2015/2016 je poizkusno pristopilo k izvedbi 10 od skupaj 18 elektro in računalniških šol. Odgovor na to, ali je možno uporabiti sistem za preverjanje, je odločno pritrdilen. Kako zadostiti vsem zahtevam varnega, enkratnega, ponovljivega in stabilnega sistema, bomo prikazali na predstavitvi.

Abstract: Final exam represents the last act in the secondary vocational and technical education . Last years all process, passing the usual procedure which are verified . The last two year , in cooperation with the Centre for Vocational Education - CPI and Community Electrical and Computer Schools Slovenian unified task and has already carried out two experimental verification using a computer or computer system. The idea is that the final examination conducted by computer, using those software tools that were used during the training in each own school. Examination of the last two years gives us the best results when using a computer - computer system . Students solves required tasks using the computer and the software tools

that have been used in the learning process of education. Resulution used the concept of Application Virtualization . Virtualization enables applications to access applications on your office computer , home laptop , tablet or smartphone. It works regardless of the operating system , while still providing safe access . Each school in the learning process of education especially in professional theoretical subjects using various software tools . The final examination - vocational diploma tasks are drawn regardless of the environment or programming language but for specific modules - items to be tested . It has been shown that using a computer to solve students to reach predmatiritetnem test verification better results . In the last school year 2015/2016 is an experimental approach to the implementation of 10 of a total of 18 electrical and computer schools. Is it possible to use the system in final exam to check , definitely yes . How to meet all requirements for safe , unique, reproducible and stable system , we will try to show and tell at the presentation.

Fizika v domači delavnici

Physics in a home workshop

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Povzetek: Pridobivanje znanja ni vezano na šolski učni prostor. Določene stvari dodobra razumemo šele takrat, ko se jih samostojno lotimo. S praktičnim delom uvidimo podrobnosti, ki so velikokrat bistvene za razumevanje pojavov. Kot učitelj sem spoznal, da učenci snov najbolje razumejo, ko se ji dovolj približajo, na primer z lastnim izvajanjem in sestavljanjem eksperimentov.

Eno od takšnih učnih okolij, ki dobro podpira področje naravoslovja, je zagotovo domača delavnica. Pri pouku sem vpeljal zahtevo, da učenci izdelajo en praktični izdelek na leto (npr. kuhinjska tehtnica), ki pripada določeni obravnavani snovi. Takšna naloga je velikokrat vključila tudi (stare) starše ali sovrstnike. Predvsem dedki in očetje so kaj hitro potegnili otroke v delavnico in z njimi izdelali izdelek, ki je ustrezal podanim kriterijem.

Vprašal sem se: Ali želim, da se učenci učijo le iz knjige in delajo samostojno, ali pa želim razvijati sodelovalno delo ter pridobivanje znanja iz različnih virov?

S tovrstno nalogo se izobraževalni proces prenese zunaj šolskega urnika v domače okolje, učitelj pa dobi vlogo moderatorja. Učitelj sicer poda kriterije za praktični izdelek, toda lastno delo zahteva pripravo načrta izvedbe izdelka, izdelavo, testiranje in nato predstavitev učitelju. Učenec izdelek predstavi tako, da razloži teoretično ozadje in odgovori na zastavljena vprašanja oz. reši računsko nalogo, vezano na izdelek.

Pri ocenjevanju tako učitelj vrednoti ustno razlago, računske spretnosti ter spretnosti laboratorijskega dela ob uporabi narejenega izdelka, zato učenčeve razlage ne temeljijo več le na prebranih besedah, pač pa jih črpa iz opazovanja ter lastnega razmišljanja med ustvarjanjem izdelka. Vsak učenec naredi izdelek, prilagojen svojim ročnim spretnostim. Učitelj ne ocenjuje videza izdelka, saj je cilj razumevanje fizikalnega ozadja. Če otrok fizikalnega ozadja ni razumel, je vlogo učitelja spontano prevzel sorodnik ali sovrstnik že od načrta izdelka dalje.

Uporabljena sta pristopa projektnega učenja in sodelovalnega dela, ki ju odlično podpira sodobna tehnologija. Spodbuja se ustvarjalnost in razvijanje praktične (ročne) spretnosti. Prednost takšnega dela je individualizacija, saj si vsak učenec sam izbere zahtevnost izdelave in čas, ki ga nameni izdelavi, ter naredi unikatni izdelek po svoji predstavi. Učitelj lahko vpelje takšen način učenja v vsakem letniku posebej in tako spodbuja razvoj zgoraj navedenih spretnosti v vseh letih učnega procesa.

Abstract: School environment is not the only place to acquire knowledge. Some processes or phenomena can be understood only when people are actively engaged in them. As a teacher I realised that students develop deeper understanding when

they prepare and conduct experiments by themselves. An appropriate environment to develop science concepts is a home workshop. All my secondary school students were required to produce one handmade product per academic year (e.g. a kitchen scale). They often needed help from their (grand)parents or peers. Particularly grandfathers or fathers invited students to their workshops and helped them make products and understand concepts behind the products, necessary for understanding science. How do I expect my students to work? Alone, studying from books, or work in a team and develop knowledge from many different resources? Thus learning physics takes place not only at school, but also in the students' home environment. Therefore, the teacher's role has changed to a moderator of the learning process. Teachers provides criteria for the product. However, all stages of the planning, practical work and product testing need to be done by students. Finally, students presenting their own products in a classroom, explain physics concepts and solve tasks provided by the teacher. Students' presentations are based on their observation, experimenting and learning from mistakes. The teacher evaluates students' understanding of the concepts, mathematical skills, related the product and experimental skills. However, the design was not evaluated, as an important aim was understanding physics, not the product itself. In this, parents supported the students and took over the role of a teacher, if they needed help. For this type of learning we use project-based and cooperative learning. It encourages creativity and experimental/practical skills. One of the benefits is individualisation as every student can find their own way and take as much time as they need to make the product. And every product is a unique. Teachers give their students opportunities to make one product every academic year and thus continuously develop different types of skills.

Dijaška izmenjava kot priložnost za odprto učenje naravoslovja

Student exchange as an opportunity for the Natural Science open learning

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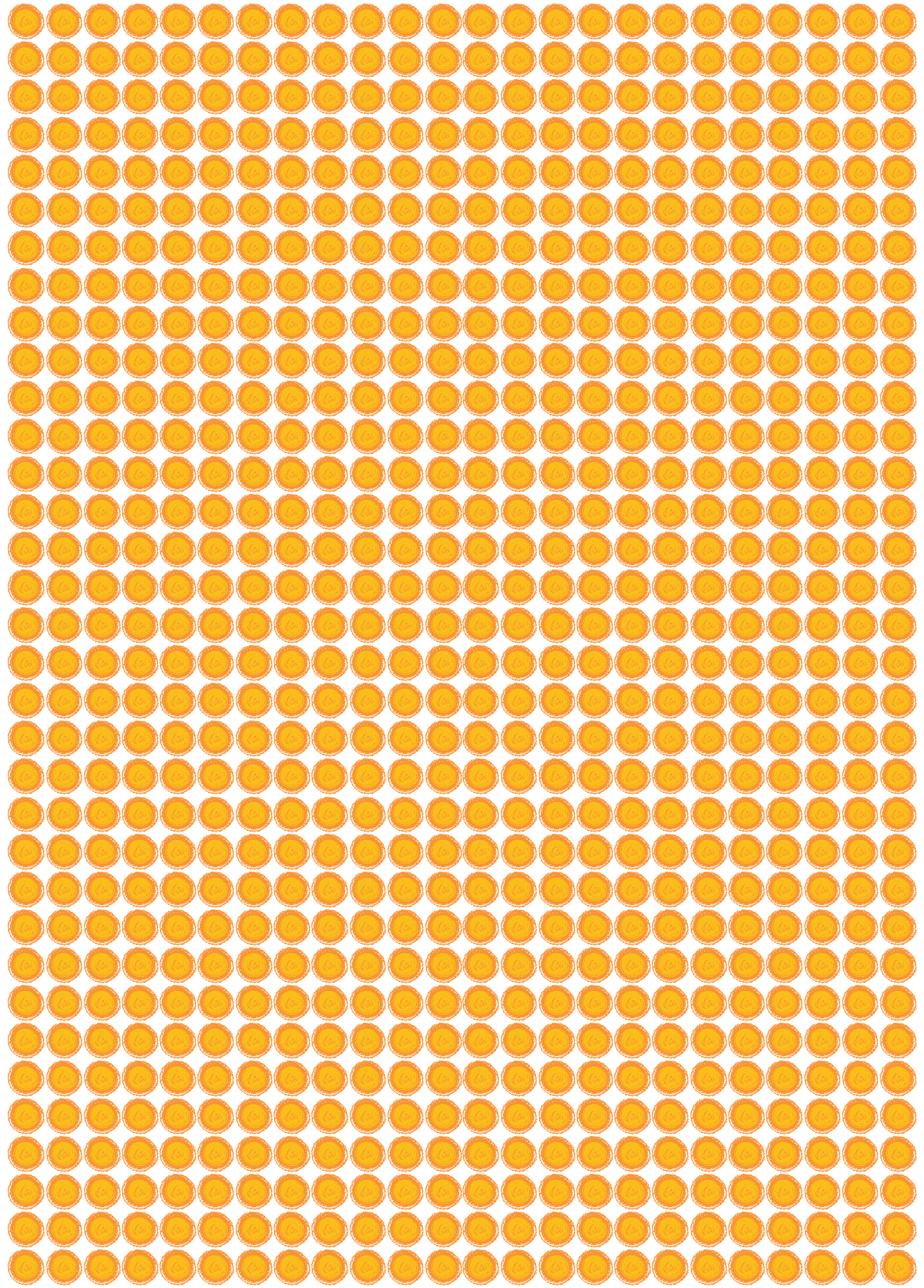
Povzetek: V šolskih letih 2014/2015 in 2015/2016 smo na Škofijski klasični gimnazij izvajali dvoletni projekt evropskega programa Erasmus+ K2 – Sodelovanje za inovacije in izmenjavo dobrih praks z delovnim naslovom Učinek naravoslovja na družbo. Prijavitelj projekta je bila naša šola, partnerska šola je bila iz Belgije. Vsebina projekta je bila naravoslovje, okoljska vzgoja, trajnostni razvoj. Glavni cilji so bili izboljšati pouk naravoslovnih predmetov ter povečati naravoslovno pismenost in zanimanje dijakov za naravoslovje. Projekt je vključeval primerjavo učnih načrtov in poteka pouka naravoslovja obeh partnerskih šol, izdelavo zbirke učnih enot biologije, kemije in fizike kot primerov dobre prakse, najpomembnejša aktivnost pa so bile štiri dijaške izmenjave. Gre za osem dni bivanja skupine 14 dijakov pri njihovih vrstnikih partnerske šole. Program izmenjave smo pripravljali učitelji naravoslovja obeh šol. Ker pri tem nismo bili vezani na učni načrt, učilnico in 45-minutno uro, smo lahko dijakom omogočili popolnoma drugačno doživljanje vsebin. Ena od dejavnosti so bile delavnice naravoslovnih predmetov, ki so jih izvajali učitelji partnerske šole. Teme so bile življenjske, zanimive in aktualne, pristopi pa inovativni in za dijake nekaj novega in privlačnega. Primer: belgijski profesorji so za naše dijake pripravili pravo »raziskavo kriminalnega dejanja«, kjer so morali s preprostimi postopki in orodji s področja naravoslovja, matematike, tehnike in IKT na koncu izmed osumljencev poiskati storilca. Velik del programa izmenjave so bili ogledi naravoslovnih in tudi kulturnih znamenitosti partnerske države. Pri tem je dijake vodil in usmerjal zunanji strokovnjak, ogledi in delavnice so bili zasnovani proaktivno. Obiskali smo razne institucije, muzeje, pouk je potekal na prostem, v urbanem in naravnem okolju. V tednu dni se je zvrstilo veliko naravoslovnih in okoljevarstvenih vsebin, hkrati pa ni bilo časovnih in prostorskih ovir. Dijaki so bili sproščeni, ker je šlo za neformalno pridobivanje znanja. Udeleženi so bili tudi pri evalvaciji dela za projekt. Po prvih dveh izmenjavah smo zbrali njihove vtise, pohvale in pripombe, kar je služilo za načrtovanje naslednjih dveh izmenjav. Treba je omeniti tudi druženje in učenje skupaj z vrstniki, kar je omogočalo razvijanje socialnih veščin in komuniciranje v angleščini.

Abstract: In our Diocesan Classical Gymnasium a two-year Erasmus+ project under KA2 (Cooperation for innovation and the exchange of good practices) entitled Natural Science for Social Impact was running in school years 2014/15 and 2015/16. The applicant institution was our school, the partner school was from

Belgium. The contents of the project were natural sciences, environmental education, sustainable development. Main goals were improvement of teaching natural science subjects, develop the natural science literacy and increase the students interests for natural sciences. The project included the Comparative Study of Natural Science Classes in Slovenia and Belgium, the issue of the brochure of class preparations of biology, chemistry and physics as examples of good practice, but the most important activity were four student exchanges. A group of 14 students stayed with their peers of partner school. The exchange programme was developed by science teachers of both schools. Because we were not bound up with curriculum, classroom and a 45 minutes lasting school hour, it was possible to give students completely different experience of these contents. One activity was natural science workshops performed by partner school teachers. Topics were from everyday life, interesting and actual, approaches were innovative and for students something new and attractive. For example: Belgium teachers prepared a real “criminal action research”, where students had to use simple procedures and tools from science, mathematics, technics and ICT fields and find the offender among suspects at the end. A big part of the exchange were visits of natural science and also cultural sights of partner state. The students were guided and directed by the experts, students had active roles in sightseeings and workshops . We visited several institutions, museums, lessons took place outdoor, in an urban and natural environment. In one week a lot of natural science and environmental contents took place, no time or space obstacles occurred. Students were relaxed, because the learning was informal. They were also involved with the evaluation of the work on the project. After first two exchanges their impressions, approvals and comments were collected, and that was useful for planning the next two exchanges. Also, we have to mention the socializing and learning together with Belgian peers , which enabled development of social skills in communication in English.



Ustvarjamo za učenje

Creating for learning

Učenci dnevno uporabljajo aplikacije, igre, e-okolja, e-gradiva, orodja idr. tudi za učenje in ne samo za igro. Izkoristimo njihovo znanje in jim ponudimo priložnost, da soustvarjajo učni proces tako, da pri pouku uporabljajo in ustvarjajo lastna: orodja (aplikacije, igre itd.), okolja (fizično, virtualno), aktivnosti (naloge, pripravijo učne ure itd.) in gradiva (na sploh) za učenje.

Imate morda izkušnje z "zamenjavo" vlog in so vaši učenci načrtovali in soustvarjali pouk ob uporabi IKT? Avtorji delijo svoje izkušnje z nami v ustvarjalnicah.

Način predstavitve: Ustvarjalnica – simulacija pouka

Ustvajalnice so kotički, ki so namenjeni izmenjavi in soustvarjanju raznolikih možnosti za učenje s podporo IKT. Učenje, kjer se vloge učiteljev in učečih prepletajo in tudi zamenjajo, poteka v "učilnici" za do 30 udeležencev, v eni šolski uri poteka pouk, pri katerem udeleženci ustvarjajo gradiva, okolja, aktivnosti za pouk na način, kot so jih ustvarjali učenci. Učenci/udeleženci pri ustvarjanju uporabljajo lastno napravo" (BYOD – bring your own device).

Students use applications, games, e-environments, tools, etc. on a daily base. But they do not use them only for playing, they also use them for learning. Let's make use of their knowledge and give them an opportunity to co-create the learning process by using and creating their own tools (applications, games, etc.), environments (physical, virtual), activities (tasks, preparing a lesson, etc.) and learning materials.

Do you have any experience with "switching" the roles where your students planned and co-designed a lesson supported by ICT? Authors in this theme section will share their experience with us in creative spaces.

Presentation form: Creative space – lesson simulation

Creative spaces are spaces intended for the exchange and co-creation of various learning possibilities supported by ICT. It's learning where the roles of teachers and learners are intertwined and sometimes even switched.

There is a "classroom" available with the capacity of 30 participants; in 45 minutes a lesson will be carried out, in which participants create materials, environments, learning activities in the way your learners in schools do. The learners/participants will bring their own devices.

Didaktična uporaba Dvolver Moviemakerja 2.0 pri pouku angleščine

Didactical use of Dvolver Moviemaker 2.0 in learning english language

Aleksandra Velenšek, Osnovna šola Frana Kranjca, Celje

Povzetek: Formativno spremljanje je eden ključnih elementov v sodobni šoli, ki lahko spremeni miselnost učencev in učiteljev. Učenci dobijo kakovostno povratno informacijo, ki je nujna za uspešno razvijanje samostojnega učenja. Pouk tujega jezika, konkretno angleščine, s pomočjo različnih orodij tako postane pestrejši, bogatejši in zanimivejši. Eno izmed takšnih orodij je Dvolver Moviemaker, ki spodbuja inovativnost in ustvarjalnost, predvsem pa je njegova prednost ta, da je za učence zabaven. Z njegovo pomočjo lahko izdelajo kratek film v le nekaj korakih, učitelj pa lahko s končnim izdelkom pridobi učinkovito povratno informacijo o znanju učencev. To orodje omogoča tako učiteljem kot učencem jezikovno izražanje lastnih pogledov ali utrjevanje jezikovnih struktur z ustvarjanjem lastnega kratkega filma z uporabo domišljije in sposobnosti izražanja v tujem jeziku. Vendar tako kot vsako drugo orodje skriva dobre in slabe lastnosti, zato je potreben nadzor učitelja. V delavnici bom predstavila sklop učnih ur z uporabo omenjenega orodja in kako vključujem formativno spremljanje v pouk angleščine. V procesu formativnega spremljanja ima učitelj vlogo moderatorja in usmerjevalca, učenci pa prevzamejo vlogo vodij učnega procesa. S tem prevzamejo odgovornost nase in njihova dolžnost je, da pokažejo, kaj so se naučili in ne le čakajo, da to odkrije njihov učitelj. Še posebej pomembna se mi zdi strategija, da učence aktiviram, da postanejo drug drugemu vir poučevanja. S tem se krepi motivacija in njihova samozavest, z medsebojno pomočjo pa ustvarijo nov nivo komunikacije. V nadaljevanju bo vsak udeleženec z uporabo omenjenega orodja ustvaril lasten kratek film s področja, ki ga bo izbral po želji. Učitelji moramo razviti digitalno pismenost učencev, zato le-te spodbujam, da uporabljajo različne spletne vire in oblike. Tudi Dvolver Moviemaker je ena izmed njih. Seveda pa to orodje ni primerno le za uporabo pri pouku tujih jezikov, njegova uporabnost je univerzalna. Predvsem pa je glavna prednost tega orodja to, da ga imajo učenci radi, saj je zabavno. Zato na pouk ne gledajo kot na prisilo, ampak pustijo domišljiji lastno pot. Formativno spremljanje nam to omogoča v polni meri in učiteljev, ki smo ga vpeljali v pouk, menimo, da ni več poti nazaj, saj je le-to prava pot.

Abstract: Formative assessment is one of the key elements in a modern school that can change the minds of students and teachers. Students can get a quality feedback that is essential for successful development of independent learning. With the use of different tools we can make learning a foreign language, in concrete

case English, richer, more interesting and meaningful. One of these tools is Dvolver Moviemaker that encourages innovativeness and creativity, but its great advantage is that it is amusing. With its use students can create their own short film in just a few simple steps and the teacher can get a quality feedback of students knowledge. This tool enables teachers as well as students a linguistic expressivity of their own views or practising language structures with the creation of their own short film. But as every other tool it also has advantages and disadvantages, that's why teacher's monitoring is essential. In the workshop I am going to present the use of this tool in the classroom with the elements of formative assessment. In the process of formative assessment the teacher has a role of a moderator and a guide and the students take the role of leaders in the learning process. Hereby they take the responsibility on their own shoulders and their duty is to show, what they have learnt and not just wait for their teacher to find this out. The most important in my opinion is the strategy to activate students to become each other's source of teaching. By doing this their motivation and self-confidence strengthen and with mutual help they create a new level of communication. Later on each participant of the workshop is going to create his/her own short film from the chosen field with the use of this tool. The teachers should develop the digital literacy of students, therefore I encourage students to use different sources and forms on the Internet. Dvolver Moviemaker is one of them. This tool isn't only appropriate for the use in foreign language classroom, his use is universal. Its main function is the popularity and fun that students experience and therefore they take the lesson without constraint and they let their imagination fly. Formative assessment enables us this in its maximum ability and the opinion of those teachers who use it in the classroom is that there is no way back, because this is the only right way.

Učenci v vlogi učiteljev na delavnici o snemanju in montiranju videa s pomočjo tabličnega računalnika

Students as teachers in workshop on taking and editing video with tablet computer

Iztok Škof in **Mojca Janžekovič**, Osnovna šola Toma Brejca, Kamnik

Povzetek: Učitelji smo obkroženi s širokim naborom različnih programskih oprem, med katerimi je težko izbrati pravo, zato smo učence zaprosili za pomoč. Učenci imajo namreč veliko znanja in izkušenj z uporabo mobilnih naprav in želeli smo, da bi to znanje prenesli na učitelje. Učenci so izvedli delavnico za učitelje o uporabi tabličnega računalnika za snemanje in montiranje videa. Vidno navdušeni so učitelji pridobili novo znanje, ki ga bodo glede na anketo, ki smo jo izvedli po izobraževanju, uporabili tudi pri pouku. V anketi smo ugotovili tudi, da so učitelji zelo navdušeni nad takšnim načinom izobraževanja. Približali so se učencem, saj so dobili možnost, da uporabno pokažejo svoje znanje. Učenec nauči učitelja uporabljati novo orodje, učitelj pa to orodje uporabi pri poučevanju. Tako smo pri podajanju znanja postali partnerji.

Abstract: Teachers are surrounded by a rich plethora of computer software and often choosing the right one is everything but easy. Therefore, we asked our students to help us out. Students have a lot of knowledge and experience when in comes to using mobile devices. Our wish was for them to transfer that knowledge onto teachers. Students prepared a workshop for teachers on using a mobile device to record and edit videos. According to a survey conducted after the workshop, teachers were thrilled about the new knowledge they had acquired and say they will be able to use it in class. The survey also showed teachers liked such a way of learning new things. Teachers got a chance to show the newly acquired skills which brought them closer together to students. A student teaches a teacher how to use new tools also in their teaching process. We became partners in giving knowledge.

Sladkorni detektivi s QR-kodami

QR codes sugar detectives

Marjetka Rovšnik, Osnovna šola Frana Roša, Celje

Povzetek: Glavni namen izvedenega projekta, ki je potekal prek portala TwinSpace, je bil učence ozaveščati o čezmerni vsebnosti sladkorja v nekaterih živilih in jih spodbujati h kritičnemu razmišljanju o prehrani. Za popestritev dela in boljše pomnjenje naučenega so se učenci med samim procesom učenja naučili izdelovati QR-kode s pomočjo spletnega generatorja, pripravili detektivske uganke za mlajše učence ter krepili komunikacijske in jezikovne veščine. Glavni cilj projekta je bil v učencih spodbuditi zavedanje o pomenu izbire zdrave hrane in pijače ter jim to temo ob uporabi spletnih aplikacij, pametnih telefonov in tablic približati na čim bolj zanimiv način. Z dejavnostjo učenci krepijo kompetence, kot so: krepitev komunikacijskih veščin (komuniciranje z odraslimi v procesu iskanja odgovorov), skrb in odgovornost za lastno zdravje (premik vedenjskih vzorcev v smeri izbire bolj zdrave hrane in pijače), računalniška pismenost, skrb za gibanje. Ključna beseda, ki se je ves čas vrtela pred nami, je bila PREPLET. Kar visoko zastavljene cilje sem skušala doseči s prepletanjem v vseh mogočih smereh in idejah. Tako so se pri izvedbi projekta prepletle metode, učenci, predmetna področja, cilji in ne nazadnje tudi naš šolski prostor z zaposlenimi vred. Prepletalo se je vertikalno, horizontalno, diagonalno, komunikacijsko in še kaj bi se lahko našlo. Ves čas pa je bil pred nami jasen cilj: učencem na zanimiv način posredovati ˝grenko˝ spoznanje: SLADKORJA JE PREVEČ. Starejši učenci so se najprej naučili “brati” navedbe na embalaži za različne pijače, se poučili o učinkih prevelikega vnosa sladkorja v telo, nato pa za mlajše učence pripravili detektivski dnevnik, ki je le-te vodil po šoli, kjer so s pomočjo QR-kod odkrivali, koliko vedo o tej temi. Izkazalo se je, da je bil cilj odlično dosežen, vsi učenci so se pri tem zabavali in se hkrati naučili veliko novega. Zadovoljna sem z doseženimi cilji, kljub temu pa me malce skrbi, ali bodo učenci resnično manj posegali po sladkarijah.

Abstract: The main purpose of this eTwinning project was to make pupils aware of high presence of sugar in drinks and food and to encourage pupils to think critically about what they drink and eat. In the process of learning the pupils used QR code generator to create QR codes, wrote mystery riddles for younger pupils and improved their communication and language skills. All these methods were used to make work more interesting and the knowledge more durable. The main goal was to awake awareness in pupils to understand that it is important to make healthy food choices. Web applications, smartphones and tablets were used to make the theme of the project more interesting for the pupils. Throughout the project the pupils improved communication skills (communication with adults), became aware

of the importance of health habits (learn how to choose healthier food and drinks), improved their ICT skills and learnt how to care for their physical health. The key word of the project was interlacement. I tried to achieve the goals by interlacing different ideas, methods, pupils, goals, school subjects and what is more, the whole school area with its employees. The things interlaced vertically, horizontally, diagonally, communicationally ...But all with the same goal: to teach the pupils one thing: THERE IS TOO MUCH SUGAR! The older pupils first learnt how to read a nutritional facts label and then found out about the risk of diseases when consuming drinks with high sugar content. Later they wrote mystery riddles for younger pupils to test their knowledge about this topic. The younger pupils used QR codes to find out the right answers. All pupils had a lot of fun working on the project and also learnt many new facts. What is more, the objectives of the project were fully achieved. Although I am satisfied with the achieved objectives, I am also a bit worried that the pupils will still choose food and drinks with high sugar content.

Program za samostojno učenje eUčitelj

Programme for independent studying eTeacher

Marjan Novak, Osnovna šola dr. Franceta Prešerna Ribnica, Ribnica

Povzetek: Program eUčitelj je namenjen samostojnemu učenju. Napisal sem ga kot učni pripomoček za svoja otroka, da bi z uporabo računalniške tehnologije laže in hitreje usvojila zahtevano znanje. Ker se je doma dobro prijel, sem uporabo testiral tudi v razredu in učenci so ga dobro sprejeli. Zasnovan je kot interaktivni bralnik, v katerem si vsak učenec sam določa vsebine in zahtevnost dela. Zato ga lahko uporabljamo pri različnih predmetih. Pred začetkom učenja moramo najprej ustrezno pripraviti učno gradivo v RTF-zapisu. Učenje s pomočjo programa začnemo tako, da odpremo pripravljeno besedilo, ga beremo in s klikom na miško označimo ključne besede. Označene besede se skrijejo, namesto njih vidimo le moder pravokotnik. Izbor ključnih besed lahko opravimo tudi samodejno, le nastavimo, na koliko besed naj se prekrije ena ključna beseda in najmanj koliko črk naj ima. Računalnik v nastavljenem intervalu sam generira naključne besede glede na nastavljene kriterije. Ko preberemo celotno gradivo, dokument shranimo z novim imenom. V naslednjem koraku ponovno beremo prej označeno gradivo. Ko pridemo do ključne besede, ki je skrita pod modrim pravokotnikom, najprej povemo vsebino skrite besede, nato pa s klikom na moder pravokotnik preverimo, ali je razlaga pravilna. S tem načinom dela ohranjamo bralčevo pozornost. Učenje nadaljujemo z nalogami dopolnjevanja. V tem delu se v besedilu na mestu označenih ključnih besed izpiše črta. Učenec mora vpisati manjkajoče besede. Program sproti preverja pravilnost vpisa, s tem da pravilne črke označi z zeleno, napačne pa z rdečo barvo. Obstaja tudi možnost, da za tiste besede, ki smo jih napačno rešili, napišemo ustrezna vprašanja. S tem dosežemo, da se posamezni deli težje snovi še dodatno utrdijo. Za delo z mlajšimi učenci (prvo triletje) je v programu tudi možnost, da gradivo izpišemo na papir. Pri izpisu se namesto izbranih besed izpišejo črte, na dnu besedila pa še rešitve. Program vodi tudi popolno statistiko našega dela (čas začetka in konca opravljanja posameznega koraka učenja, celoten čas učenja, pravilnost reševanja). Video: www2.arnes.si/~mnovak19/eUcitelj.zip.

Abstract: The programme eTeacher is designed for independent studying. I wrote the program as a teaching tool for my children, so they could use computer technology for quicker and easier learning. Since my children liked it, I tested it in school too and the pupils liked it as well. The program is designed as interactive reader, in which every student chooses the subjects and the level of difficulty for themselves, therefore we can use it for different subjects. Before we start studying, we have to prepare the study material. The material we are going to use needs to be written in RTF format. We start studying with the program by opening the prepared file – we

read it and clicking on words we mark the keywords. The marked words hide, instead of them we see blue rectangles. The keyword selection can also be done automatically, we only have to choose the number of words that cover one keyword and the minimum number of letters in one. The computer generates random words, based on the set criteria. After we read the entire text, we save the document under a new file name. In the next step, we read the previously marked text. When we come to a keyword, hidden under a blue rectangle, we first tell the hidden keywords content and then by clicking on it we check its accuracy. This keeps the reader focused. We continue studying with completion tasks. Instead of a blue rectangle, there is a line. The learner has to write in the missing words. At the same time, the program is checking the accuracy – the correct words are marked in green, the incorrect words red. There is also an option to write questions for incorrect words in order to consolidate more difficult subject matters. For work with younger children, there is also an option of printing the material down on paper. There are lines instead of the chosen words and the solutions are written on the bottom of the page. The program also carries out the total statistics of our work (the time of the beginning and the end of preforming each step, the complete time of studying, the accuracy of learners answers). Video: www2.arnes.si/~mnovak19/eUcitelj.zip

Vključevanje učencev v izvedbo učnega načrta

Involving students in lesson plan execution

Breda Banovšek, Osnovna šola Toma Brejca, Kamnik

Povzetek: Učenci radi preizkušajo nove in neobičajne stvari, še raje pa jih povezujejo s svojimi talenti in zanimanji. Želela sem jih spodbuditi k ustvarjanju lastnega gradiva, prek katerega bi spoznali pomembnost obravnavane teme, obenem pa bi lahko uporabili že obstoječe znanje ali le-tega nadgradili. Predstavila bom tri aktivnosti, ki so jih izdelali učenci treh različnih starostnih skupin. Prva skupina so bili četrtošolci – začetniki v nemščini. Učenci so skozi leto pridobili znanja za predstavitev osnovnih podatkov o sebi. Samostojno so v šoli sestavili dialog oz. kratek film s pomočjo preproste aplikacije Dvolver, ki jim je bila predhodno predstavljena tako, da smo skupaj sestavili film, obenem pa sem jim njene predstavila možnosti. Cilj oz. prednosti: ponovitev snovi in tvorjenje enostavnih dialogov, ki jih učenci lahko uporabijo v vsakodnevnih situacijah. Nadgradnja: sinhronizacija filmov (v filmih je dialog samo napisan). Slabosti: učenci potrebujejo veliko časa za izdelavo. Druga skupina so bili sedmošolci – začetniki v nemščini. Morali so predstaviti svojo domačo žival. Tip predstavitve so bili plakati, PowerPoint ter predstavitev na interaktivni tabli v programu Notebook (katerega so nekateri učenci že obravnavali pri računalništvu). Učenka je samostojno pripravila predstavitev in aktivnosti v programu Notebook ter jih predstavila v razredu. Cilj oz. prednosti: učenka, ki ima nižjo samozavest, je korektno in jasno predstavila svoje gradivo in učenci so jo z zanimanjem poslušali. Osvežili so svoje znanje ter se navdušili za uporabo tovrstnih programov. Nadgradnja: medvrstniško učenje o programu Notebook. Tretja skupina so bili devetošolci – nemščino se učijo tretje leto in za učenje nemščine jih je težko motivirati, še zlasti ko je obravnavana snov njim nezanimiva in nesmiselna za rabo v njihovem življenju. Tistim, ki so že vešči v montiranju filmov, sem predlagala, naj pripravijo nekaj na določeno temo, kar bi jih motiviralo in obenem obrazložilo snov. Scenarij in izvedba sta bila v njihovih rokah. Svoje delo so zelo dobro opravili in oba videoposnetka objavili na portalu YouTube. Cilj oz. prednosti: ob načrtovanju so se sodelujoči veliko naučili, preostali učenci pa so poleg utrjevanja snovi snovi videli, da je učenje nemščine zabavno. Nadgradnja: medvrstniško učenje o montaži. Predstavitev tem z lastnimi videoposnetki.

Abstract: Pupils like to try out new and unusual things and what they like even more is to connect them with their talents and interests. I wanted to encourage pupils to create their own materials and, by doing so, they would recognize the importance of discussed topic and at the same time use their already existent knowledge or upgrade it. I want to present three activities created by students of different ages. 1st group: fourth graders – beginners in learning German Pupils acquired their knowledge

on how to describe themselves throughout the whole year. They created their own film at school with the help of a simple application Dvolver. I presented the application to the pupils beforehand by creating a short film (dialog) with their help and I showed them how the Dvolver works. Goals or advantages: Revising a certain topic and forming simple dialogs that pupils can use in everyday situations. Upgrade: Dubbing short films (since the dialogs in the Dvolver are only written, not spoken) Disadvantages: Time consuming (it takes a lot of time for pupils to type) 2nd group: seventh graders – beginners in learning German Pupils had to describe their pet. They could do that with the help of posters, power point or program Notebook for interactive boards. The latter has already been explained to some pupils at computer science. A pupil created the presentation and activities in Notebook and presented them in front of the class. Goals or advantages: A pupil, who has lower self- esteem, did a great job in presenting the material and schoolmates listened to her with interest. Pupils revised their knowledge and got excited about the program. Upgrade: Peer teaching 3rd group: ninth graders – learning German for three years It is difficult to motivate pupils to learn German or to even keep the motivation, especially when the theme is not interesting and they cannot find purpose in it. I proposed pupils, who already had the knowledge of making short videos, to do something about a certain topic that would motivate pupils and at the same time revise or explain a topic. The script and execution were up to them. Students made two very good videos and posted them on You Tube. Goals or advantages: Pupils learnt a lot while preparing the video and their classmates revised the topic and at the same time saw that learning German is fun. Upgrade: Peer teaching and presenting other topics with the help of self-made videos.

Uporaba spletne aplikacije Wordwall pri pouku

Wordwall in the classroom

Ana Cencelj, Osnovna šola Griže, Griže

Povzetek: V sodobnem načinu poučevanja in pridobivanja znanja se postavlja vprašanje, kako naj učenci prikažejo oziroma dokažejo pridobljeno znanje. V prispevku je natančno predstavljena uporaba spletne aplikacije Wordwall, ki se na slovenskem tržišču promovira že nekaj mesecev. Wordwall omogoča drugačen in učencem prijazen način predstavitve in dokazovanja lastnega znanja ob uporabi sodobne tehnologije. Z nekaj koraki so lahko pri pouku matematike sestavili zanimive interaktivne naloge na temo Pitagorov izrek. Zakaj jih ne bi tudi učitelji? Preprosta izdelava križank, parov, vislic v interaktivni obliki itd., izdelanih v manj kot minuti, ki so učencem dosegljivi na vseh sodobnih napravah, je dovolj dober razlog, da učitelji spoznajo ta preprost in kakovosten program ter z njim ustvarjajo spodbudno učno okolje za svoje učence in dijake.

Abstract: With modern way of teaching and learning there is a question about how students should demonstrate and prove their acquired skills. This paper describes the use of a special tool in a form of web application called Wordwall that was introduced to Slovenian market in early 2016. Wordwall enables students more friendly approach to demonstrate and test their knowledge using modern information technologies. With just few easy steps students were able to make their own interactive presentations about Pythagorean theorem. Wordwall makes it easy to make crosswords, pairs, quizzes and more in a modern and interactive form in just one minute. The simplicity of this program is the main reason that teachers should be introduced with Wordwall and include this tool in daily curriculum.

Ustvarjamo s TouchDevelopom

Creating with TouchDevelop

Miroslava Minić, Osnovna šola Dobje, Dobje

Povzetek: Predstavila bom Microsoftovo učno orodje TouchDevelop, ki mi je pomagalo soustvarjati raznolike možnosti učenja programiranja s podporo IKT. Z učenci smo izbrali različne tečaje za poučevanje aplikacij. Korak za korakom so reševali vaje ter gradili igre in aplikacije. Prednost je v tem, da TouchDevelop Web App deluje v večini sodobnih brskalnikov in da aplikacija TouchDevelop Windows Phone omogoča dostop do večine pametnih telefonov. Ugotovila sem, da lahko poleg ustvarjanja zabavnih in uporabnih aplikacij TouchDevelop uporabim za ustvarjanje lastnih interaktivnih vaj ali učnih gradiv in da so učenci bolj motivirani za delo. TouchDevelop je interaktivno programsko orodje, ki je namenjeno poučevanju osnov programiranja. Če radi uporabljate tablico ali telefon, lahko ustvarjate igrico le z dotikanjem zaslona. Seveda lahko uporabimo tudi računalniško tipkovnico ali kombiniramo zaslonsko in računalniško tipkovnico. TouchDevelop je idealno orodje za pouk računalništva ali pri računalniškem krožku, ker izpolnjuje naslednje cilje: • namenjen je učenju programiranja; • učenci zelo hitro ustvarijo aplikacije na telefonu, tabličnem računalniku ali prenosnem računalniku in za ustvarjanje potrebujejo na šoli le internetno povezavo in uporabniški račun; • praktičen je za izdelavo računalniške igre, animacije ali interaktivne zgodbe; • svoje izdelke lahko prikazujejo na svetovnem spletu in jih delijo z drugimi; • na spletu so dostopna gradiva, kjer se učitelji in učenci lahko samoizobražujejo. Potek dela: predstavila bom, kakšno je učno okolje TouchDevelop, in pokazala osnovno okno za ustvarjanje kode. Učenci se prijavijo v učno okolje, pripravijo in dopolnijo osebne podatke, sprehodijo se skozi predloge; predstavimo osnovno okno za ustvarjanje kode. Učenci rešijo nekaj primerov nalog (izdelajo igro ali naredijo kolaž ali rešijo nekaj nalog iz želvje grafike, dodajo slike ali besedilo, rešijo tutorial ipd.). Ob koncu predstavijo svoje delo sosedu ali skupini. TouchDevelop imajo učenci radi, ker: • dela na iOS-u, Androidu, Windowsu, Macu ali Linuxu, • otroci namesto pisanja zapletenih programskih kod premikajo in zlagajo pisane grafične bloke (podobnost s Scratchem), • ni težav s sintakso. Slabost je jezikovno okolje, ki je večinoma prirejeno in deluje le v angleščini. Kljub temu sem pri poučevanju z učenci imela le pozitivne izkušnje, kar vam bom tudi predstavila.

Abstract: I will present you TouchDevelop, Microsoft learning interactive tool that helped me to co-create diverse opportunities for learning programming with the support of ICT. With the students we choose different courses for the teaching of applications. Students then solved step by step tutorials and build games and applications. The advantage taht helped us is that TouchDevelop Web App works in most modern browsers and TouchDevelop Windows Phone application provides access

to most smart phones. I found out that in addition to creating fun and useful applications, I use TouchDevelop to create my own interactive exercises or learning materials. Students were more inspired to study. TouchDevelop is an interactive development environment and a visual programming language being developed at Microsoft Research for learning programing. If you have a mobile device such as for instance smart phone or tablets, you can write scripts only by tapping on the screen. You do not need a separate PC or keyboard. TouchDevelop can be used in the classroom to teach programming concepts and also for classes on Mobile Computing, as it cuts the time required to write apps. TouchDevelop is an ideal tool for teaching computer science, because it meets the following objectives: • Designed for learning programming. • The TouchDevelop Web App runs in most modern browsers and you only need an internet connection and users account • The TouchDevelop Windows Phone app gives access to most sensors and data providers available on modern smartphones • Create applications on your phone, tablet or laptop computer • Its products can be displayed on the internet and you can share them with others very quickly • Students can use it to make their computer games, animation or interactive stories • On the web are accessible material, where teachers and students can self-directed learning Workflow: I will present you how it looks learning environment TouchDevelop, showing a basic window to create the code. The participants (students) are applying in the learning environment, preparing and updatening the personal informations, taking a walk through the proposals; presenting the basic window for creating code .. The participants (students) solve some examples of tasks (create game or make a collage or solve some tasks of turtle graphics, add image or text, run the tutorial, etc.). At the conclusion they present their work to their neighbor or group. TuchDevelop is useful and popular with students because: • TouchDevelop is a novel programming environment that runs on iPad, iPhone, Android, PC, Mac, Windows Phone, Linux. • Students instead of writing complex software code, move and stack colorful graphic blocks. • There are no problems with the syntax. The possible drawback is the language environment, which is largely adapted and only works in English. Nevertheless, teaching the students I have had only positive experiences, which I will also be presented.

OpenSCAD – 3D-modeliranje

OpenSCAD - 3D modeling

Miklavž Šef, Osnovna šola Litija, Litija

Povzetek: Vodilna ideja: 3D-modeliranje – uporaba obstoječega orodja pri pouku: tehnike in tehnologije, matematika, računalništvo.

Cilji: osnovna predstavljivost 3D-prostora, iz 2D v 3D, »programersko« razmišljanje.

Učni proces: zastavitev problema, razčlenitev problema, modeliranje s pomočjo sestavljanja teles, analiza, morebitna evalvacija, razmislek: slabosti: način razmišljanja pri pisanju ukazov, lokalizacija posebnih znakov; prednosti: medpredmetna povezava, preprosti 3D-objekti so izvedljivi že v 6. razredu, definiranje teles iz njihovih izhodišč.

Abstract: Leading idea: 3D modeling – The use of existing tools in the classroom: Engineering and technology, Mathematics, Computers.

Goals: 3D space visual interpretation of, From 2D to 3D, Thinking like a programmer.

The learning process: Pledging problem, Specification of the problem, Molding by using the assembly of the bodies, Analysis, Evaluation, Reflection: Weaknesses: Way of thinking when writing commands, Localization of special characters; Better: Cross-Curricular Connections, Simple 3D objects are feasible already in the 6th grade, Define the bodies of the Platform.

Digitalno kiparjenje pri pouku

Digital sculpting as part of teaching

Manca Griljc, Osnovna šola Marije Vere, Kamnik

Povzetek: 3D-oblikovanje je sodoben pristop k pouku likovne umetnosti. Osnove, ki se jih tako naučijo učenci, so odskočna deska za nadaljne izobraževanje, katerega usmerjenost predstavlja pespektivno področje. Učenci po usvojenih osnovah digitalnega kiparjenja sami nadgrajujejo svoje znanje, soustvarjajo učni proces, se aktivno vključujejo v pouk in hkrati urijo veščine vodenja in sodelovanja. Na delavnici bomo v programu Sculptris izdelali digitalni kip in se v učni uri pogovorili o prednostih in slabostih takšne sodobne izvedbe pouka. Cilj delavnice je udeležence seznaniti z možnostjo digitalnega kiparjenja, ki je kot osnova 3D-oblikovanja uporabna pri predmetih likovna umetnost, zgodovina, geografija, kemija, fizika, matematika idr. Prav tako pa udeležence usmeriti na področja, ki so aktualna in perspektivna pri tehnologiji, razvoju in ne nazadnje na trgu dela. Razlike med tradicionalnim in digitalnim načinom kiparjenja odpirajo dileme o izbiri učne metode in postopka. Na eni strani gre za oblikovanje fizične forme, na drugi digitalne, ki s 3D-tiskanjem pridobi fizično. Na eni strani za uporabo fizičnih orodij, na drugi digitalnih. Odvzemanje in dodajanje materialov – katere so prednosti in katere pomanjkljivosti? Pri tradicionalnem kiparjenju dobimo en končni izdelek, digitalno kiparjenje pa zaradi možnosti shranjevanja posameznih korakov omogoča več variacij. Pri prvem imamo izdelek ves čas pred očmi, medtem ko izdelek pri digitalnem kiparjenju vidimo šele ob koncu procesa. Kateri pristop predstaviti učencem in pri katerem je učenec bolj aktivno vključen v proces učenja in poučevanja, kje je motivacija močnejša? Kljub temu da digitalno kiparjenje v procesu izdelave nudi možnosti, ki olajšajo potek dela, pa je nezanemarljiva umetniška vrednost likovnih del, saj je to osnovna bit umetnosti. Stvaritev, ki so jo izdelale človeške roke z vso svojo senzibilnostjo in čutnosto, le s težavo zamenjajo računalniško zasnovani in industrijski izdelki. Ali torej tradicionalno kiparjenje naredi boljšega umetnika ali obratno? Ali dobrega umetnika naredi kreativnost ali izbira orodja? Ali so digitalno ustvarjene umetnine preveč popolne in prav človeške »napake« (neenakomerna tekstura, nesimetričnost itd.) naredijo likovno delo umetnino? Ali je digitalno kiparjenje korak naprej ali nazaj za likovno umetnost?

Abstract: Three-dimensional (3D) modelling is a modern approach to art education and teaching. Pupils get basic knowledge for further education, which is a prospective area. They also obtain basic knowledge about digital sculpturing and develop further knowledge themselves; they co-create learning process and actively participate in teaching and, thus, develop their skills in leading and cooperation. In the workshop, we create a digital sculpture using programme Sculptris and

discuss the advantages and disadvantages of such modern lessons. The objective of the workshop is to present digital sculpturing which is the basic of 3D modelling and can be used in art education, history, geography, chemistry, mathematics along with orienting pupils as well as participants to areas that are actual and prospective in technology, development and labour market. Differences between traditional and digital sculpturing open dilemmas about the choice of teaching method and procedure. Physical form on one side and digital one on the other that also obtains a physical form with 3D printing as well as physical tools contra digital tools are obvious. Adding and removing material – where are advantages and disadvantages? In traditional sculpturing, we have one final product while digital sculpturing enables partial savings and thus more variations. In the traditional sculpturing, we see the product all the time while in digital sculpturing we see the product at the end of the process. Which approach shall be presented to pupils? In which process pupils are more actively included in the learning and teaching process, where is motivation stronger? Even if digital sculpturing offers possibilities that facilitate workflow during process, the artistic value of artistic products should be considered since it is the basic spot of art. A creation made by human hands with all sensibility and sensuality, can hardly be replaced by a computer-designed and industrial product. Thus, does traditional sculpturing create better artist or vice versa? Is a good artist formed by creativity or by choice of tools? Are digitally modelled pieces of art too perfect and do human errors (uneven texture, asymmetry) make a fine art product an artistic product? Is digital sculpturing a step forward or backward in fine arts?

Kodu – moj svet znanja

Kodu - my world of knowledge

Gregor Hrastnik, ERŠ, Šolski center Velenje, Velenje

Povzetek: Na Elektro in računalniški šoli Šolskega centra Velenje za promocijo računalništva že nekaj let uporabljamo okolje Kodu Game Lab. V letošnjem šolskem letu pa smo ga uporabili tudi pri rednem pouku. Kodu Game Lab je okolje za izdelavo in igranje 3-dimenzionalnih iger, kjer lahko igro izdelamo brez znanja programiranja in razvijamo logično in analitično mišljenje. Pri praktičnem pouku smo dijakom 2. letnika programa Tehnik računalništva predstavili Kodu na primeru izdelave preproste igre. Nato so v okolju izdelali svoje igre, ki bi jih lahko uporabljali pri pouku v osnovnih in srednjih šolah. Nastali so zanimivi izdelki, ki pokrivajo področja od jezikoslovja do naravoslovja. Dijake smo nato s pomočjo vprašalnika prosili, da povejo svoje mnenje o uporabi Koduja in možnostih za njegovo uporabo pri pouku. Okolje jim je bilo všeč, ker je preprosto, zabavno in brezplačno, motilo pa jih je, da je za resno uporabo preveč preprosto in ima premalo funkcij in objektov. Kodu bi po njihovem mnenju lahko uporabljali kot popestritev pouka z drugačno predstavitvijo in usvajanjem snovi in kot uvod v programiranje in izdelavo iger. Zaradi preprostosti uporabe je primeren že tudi za osnovno šolo. Odzivi so nas pozitivno presenetili in pokazali, da je Kodu primeren za uporabo pri pouku. Uporabljali ga bomo še naprej pri promociji in tudi za popestritev pouka.

Abstract: At School of Electrical Engineering and Computing within the School Center Velenje we have been using Kodu Game Lab for promoting computer science for a few years. This school year it has also been used for regular school classes. Kodu Game Lab is a tool for making and playing 3-dimensional games. Using it, one can make a computer game without programming as well as develop logical and analytical thinking. During practical lessons in the 2nd year of our computer science programme we made a tutorial of making a simple game in Kodu. Students then developed their own games that could be used during classes in primary and secondary schools. Students made some interesting projects, ranging from linguistics to natural sciences. We then asked students to answer a questionare about pros, cons and classroom uses of Kodu. They liked the simplicity of the tool, as well as being fun and free of charge. They disliked the lack of features and objects for serious use. They answered that Kodu could be used as an enrichment in the classroom and as an introduction to programming and game development. Due to its simplicity, it can also be used in primary schools. We intend to continue using Kodu for promotion and as enrichment of regular classes.

Prenos v živo? Nič lažjega!

Livestream? Nothing could be easier!

Simon Dražič, Osnovna šola Šmarje pri Kopru, Šmarje
Maja Vičič Krabonja, Srednja ekonomska šola Maribor, Maribor

Povzetek: Videoposnetki so v generaciji milenijcev eden izmed glavnih virov (neformalnega in informalnega) učenja. Učitelji se tega zavedamo in jih vedno pogosteje vključujemo v izobraževalni proces. Najpogosteje videogradiva poiščemo na spletu, včasih jih ustvarimo sami ali pa k temu spodbudimo učence, da namesto kopiraj-prilepi seminarskih nalog postanejo ustvarjalci. Glavna motivacija in smisel ustvarjanja je seveda uporaba in deljenje. Če so učencem in dijakom zelo blizu tuja omrežja kot npr. Vimeo, YouTube ipd., pa smo učitelji pri tem precej konservativni in skeptični. Kot varna in domača rešitev se nam ponuja Arnes Video portal, ki je namenjen prav izobraževanju in raziskovanju, objavljene vsebine pa ostanejo v Sloveniji. Portal omogoča tudi prenose v živo (life streaming), ki lahko našo učilnico odprejo navzven ter vzpostavijo drugačne, nove povezave z učitelji in učenci drugih šol, starši in drugimi zainteresiranimi. Na ustvarjalnici bomo torej ustvarjali za učenje in svoje izdelke delili z drugimi. Cilji ustvarjalnice so: • pripraviti prenos izobraževalne aktivnosti v živo in pri tem uporabiti različne naprave (ki jih bodo prinesli s seboj); • razvijati zmožnosti projektnega in sodelovalnega dela; • naučiti se, kako posnetek obdelati in objaviti na Arnesovem videoportalu; • spoznati tudi druge možnosti Arnesovega videoportala; • deliti svoje ideje, kako novo znanje uporabiti za potrebe pouka in šole. Pridobljeno znanje in zmožnosti bodo udeleženci ustvarjalnice – učitelji lahko uporabili za samostojno pripravo in objavo videoposnetkov na Arnesovem videoportalu in ga prenesli na svoje učence in dijake, ter jih tako spodbudili k prevzemanju aktivne vloge v izobraževalnem procesu. Ustvarjalnica bo potekala v naslednjih korakih: 1. priprava kratke vsebine za prenos v živo, 2. pregled in priprava naših naprav na začetek prenosa, 3. predstavitev Arnesovega videoportala, 4. priprava prenosa v živo in snemanje le-tega, 5. objava posnetka prenosa na Arnesovem videoportalu.

Abstract: The video is one of the main sources of formal and informal learning for millennials. Teachers are aware of this fact and therefore increasingly include video and livestream media in the educational process. Most commonly, we look for video materials via the internet or sometimes we make them ourselves. Moreover, we can also encourage students to become the creators of their seminar papers instead of using the ˝copy – paste˝ option. The main motivation and purpose of creativity is, of course, its use and contribution. Pupils have become very familiar with foreign networks like Vimeo and YouTube, however, teachers are still being fairly conservative and sceptical about them. A safe and ˝domestic˝ solution is the

Arnes Video Portal, which was developed for education and research purposes. The portal enables that its uploaded contents remain in Slovenia. The portal also enables live broadcasts (live streaming), which can open our online classroom to the outside world. This e-tool allows the creation of a new and different connection with teachers and pupils from other schools, parents and other interested parties. By hosting this workshop, we will therefore create new ideas for learning and share our products with others. The workshops objectives are: - to create a livestream of the educational activity by using various devices (gadgets that the participants bring with them) - to develop project and collaborative working skills and abilities - to learn how to edit, process and upload the video on Arnes Video Portal - to learn about additional options that this portal offers - to share our ideas and newly acquired knowledge to meet the needs of teaching and schools in general The given knowledge and capabilities that participants – teachers acquire in this workshop will help them independently produce and upload videos on Arnes Video Portal. Moreover, they will be able to convey the knowledge to their pupils and students by encouraging them to take an active role in the educational process. The workshop will take place in the following steps: 1. Preparation of short content for live streaming. 2. Review and preparation of our equipment for transfer. 3. Presentation of Arnes Video Portal. 4. Preparation of livestream and its recording. 5. Upload of the recorded video on Arnes Video Portal.

S pomočjo robotkov se drug od drugega učimo osnov objektnega programiranja

Learning the basics of object-oriented programming with the help of a robot

Marjan Cerinšek, Osnovna šola Šentjernej, Šentjernej
Roman Drstvenšek, Osnovna šola Blanca, Blanca

Povzetek: Programiranju in robotiki se tudi v slovenskem šolstvu pripisuje vse večji pomen. Zanimiv naslov Programiranje in robotika in program sta me vzpodbudila k prijavi in kasneje udeležbi na pedagoški razvojni delavnici (PDW) v okviru akcije Etwinning, ki je maja potekala v Bragi na Portugalskem. V okviru PDW sem se udeležil delavnice, na kateri je bil predstavljen robot Meet Edison, ki so ga razvili v Avstraliji in je nastal kot rezultat uspešne Kickstarter kampanje z zbranimi več kot 100.000 dolarji zagonskih sredstev. Pregled virov pred udeležbo na delavnici na Portugalskem pa tudi izkušnje na delavnici so me privedli do predpostavke, da bi bil robot Meet Edison lahko dobra in cenovno ugodna možnost vpeljevanja programiranja in robotike že na razredni stopnji. Idejo sem želel potrditi tudi z izvedenimi učnimi urami z uporabo robota na svoji šoli. Uro sem izvedel z učenci 4. in 5. razreda, ki obiskujejo izbirni predmet računalništvo in so se že srečali s programiranjem v Scratchu, z učenci 7. in 8 razreda, ki obiskujejo računalniške izbirne predmeta, pa se s programiranjem še niso srečali, ob koncu šolskega leta pa tudi s petošolci, ki s poučevanjem računalništva v šoli nimajo nobenih izkušenj. Želel sem pridobiti še izkušnje z druge šole, zato sem se dogovoril s kolegom, ki je delavnice izvedel na svoji šoli. Učenci so pri učni uri ustvarjali naloge, ki so v nadaljevanju služile učenju sošolcev. To je bil razlog za izbiro sklopa za prispevek. Z izvedbo ur sem želel preveriti pravilnost pristopa in uspešnost uporabe robota za poučevanje programiranja. Izvedene ure so me prepričale in bom robota v naslednjem šolskem letu uporabil pri poučevanju izbirnega predmeta, svojo izkušnjo pa bi rad predstavil tudi strokovni javnosti. Ure sem zastavil tako, da so po uvodu, v katerem so bile predstavljene zmožnosti robota, obravnavane v nadaljevanju, učenci pripravili naloge, v katerih so bile uporabljene predstavljene funkcionalnosti robota, nadgrajene z dodatnimi zmožnostmi, ki so jih učenci sami raziskali, sošolci, pa so jih v zadnji fazi učne ure skušali razrešiti – pri tem so se učili drug od drugega ne samo o programiranju, ampak so se tudi urili v oblikovanju nalog, kar je bilo precej težje kot naloge razrešiti, in s se s tem urili tudi v bralni pismenosti. Robota Meet Edison bi bilo kot dobro motivacijsko sredstvo mogoče uporabiti tudi pri obravnavi vsebin pri drugih predmetih in ob tem utrjevati in nadgrajevati tudi računalniške vsebine.

Abstract: Programming and robotics is gaining on importance also in Slovenian educational system. The interesting title and programme about programming and robotics, lead me to attend the Etwinning pedagogical conference (PDW) in Brag, Portugal, which was held in May 2016. It was here that the robot Meet Edison was first introduced to me. The robot Meet Edison was developed in Australia as a result of a successful Kickstarter campaign raising more than 100.000 $. Reading the materials before attending the workshop in Portugal and the experiences I got there, lead me to the conclusion that the robot Meet Edison is a good and affordable option of introducing programming and robotics already in the early education process. I wanted to confirm this idea(s) in the classroom so I conducted lessons with the pupils from grade 4 and 5, who attend Computer lessons as an extra-curricular programme and were already familiar with the programme Scratch, as well as with the pupils from grade 7 and 8, who have not been in contact with programming and at the end of the school year also with the pupils from grade 5, who have not had experiences with programming either. As I wanted to gain and exchange experiences, I connected with my colleague from another school, who also conducted these lessons on his school. The pupils in the lessons made tasks, which have further on served as learning material for their classmates. This is the reason why I have chosen to present my paper in this theme section. With this type of lessons, I wanted to check the correct approach and the successfulness of using a robot as a tool for developing and teaching programming. The lessons have convinced me to use the robot as a tool in my educational process in the next school year and to share my experiences with the public. At the beginning of the lesson, the robot's capabilities were presented, which were later also further examined, the pupils prepared various tasks showing different functionalities that the robot offers, upgraded with extra capabilities, which were explored by the pupils themselves and lastly the problems or tasks were resolved. This way of learning enabled pupils to learn from each other as well as developing functional literacy, as they had to form tasks and write explanations for them in a way every pupil could understand them. Finally, I want to say that the Meet Edison robot can also be used as a motivational tool in other school subjects thus enabling interdisciplinary lessons and further developing computer skills.

Izdelava aplikacij za računanje s programom Scratch

Developing applications for calculating with Scratch programme

Milan Hlade, Osnovna šola Koroška Bela, Jesenice

Povzetek: Učenci velikokrat poskušajo učiti svoje vrstnike ali mlajše sošolce. Zgodi se, da imajo pri tem celo več uspeha kot učitelji. Obenem se postavijo v vlogo odraslih, učiteljev. Na OŠ Koroška Bela Jesenice smo z učenci 8. razreda s programom Scratch pri pouku izbirnega predmeta multimedija izdelali nekaj aplikacij, ki omogočajo seštevanje, odštevanje pa tudi množenje in deljenje v obsegu do 10, 20 in 100 za učence prvega triletja in računanje s celimi števili za njihove sošolce. V aplikaciji smo uporabili virtualno punčko, ki je obenem tudi maskota naše šole. Ima zanimivo ime – Blanka po kraju Koroška Bela. Učenec pri uporabi aplikacije lahko izbere število računov, ki jih bo izračunal. Aplikacija naključno izbira vrednosti potrebnih števil za računanje. Blanka šteje pravilne in nepravilne odgovore in sešteva dosežene točke. Sproti meri tudi čas reševanja. S prvimi aplikacijami so učenci skušali pomagati pri računanju najprej svojim bratcem in sestricam. Kasneje smo se povezali z učiteljicami razrednega pouka. Učenci so predstavili seštevanje in odštevanje mlajšim sošolcem s pomočjo aplikacije v računalniški učilnici ob navzočnosti učiteljice. S tem načinom smo dosegli pestrost pouka, povezanost med generacijami in učno uro, ki so jo pripravili učenci. Izvedli smo zanimive učne ure v IKT-okolju, ki je učencem blizu. Z drugo aplikacijo so učenci pomagali sošolcem, ki imajo težave pri usvajanju računanja s celimi števili. Aplikacijo smo uporabili pri dopolnilnem pouku in medsebojni pomoči med učenci. Učenci si med uro zapišejo račun in ga izračunajo v zvezek. Nato pa s pomočjo aplikacije vidijo, ali so račun pravilno izračunali. Z izdelavo podobnih aplikacij utrjujejo snov in spoznavajo začetne korake pri programiranju. Dobro morajo poznati določeno snov, pokazati morajo začetno znanje programiranja, aplikacija pa mora biti zanimiva in privlačna. Z učenci načrtujemo izdelavo podobnih aplikacij s programom Scratch ne samo pri matematiki, ampak tudi pri drugih predmetih. Možnosti je res veliko.

Abstract: Pupils often try to teach their peers or younger schoolmates. It happens that they are even more successful with this work than their teachers. At the same time they play teachers role. At Koroska Bela Primary School some pupils of the 8th grade visited the Multimedia lessons. They developed few applications which allow addition, subtraction, multiplication and division in the range to 10, 20 and 100 for the pupils of the first triade. We have also developed calculation with whole numbers application for their schoolmates. In this application we used a virtual girl , the mascote of our school. We named it – Blanka – after our village Koroska

Bela. Pupils can choose the number of accounts to calculate. The application randomly choose values of necessary numbers for calculation. Blanka is counting correct and wrong answers and calculating achieved points. She also regularly measures the time. With our first applications pupils have helped their younger brothers and sisters at home. Our next step was connection with teachers of the first triade. Senior pupils presented addition and subtraction to their younger colleagues in computer room. With this project we achieved diversity of the math school lesson, connection between different generations and more important the lesson was completely prepared by pupils themselves. Pupils liked math in ICT environment. With our second application pupils have helped their schoolmates having problems with counting whole numbers. The application was used during remedial teaching. Pupils are writing their calculations in the notebook. The application verifies their results. Developing similar applications enable pupils to strenghten their knowledge and learning first programming steps. Students have to know certain school topics very well, they have to show some knowledge about programming, the application should be interesting and attractive. We are planning to develope similar applications using Scratch programe not only at math lessons but also at other school subjects. There are a lot of options in this field.

Izdelava računalniške igrice, ki učencem prvega triletja osnovne šole pomaga utrjevati znanje matematike

Production of of computer games, which pupils first triad of primary school helps consolidate knowledge of mathematics

Romana Vogrinčič, Gimnazija Murska Sobota, Murska Sobota

Povzetek: Digitalna kompetenca, ena od osnovnih učnih kompetenc, je vse premnogokrat napačno razumljena kot veščina, ki obsega poznavanje uporabe informacijske tehnologije. Kot si ne moremo predstavljati obče funkcionalne pismenosti brez poznavanja vsaj osnov slovnice jezika, v katerem komuniciramo, tako tudi ne moremo govoriti o funkcionalni digitalni pismenosti brez poznavanj vsaj osnov računalniških konceptov – programiranja. Pri pouku informatike so dijaki v okolju SCRATCH usvajali osnovne koncepte programiranja ob izdelavi didaktične računalniške igrice, ki je namenjena učencem prvega triletja osnovne šole za utrjevanje znanja iz matematike. Cilji: po zaključenem učnem procesu ... dijak zna: opredeliti pojem algoritem in njegove osnovne gradnike; ustvariti algoritem za enostavne probleme; argumentirati, zakaj je algoritmično razmišljanje pomembno za vsakogar; spozna osnovne programerske koncepte (zanka, vejitve, spremenljivka itd.) in jih zna uporabiti; spozna programsko orodje Scratch in zna z njim ustvarjati enostavne programe; načrtuje in izdela delujoč računalniški program; načrtuje svoje učenje, ga vrednoti in daje konstruktivne povratne informacije sošolcem. Uporabljala sem elemente formativnega spremljanja dijakovega napredka: ugotovljanje predznanja, skupno določanje cilje in kriterijev, dokazila o doseganju ciljev, povratna informacija, samovrednotenje in vrstniško vrednotenje. V učnem prcocesu sem dijake z izzivi in vprašanji vodila skozi zastavljene informacijske probleme. Z uporabo elementov formativnega spremljanja znanja je bil pouk veliko bolj sproščen, saj se dijaki niso bali delati napak, pač pa smo jih izkoristili za učenje in povečevanje znanja.

Abstract: Digital competence, as one of basic learning competencies, is misunderstood as skill, comprising the knowledge of the use of information technology. As we can not imagine general functional literacy without knowing at least the basics grammar of the language in which we communicate, we can also not talk about functional digital literacy without knowing at least the basics of computing concepts - programming. In teaching informatics students are in an environment of SCRATCH learning basic concepts of programming on the manufacture of didactic computer games, which is intended for pupils of the first three classes of

primary schools to consolidate their knowledge in mathematics. Objectives: after completion of the learning process ... A student is able to ... - define the concept of the algorithm and its basic building blocks - create an algorithm for simple problems. - argue why computational thinking is important for everyone. realizes ... - basic programming concepts (looping, branching, variable, ...) and is able to apply Scratch software tools and knows how to generate simple computer programmes. works on strategy ... - and produces a working computer programme. - of his/her learning, assesses and gives constructive feedback to their classmates Formative assessment of a pupils progress was determined by: - assessing the prior knowledge of a student - joint setting of objectives and criteria - evidence of achievement - feedback - self-evaluation and peer evaluation In learning prcoces students were guided with the challenges and issues through the set of information problems. Using the elements of formative assessment skills lessons would be much more relaxed, because students are not afraid to make mistakes but can be used for learning and knowledge enhancement.

S pomočjo IKT do večje aktivnosti

Information and communication technology as a tool for improving physical activity

Maja Škerjanec, Osnovna šola Brinje Grosuplje, Grosuplje

Povzetek: Z željo, da bi učence spodbudila k aktivnejšemu sodelovanju pri pouku, sem se odločila, da jim ponudim uporabo IKT pri vadbi. Predvidevala sem, da bodo bolj motivirani, če bodo uro sooblikovali in se s pomočjo IKT tudi merili, primerjali, celo tekmovali. Dogovorili smo se, da bomo izvedli delo po postajah, število ponovitev na posamezni postaji pa bomo nadzorovali s pomočjo IKT. Na voljo smo imeli merilce števila korakov in pametne telefone z različnimi aplikacijami. Določiti smo morali naloge, pri katerih lahko smiselno uporabimo IKT. Z uporabo IKT so lahko le merili svoje dosežke ali pa jih tudi primerjali s sošolci. Motivacija za sodelovanje je bila velika, vse ideje niso bile uresničljive, so pa tiste, ki smo jih izbrali, pozitivno vplivale na izvedbo nalog. Učenci so bili motivirani, nekateri se z drugimi niso želeli primerjati in so primerjali le svoje rezultate, drugi pa so iz vadbe naredili pravo tekmovanje.

Abstract: To encourage my students to be more active, I integrated information technology into physical education instruction. The central aim was to increase motivation by involving students in lesson planning. Not only did IT enable them to monitor and compare their own results, but also lead to healthy competition among some of the students. We agreed on setting up stations. Pedometers and a number of smartphone applications were used to monitor the number of repetitions. We determined the task in wich IT could be availed of in order to monitor or compare progress. Altough not all the ideas were feasible, the ones that were selected strengthened the students motivation and effort considerably.

Učenci se učijo z uporabo aplikacije Nearpod

Pupils learn by using Nearpod

Iztok Ostrožnik, Osnovna šola Ivana Kavčiča, Izlake

Povzetek: V šolskem letu 2015/2016 sem pri pouku matematike v 9. razredu začel uporabljati tablične računalnike. Želel sem povečati motiviranost učencev ter izkoristiti prednosti IKT pri pouku. Učenci vsakodnevno uporabljajo elektronske naprave, vendar večinoma za zabavo. Zakaj jih ne bi uporabili tudi za delo? Na začetku si nisem postavil nobenih posebnih ciljev, saj sem želel le preveriti, kako se bodo odzvali. Vse druge aktivnosti so se prek celotnega šolskega leta odvijale spontano. Začel sem z uporabo različnih aplikacij, prek katerih je bila razlaga snovi bolj raznolika. Pripravil sem gradiva, s katerimi sem izvedel nekaj učnih ur. Za utrjevanje in razlago nove učne snovi smo uporabljali e-učbenik, Kliker, Geogebro, Smart tools, Nearpod, QR-kode itd. Učenci so te aplikacije kmalu vzeli za svoje. Najraje so delali z aplikacijo Nearpod. Tako smo začeli izdelovati gradiva predvsem za to orodje. Najprej jaz, nato še učenci, ki so bili zelo motivirani in željni takšne oblike pouka. Sam koncept izdelave prezentacij v aplikaciji Nearpod je preprost. Učenci niso potrebovali nobene razlage. Prezentacije so pripravljali doma. Nekateri so si za izziv izbrali novo učno snov, drugi pa utrjevanje že predelane učne snovi. Preden so izvedli učno uro oziroma del učne ure, sem prezentacijo pregledal in zahteval morebitne popravke in dopolnila. Nato smo zamenjali vloge. Učenci so bili zadovoljni, aktivni, motivirani. Na koncu so seveda usvojili tudi vsa zahtevana znanja. S takšnim načinom izvajanja pouka so bili precej bolj motivirani za delo. Radi imajo elektronske naprave. Spoznali so, da lahko z njimi naredijo kaj koristnega. Postali so bolj aktivni. Učitelj prek aplikacije Nearpod dobi realno časovno povratno informacijo o njihovem napredku. Slabosti takšnega načina pouka so predvsem tablični računalniki sami po sebi. Že tako so otroci preveč časa za takšnimi napravami, potem pa jih uporabljajo še v šoli. Takšen način pouka zahteva od učitelja precej več predpriprave na posamezno učno uro. Sam Nearpod ima tudi nekaj pomanjkljivosti, predvsem pri izbiri predlog in pri samem predogledu prezentacij. Izkušnja je bila pozitivna. V prihajajočem šolskem letu jo bom poizkusil ponoviti oziroma še nadgraditi. Izkoristiti moramo kreativnost učencev.

Abstract: During the school year 2015/2016 I started using tablet computers with nine graders during maths lessons. My aim was to increase pupils' motivation and to take advantage of ICT during classes. Pupils use electronic devices every day, mostly for fun. So why not use them for work? At the beginning I did not set any particular goals, I only wanted to check the pupils' reactions. The rest of the activities were done spontaneously during the school year. I started by using different applications and so my explanations in the classroom became more varied and

interesting. I prepared material with which I carried out some lessons. To test the pupils' knowledge and to deal with new topics, I used e-books, Kliker, Geogebra, Smart tools, Nearpod, QR codes, etc. The pupils soon became familiar with these applications. They preferred Nearpod. So we started making materials mainly for this tool, first myself, then the pupils. The pupils were highly motivated, eager for this type of lessons. The concept of making presentations in Nearpod is simple. The pupils did not require any explanation, they made the presentations at home. Some chose new topics, and some the topics already dealt with. Before the pupils carried out their presentations, I had examined them in case any corrections were needed. Then we switched our roles. The pupils were pleased, active and motivated and in the end they acquired all the required knowledge. In this way, the pupils were a lot more motivated for work. They like electronic devices. They have learnt that they can do something useful with them. They have become more active. By using Nearpod, a teacher can get a real-time feedback on their pupils' progress. The drawbacks of such lessons are tablet computers themselves. Children already spend too much time with such devices and then they use them at school as well. Such lessons demand a lot more preparation from the teacher. Nearpod itself has got some drawbacks, especially when choosing source material and when examining presentations. All in all, it was a positive experience, one that I hope to repeat or even upgrade next school year as well. We really should take advantage of pupils' creativity.

HaIK(T)u v eTwinningu

HaI(CT)ku in eTwinning

Dejan Kramžar,
Osnovna šola Toneta Okrogarja, Zagorje ob Savi v sodelovanju s CMEPIUS-om

Povzetek: V ustvarjalni učni uri bo predstavljen inovativni način poteka interaktivnega sodelovalnega dela na daljavo med učenci in učitelji, ki ga omogočajo portal eTwinning, spletna učilnica TwinSpace in eTwinning Live, in sicer na primeru pisanja haiku pesmi. Učenci bodo učno uro pod mentorstvom eTwinning ambasadorjev po predhodno izdelanem učnem scenariju za udeležence – učitelje izpeljali na temo pisanja haikujev. Podajanje snovi ne bo potekalo v klasični obliki, temveč v obrnjeni vlogi s podporo digitalne tehnologije. Prispevek je uvrščen v izbrani tematski sklop, ker postavlja v ospredje učence in njihovo vlogo pri načrtovanju in soustvarjanju učne ure na prosto dostopni platformi eTwinning. Platforma danes predstavlja največjo evropsko skupnost šol, ki varno in brezplačno povezuje več kot 384.000 učiteljev iz več kot 160.000 šol iz različnih evropskih in nekaterih neevropskih držav. V Sloveniji v pobudi sodeluje že več kot 500 šol in 2000 učiteljev in vzgojiteljev, za katere portal predstavlja predvsem avtentično učno okolje, ki učence spodbuja k ustvarjalnemu in kritičnemu pristopu do učenja. Študije so dokazale, da učenci s pomočjo in prek eTwinninga pridobijo zavedanje uporabnosti usvojenega znanja, torej razumejo, zakaj se učijo in zakaj je pridobljeno znanje pomembno za njihovo prihodnost. Cilj učne ure je izvedba praktičnega prikaza drugačnega učnega pristopa in aktivacija udeležencev ustvarjalnice v smeri inovativne uporabe digitalne tehnologije pri vsakodnevnem pouku ter vključevanja učencev v načrtovanje učnega procesa. V začetku bodo eTwinning ambasadorji udeležence delavnice seznanili s posebnostmi in prednostmi virtualnega učnega okolja eTwinning, kako so se pripravili na učno uro in kakšno vlogo je imel pri tem IKT. Nato bodo učenci OŠ Litija prevzeli vlogo učiteljev. Na daljavo, prek videokonferenčne povezave eTwinning Live, bodo udeležencem delavnice pokazali, kaj je haiku in kako ga zapisati. Posredovali bodo navodila za izdelavo interaktivnega haikuja in razložili, kakšne lastnosti ga označujejo. Udeležencem ustvarjalnice bodo s pomočjo digitalne tehnologije (npr. Animoto) in eTwinning Live na voljo tudi za vprašanja. HaIK(T)u v eTwinningu bo dobil novo, virtualno dimenzijo. V zadnjem delu delavnice bodo udeleženci znanje utrdili s praktičnimi nalogami, ki jih bodo zanje pripravili učenci. Rezultat uspešno opravljenih nalog bo objava e-haikujev v spletni učilnici s strani udeležencev. Najdrznejši udeleženci se bodo preizkusili še v prevajanju/pisanju haikujev v angleškem jeziku. Didaktična vrednost predstavljenega načina dela je predvsem timsko in vzajemno učenje učencev ter njihovo aktivno sodelovanje pri pripravi učne ure ob podpori IKT, in sicer v obrnjeni vlogi. eTwinning in avtentično e-učno okolje motivirata in spodbujata samoiniciativnost udeležencev v projektnem sodelovalnem delu na daljavo. Poleg tega opisana

učna ura predstavlja model medvrstniškega učenja, ki ga lahko vidimo tudi kot primer medgeneracijskega učenja. Nastalo gradivo bo dostopno vsem udeležencem ustvarjalnice in ga bo mogoče kasneje uporabljati in urejati.

Abstract: During this creativity lesson we will present an innovative form of interactive distance cooperation of pupils and teachers, enabled by eTwinning, TwinSpace and eTwinning Live, i.e. collaboration in the making of a haiku. Under the mentorship of eTwinning ambassadors and according to the prior developed learning scenarios pupils will hold a lesson for participating teachers on the topic of writing haikus. The delivery of knowledge will not take the classic form, but we will exploit the support of digital technology and revers the roles. The paper has been placed in the relevant section since it focuses on pupils and their role in the planning and co-creation of lessons by using the open eTwinning Platform. The platform represents the largest European community of schools for secure and free connecting of over 384,000 teachers from over 160,000 schools from different European and some non-European countries. The community was joined by over 500 schools and 2000 teachers and preschool teachers from Slovenia for whom the portal primarily represents an authentic learning environment which encourages pupils' creative and critical approach to learning. The studies have proven that with the help of and through eTwinning the pupils become aware of the applicability of their knowledge, i.e. they understand why they learn and why the acquired knowledge is important for their future. The objectives of the lesson are: to provide a practical demonstration of a different learning approach; activation of participants of the creative workshop to resort to innovative application of digital technology in their day-to-day work; and to include pupils in the planning of the learning process. In the beginning, the eTwinning ambassadors will brief the workshop participants on the special features and advantages of the eTwinning learning environment, while they will also explain how to prepare for the lesson and the role ICT plays in the process. Afterwards, the pupils of Litija Primary School (OŠ Litija) will assume the role of teachers. By using an eTwinning Live videoconferencing connection they will show the workshop participants, at distance, what is a haiku and how to write one. Pupils will submit the instructions for making an interactive haiku and explain its main characteristics. With the aid of digital technology (e.g. Animoto) and eTwinning Live the pupils will also be available to workshop participants for any questions. In eTwinning the HaI(CT)u will get an additional, virtual dimension. In the last part of the workshop the participants will refresh the acquired knowledge with practical exercises, which will be prepared for them by the pupils. The result of successfully completed exercise will be the publication of e-haikus in the online classroom by the participants. The most daring participants will also be able to test their haiku writing skills in English. The didactical value of the presented form of work lies primarily in team and peer learning of pupils, as well as their active participation in the preparation of the lesson with the support of ICT, in a reversed role. The eTwinning platform and an authentic e-learning environment motivate and encourage the self-initiative of workshop participants in the field of distance project collaboration. The created materials and resources will be available to all participants of the creative workshop for later use and modification.

Sodelovalno učenje brez prostorskih in časovnih okvirjev

Collaborative learning without space and time limits

Barbara Hebar in **Magdalena Dobršek**, Osnovna šola Dobje, Dobje

Povzetek: Trend sodelovalnega učenja, ki poleg aktivne oblike pridobivanja znanja spodbuja razvijanje socialnih veščin, lahko učitelj spretno nadgradi z integracijo dela v oblaku. Microsoft Office 365 ponuja pester nabor različnih orodij in storitev, ki jih lahko učitelj vključi v proces učenja tako, da se vlogi učitelja in učenca prepletata ter tudi zamenjata. Takšna oblika dela povečuje učenčevo produktivnost in odgovornost za lastno znanje. Na delavnici bo predstavljen konkreten primer sodelovalnega učenja v oblaku. Pri obravnavi učne vsebine bodo udeleženci v spletni učilnici uporabili različna orodja Office Online (Word, PowerPoint, OneNote). Skupna raba nastajajočih dokumentov bo omogočala sočasnost dela več učencev, s čimer bomo pridobili večjo učinkovitost pridobivanja novih znanj. Pri takšni obliki dela ima učitelj možnost nenehno spremljati nastajanje učnega gradiva ter dajati sprotne povratne informacije prek spletnih opomb. Nastalo gradivo je samodejno shranjeno v oblaku in se lahko po potrebi še vedno nadgradi. Obravnavano vsebino nato predstavijo učenci s pomočjo nastalega gradiva, ki je dostopno celotni skupini vključenih.

Abstract: A teacher can neatly upgrade a trend of collaborative learning that encourages development of social skills and active learning with integration of the cloud computing. Microsoft Office 365 offers a specter of different tools and services a teacher can include in a learning process. Thus the role of a teacher and a learner can intertwine and also swap. The method expands learners' productivity and responsibility for their own knowledge. The workshop presents an example of the collaborative learning in the Cloud. Participants of the workshop will be able to use different Office Online tools (Word, PowerPoint, OneNote) while discussing some teaching contents. Collaboration work will enable more people to work simultaneously and increase the amount of new data. A teacher can constantly check and comment on the notes that learners make. The materials are automatically stored in the Cloud and can be easily upgraded. Furthermore, learners present the materials which are also available to every collaborator.

LearningApps.org – podpora učenju in poučevanju

LearningApps.org - learning and teaching support

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Povzetek: S sodelovanjem v projektu Erasmus+ sva pridobili znanje, kako ustvariti gradiva, s katerimi bi stopili bliže potrebam in navadam nove, e-generacije učencev. Pri matematiki so učenci s pomočjo spletne aplikacije LearningApps.org utrjevali znanje o Pitagorovem izreku in enačbah, pri biologiji pa so se učili o ekosistemih. To orodje, ki je prosto dostopno na spletu, vam bova predstavili v delavnici, kjer si boste izdelali lastno interaktivno gradivo in tudi preizkusili gradivo drugih udeležencev. Pri biologiji so učenci cilje vsebinskega sklopa Biomi in biosfera dosegli z uporabo učbenika in spletnega orodja. Učbenik je služil kot vir informacij za izdelavo interaktivnega gradiva. Obliko gradiva so izbrali sami. Med ponujenimi možnostmi so izbrali križanko, kviz Milijonar, vislice in osmerko. Vsako izdelano gradivo je samodejno opremljeno s kodo QR in URL-jem, kar omogoča lažje deljenje z drugimi udeleženci. Učenci so QR-kode poslali prek e-pošte, učiteljica pa jih je natisnila in polepila po razredu. Tako so svoje znanje o biomih in biosferi preverili vsi. Pri tem so uporabili pametne telefone ali tablične računalnike, na katere so predhodno naložili aplikacijo za branje QR-kod. Namesto tiskanja lahko QR-kode in URL-je kopiramo v mapo, ki jo ustvarimo v orodju Google Drive. Učenci sočasno rešujejo isto gradivo in ga na koncu z učiteljem tudi ovrednotijo. Morebitne napake lahko učenec hitro in preprosto popravi ter tako izboljša svoje gradivo. Če učitelj gradivo deli, učenci do njega lahko dostopajo povsod, kjer se povežejo s spletom. Pri takem delu so izjemno motivirani, saj uporabljajo lastne naprave, ki so sicer pri pouku prepovedane. Težave se pojavijo, če nimajo lastnih naprav ali če je omejena brezžična povezava. V tem primeru lahko spletno aplikacijo uporabljamo v računalniški učilnici. Učenci aktivno soustvarjajo učno uro in izboljšujejo znanje angleškega jezika, saj je spletno orodje v angleškem jeziku. Kadar sami izdelajo gradivo, lahko aplikacija služi za samostojno učenje, ko pa s pomočjo aplikacije rešujejo naloge, gradiva uporabimo kot del učne ure, npr. za uvodno motivacijo, preverjanje znanja, utrjevanje. Meniva, da tako učenje naše učence bogati, jim daje nove ideje, spoznanja, omogoča pot v svet, samostojnost in odgovornost.

Abstract: Being part of Erasmus+ project we have learned how to create materials to meet the needs of a new e-generation of students. In maths students revised their knowledge about Pythagorean theorem and equations using learning apps.org application; in biology they learnt about ecosystems. We are going to present the tool, which is accessible online, in a workshop where you can create your own interactive materials and try out materials made by other participants. In biology the goals on

biomes and biosphere were achieved by using the student book and Internet resources. The student book presented the main source of information for creating an interactive material. Students chose the material's form by themselves. They chose from different forms (a crossword, how to be a millionaire quiz, hangman and a word grid). Every material has a QR code and web link, which makes it possible to share the materials with other students. Students sent their codes via e-mails, the teacher printed them and put them up around the classroom. This made it possible for all the students to check their knowledge on biomes and biosphere. They used their tablets and smart phones that had the application for reading QR codes uploaded beforehand. The QR code and web link can be copied directly into the folder using Google drive tool instead of printing the codes. Students work simultaneously on the same material and then evaluate it with the teacher. The mistakes that occur along the way can be quickly and easily modified and their material upgraded. If the teacher shares the material it is accessible to anyone and everywhere with Internet connection. The motivation is extremely high on the part of the students because they can use devices that are otherwise forbidden to use during classes. Problems might occur if students don't have such a device or Internet connection is weak. In this case teachers can still use the application in a computer room. Students are active in the learning process, they help create the lesson and improve their knowledge of English since Internet Tools are in English. The application is either intended for self - learning when students create the material by themselves or constitutes a part of the lesson when they use it to do different tasks (revision, introductory motivation, exams, etc.). We believe that such learning process gives the students new ideas, enriches them, broadens their horizons and enables them to become a responsible and autonomous learner and human being.

Poklicna orientacija – spoznavanje samega sebe v Oblaku

Professional orientation – getting to know yourself in the Cloud

Boža Jazbinšek in **Mira Minić**, Osnovna šola Dobje, Dobje

Povzetek: Pogoj za uspešno nadaljnje izobraževanje oziroma poklicno pot je dobro poznavanje samega sebe. Mladostniki so navadno kritični do sebe, zato jih je treba usmerjati k iskanju njihovih močnih področij. Z ozaveščanjem močnih področij dobijo občutek lastne vrednosti in s tem popotnico za oblikovanje pozitivne samopodobe, pri čemer je zelo pomembna povratna informacija vrstnikov. Uporaba različnih mobilnih tehnologij med mladostniki prinaša učiteljem tudi prednosti in izzive. Zato smo pri poklicni orientaciji uporabili Oblak 365, ki nam omogoča odprto ter sodelovalno učenje ne glede na čas in prostor. V Oblaku 365 smo uporabili zvezek OneNote, ki omogoča sodelovanje med več vrstniki ter možnost kritičnega prijateljevanja, na podlagi katerega bodo v Swayu dopolnili svojo samopredstavitev. Potek dela: Učenci se prijavijo v Oblak 365. V OneNote odprejo zvezek za poklicno orientacijo. Preberejo navodila za delo. Oblikujejo trojke, ki bodo sodelovale v medsebojni komunikaciji. Poiščejo zvezek izbranega sošolca. Najprej pregledajo v Swayu pripravljeno sošolčevo samopredstavitev ter nato pazljivo preberejo še analizo odgovorov o sošolčevih osebnostnih lastnostih. Glede na prebrano ter poznavanje sošolca oblikujejo povratno informacijo v obliki komentarja. Posameznikovo predstavitev dopolnijo s svojimi opažanji. Na podlagi prebranega in komentarjev dokončajo izdelek posameznika v Swayu. Predstavijo se v Swayu.

Abstract: If you want to be successful when you look for a perfect job for yourself, you need to know yourself in details. Teenagers usually think of themselves critically. That is why they need someone to guide them while looking for their competence. Being aware of their own strengths helps them to create a positive self-image. Peers' comments about their positive or negative characteristics have a very important impact. Using different types of mobile technologies among teenagers brings new challenges and many advantages for a teacher, too. Therefore we used the Cloud 365 to establish collaborative learning, regardless of place or time. We used OneNote Class Notebook in the Cloud 365 in order to make notes on peers personalities, their strengths and imperfections. The materials were used to make a presentation about themselves in Sway. The Script: Learners login to the Cloud 365. They open Professional Orientation OneNote Class Notebook. They read the instructions and form groups of three. Learners communicate inside each group by using the digital notebook. Learners choose somebodys notebook. Furthermore, learners

check peers presentation in Sway and read the description of his/ her characteristics. According to the presentations and their relationship with the peer, they write a comment and add it to the presentation. All the comments and materials gathered in collaboration space enable learners to finish their products in Sway. They present themselves in Sway.

Orodje za samoevalvacijo dela posameznika v skupini

Self-evaluation tool for group project members

Gorazd Krumpak, Srednja medijska in grafična šola Ljubljana, Ljubljana

Povzetek: Kakovostno skupinsko delo je pomembno za povezanost članov skupine, njihovo učinkovitost ter uspešno izvedbo projekta. Spodbujanje teh učnih oblik v razredu pripravi učence/dijake na oblike dela, ki jih čakajo v prihodnosti na delovnih mestih v podjetjih. Zaželeno je, da ima učitelj pri vpeljevanju učencev/dijakov na skupinsko delo možnost tako spremljati kot ocenjevati delo skupine in njenih posameznih članov. To znanje mu omogoča skupino usmerjati v želeno smer. Podana povratna informacija ob koncu skupinskega dela zelo pomaga tako učitelju kot učencem/dijakom z vidika: ugotavljanja realizacije dela posameznika v skupini in prepoznavanja problemov, s katerimi so se soočili učenci/dijaki v skupinskem delu pri realizaciji zahtevanih ciljev. Za lažje doseganje zgoraj zapisanih ciljev smo razvili orodje za samoevalvacijo dela posameznika v skupini. Namenjeno je predvsem temu, da učitelj poleg opazovanja skupine pridobi povratno informacijo o dinamiki znotraj skupine o posameznih članih od članov samih. Pomaga pri spremljanju večjega števila skupin. Z njim učitelj dobi poenoteno in primerljivo povratno informacijo tudi na dolgi rok. je Zasnovano je kot spletna aplikacija, za delo z njim pa potrebujemo napravo z dostopom do interneta in spletni brskalnik. Učitelj ali učenec/dijak dostopa do orodja prek spletnega mesta. Učitelj ima dostop do vmesnika za upravljanje s samoevalvacijskim vprašalnikom, medtem ko ima učenec/dijak dostop le do samega vprašalnika samoevalvacije. Učitelj prek vmesnika predhodno pripravi vprašalnik za samoevalvacijo in način ocenjevanja. Oblikuje skupine, jim dodeli člane in pripravi vprašanja za samoevalvacijo. Rezultate izpolnjenih vprašalnikov pridobi v obliki »surovih« podatkov ali v statistično obdelani obliki. Orodje ne omogoča odprtega tipa vprašanj, zato rezultati samoevalvacije ne ponujajo možnosti odgovorov zunaj zastavljenih okvirjev. Z udeleženci ustvarjalnice bomo šli skozi posamezne korake priprave vprašalnika za samoevalvacijo. Najprej bomo pripravili ocenjevanje in način ocenjevanja (številčno, opisno ali s simboli). Nadalje bomo pripravili skupine in vnesli člane posameznih skupin. Pred objavo vprašalnika bomo oblikovali še vprašanja za samoevalvacijo. Udeleženci bodo znotraj skupin dobili svoj dostop do orodja. Tako bodo sami oblikovali svoj vprašalnik in ga, na podlagi izkušnje učenca/dijaka, tudi izpolnili. Skupaj bomo analizirali uporabniško izkušnjo, saj smo zainteresirani za predloge in izboljšave orodja.

Abstract: Quality teamwork is integral to team members feeling connected, being efficient, and carrying out a project successfully. Encouraging such behavior in a classroom environment prepares the students for this type of work in their future careers. In teaching students the ins and outs of teamwork, the teacher should preferably have the possibility to both oversee and grade the progress of both the group and its individual members. The insight gained thusly enables the teacher to further guide the group into a desired direction. The feedback acquired by the end of a group project provides assistance to the teacher and the students when it comes to establishing the input of individual group members and recognizing problems faced by the students on a group project when trying to achieve the set goals. To achieve that more easily we have developed an application for self-evaluation of the work done by individual group members. This tools main purpose is to enable the teacher to not just observe the group but also acquire feedback on the group dynamics from the group members themselves. It can help monitor a large number of groups. With it the teacher receives consistent and comparable short- and long-term data. The tool is designed as a web application. Use requires access to the Internet and a browser. The teacher and the students access the application through a website. The teacher is granted access to the user interface for editing the self-evaluation questionnaire, whereas the students can only access the self-evaluation questionnaire itself. Teachers can use the interface to prepare a self-evaluation questionnaire in advance and set the grading parameters. It is easy to form groups, assign group members, and prepare the questions for the questionnaire. The data produced by the students filling it out is presented to the teacher in a raw form of unprocessed data or processed statistically. The tool does not allow open type questions, therefore the results of a self-evaluation survey do not stray outside the boundaries of a set framework. We will guide the seminar attendees through the individual steps necessary to prepare a self-evaluation questionnaire. First we set the type of grading scheme (numerical grades, narrative grading or letter grading). Then we form groups and assign group members. Before posting the questionnaire online we form the individual questions. Participants will be given access to the application to form their own questionnaire and then adjust it after experiencing it as a student. Together we will analyse the user experience as such data provides valuable suggestions and propositions for further development of the application.

Dan odprtih vrat

School open day

Patricija Veldin, Gimnazija Kranj, Kranj

Povzetek: Predstavila bom projekt gimnazijcev, ki so že od šolskega leta 2013/2014 vključeni v projekt Inovativne pedagogike 1 : 1 oz. se njihovo učenje in poučevanje razlikuje od tradicionalnih metod dela, saj uporabljamo tablične računalnike ali pametne telefone. Dijaki so za šolsko leto 2016/2017 pripravili delavnico za osnovnošolce, ki se bodo udeležili dneva odprtih vrat na Gimnaziji Kranj. S pomočjo aplikacije Learning Designer so sestavili načrt dela za osnovnošolce ter si razporedili naloge, ki jih bodo opravljali kot mentorji. Iz izkušenj vemo, da se dneva odprtih vrat udeležujejo devetošolci, zato bo tema delavnice primerjava prve in druge svetovne vojne. S tem projektom bodo utrdili poznavanje IKT ter nadgradili kompetence 21. stoletja, saj se njihova vloga učencev v kontekstu modernih pristopov k učenju in poučevanju spreminja že od prvega letnika naprej. Dijaki so s tem projektom prevzeli odgovornost za izpeljavo delavnice, tema in metode dela so bile izbrane z dogovorom med dijaki. Namen delavnice je, da se osnovnošolcem prikaže delo z IKT, ki omogoča uporabo raznolikih zgodovinskih virov in aplikacij. Osnovnošolci bi z lastnim delom izkusili iskanje in izbiranje verodostojnih zgodovinskih virov, dijaki mentorji pa bi pomagali pri prepoznavanju verodostojnosti virov. Sledila bi analiza podatkov in izdelava miselnega vzorca. Dijaki so se odločili za aplikacijo Xmind, za katero sklepajo, da jo verjetno poznajo tudi osnovnošolci, v primeru nepoznavanja te aplikacije pa so pripravili načrt učenja rabe aplikacije Xmind. Razdelili so se v tri skupine in vsaka je opravila eno od nalog: seznanitev z aplikacijo Learning Designer ter načrtovanje delavnice z njeno pomočjo; izbira vprašanj za primerjavo prve in druge svetovne vojne; načrt dela z aplikacijo Xmind oz. načrtovanje predstavitve dela z aplikacijo Xmind. Moja naloga je bila svetovanje pri načrtovanju in izbiri vprašanj, večino dela pa so dijaki opravili sami. Vsaka skupina je predstavila svoje ugotovitve in rešitve, sledila sta pogovor in izdelava načrta delavnice. Dijaki so z načrtovanjem izkazali samoiniciativnost ter visoko motivacijo. Med seboj so komunicirali in sodelovali ter sprejeli zanimive rešitve. Pomanjkljivost je vedno v času, namenjenem učnemu procesu.

Abstract: I will present you a project of gymnasium students, who are from the school year 2013/2014 involved in the project Innovative pedagogy 1: 1. Their teaching and learning differs from traditional methods of work, because we use tablets or smartphones. The students are preparing for the next academic year (2016/2017) a workshop for primary school pupils, who will attend the Open Day. With application Learning Designer they will drew up the curriculum and allocate the tasks for pupils, who will perform with mentors. We know from experience that the

Open Day attended by ninthgraders, so the theme of the workshop will be comparison of the first and second world wars. This project will strengthen ICT knowledge and upgrade skills of the 21st century, because their role of students in the context of modern approaches to teaching and learning changes from the first year onwards. The students with this project took responsibility for carrying out workshop, theme and working methods were selected by agreement between the students. The purpose of the workshop is to display ICT technology to pupils and work with a variety of historical sources and applications. Pupils would with own experience of finding and selecting credible historical sources, analysis the data and production mindset learn new skills. Students choose application Xmind, because they concluded that it probably also know the elementary school, however, they prepared learning plan Xmind use applications. Students were divided into three groups for one of the 3 tasks: to familiarize with the app Learning Designer and planning workshop with its aid; choice questions to compare the first and second world war; Plan works with application Xmind and planning presentations of work with the application Xmind. My task was to advise in the design and selection of questions, most of the work students have done themselves. Each group presented their findings and solutions, followed by interviews and making a plan workshop. Students are to design proved self-initiative and high motivation. Between them they communicate and collaborate, and take interesting solutions. The disadvantage is always the time devoted to the learning process.

S Scratchem v holigramsko animacijo

Using Scratch to create hologram animations

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Povzetek: Učenci v svoj vsakdanjik vključujejo različne tehnologije – telefon, tablico, pametno uro idr. S svojim znanjem in preprostimi pripomočki pa lahko svojo napravo spremenijo v pravi hologram. Pri urah multimedije so s pomočjo matematičnega programa Geogebra izdelali mrežo prisekane piramide, ki je ustrezala dimenziji glede na zaslon njihovega pametnega telefona. Mrežo so nato natisnili na prozorno folijo ter jo izrezali in sestavili. Z učenci smo si pogledali osnove programiranja v programu Scratch: premikanje, povečava, obračanje. S pomočjo enostavnega programa so usvojili osnove programiranja, zank, delovanja programa in koordinatnega sistema, ki je ključen za pisanje programa. Po začetni uri programiranja so naredili kratek scenarij, v katerem so že predvideli celotno gibanje figure, pri tem so morali biti pozorni na premikanje v hologramu: večanje figure je približevanje, zmanjšanje oddaljevanje, premikanje pa je omejeno po diagonalah zaslona itd. Najprej so zdelali kratko animacijo za eno stransko ploskev piramide, ki so jo predvajali na monitorju, in preverili videz v hologramu ter ugotovili, ali ustreza njihovemu scenariju in ali se je s pomočjo lastnosti odboja svetlobe ustrezno prikazala znotraj piramide kot 3-dimenzionalna figura s prostorskimi učinki. Nato so morali program nadgraditi za preostale 3 ploskve. Tako so dodali dodatne figure in upoštevali lastnosti zrcaljenja čez točko in premico. Program so nato spreminjali in popravljali zrcalno glede na koordinati x in y. Pravilnost končnega programa so nato zopet preverili na hologramu, ki je bil na monitorju. Delo v razredu je potekalo večinoma samostojno, saj so učenci programe uporabljali brez pomoči učitelja, zaradi dela v spletni različici pa smo lahko naredili večji hologram na enem izmed centralnih računalnikov, kjer so lahko sproti preverjali svoje rešitve. Moja vloga učitelja je bila, da so vsi naredili pravilno 4-strano priamido ter da so spoznali nekaj osnovnih funkcij programiranja. Vse drugo so učenci naredili samostojno, nekateri so celo sami izrisali figure, tako da so poleg premikanja uspeli narediti še sukanje figure. Takšen način dela je nekatere učence spodbudil, da so se ustvarili še kak nov izdelek, ki ga srečujejo v vsakdanjem življenju na različnih videokanalih.

Abstract: Pupils incorporate various technologies into their everyday life – mobile phones, tablets, smartwatches etc. Using their knowledge and simple aids they change their devices into true holograms. In multimedia lessons pupils used the mathematics software Geogebra to construct the net of a truncated pyramid that matched their smartphone screens dimensions. The net was printed on a transparent foil, cut out and put together. Pupils got to know the programming basics in the Scratch software: moving, enlarging, rotating. With the help of simple software they

acquired the basics of programming, loops, software functions and the coordinate system. The knowledge of the latter is crucial in the programming process. After the introductory programming lesson the students wrote a short script where they predicted the whole movement of the figure, paying special attention to the movement in the hologram: enlarging the figure meant zooming in, while reducing it meant zooming out. The movement was limited by the screen diagonals. The pupils started by making a short animation for one outer surface, which was shown on the monitor, while checking its image in the hologram, making sure whether the animation corresponded to their script, all the while checking if it was properly shown inside the pyramid as a 3-dimensional figure with spatial effects with the help of light reflection properties. The programme had to be upgraded for the other three surfaces, thereby adding additional figures and taking into account the properties of reflections over the point and the line. The programmes were changed and corrected in terms of reflection of x and y coordinates. The validity of the final programme was rechecked on the hologram that was featured on the monitor. Classwork was mainly independent since the pupils used the software without any help from the teacher. The web version helped to make a bigger hologram onto a central computer where the solutions could be tested simultaneously. My role was to help pupils make a square regular pyramid and get to know the programming basics. The rest of the work was done independently by the pupils, where some of them rendered figures by themselves, which meant not only moving the figure but also rotating it. This method encouraged some pupils to create new items they meet in everyday life on different video channels.

Klasični in digitalni zvezek z roko v roki

Paper and digital notebook hand-to-hand

Mateja Pintar in **Lea Gosar**, Osnovna šola Dobje, Dobje

Povzetek: Uporabljati samo klasični zvezek ali dopolniti klasični zvezek z digitalnim? Kot Microsoftova inovativna šola si prizadevamo za aktivno uporabo računalniških orodij, s katerimi pri učencih spodbujamo iniciativnost, ustvarjalnost, aktivnost, evalvacijo in refleksijo pri pouku. Učencem tako nudimo bolj kakovostno formativno spremljanje znanja, fleksibilno organizacijo učenja, bogato skladišče informacij in stalno možnost za kakovostno povratno informiranje. Delavnica je namenjena vsem učiteljem in drugim pedagoškim delavcem, ki bi si želeli v sklopu pouka skupaj z našimi učenci raziskovati in preizkušati digitalni zvezek – OneNote Class Notebook. Zvezek je razdeljen na tri dele: • Zvezek za učence – zasebni zvezek v skupni rabi z učiteljem in posameznim učencem. • Knjižnica – zvezek samo za branje, v katerem učitelj odlaga raznolika gradiva. • Prostor za sodelovanje – zvezek, ki omogoča sodelovanje in v katerega lahko vsakdo v razredu daje vsebino v skupno rabo in jo organizira. Digitalni zvezek omogoča, da se učenci lahko učijo kjer koli, kadar koli, s katero koli napravo in s pomočjo kogar koli. Pouk je usmerjen na razvoj posameznika, kar omogoča odlično individualizacijo.

Abstract: Using only paper notebook or using it also with the digital one? Being a Microsoft Innovative School means striving for active use of computer tools that encourage learner's initiative, creativity, activity, evaluation and reflection at school lessons. This is the way that offers learners a formative assessment of knowledge, flexible lessons, rich store of information and constant qualitative feedback. The workshop is for teachers and other pedagogical workers who would like to explore digital notebook – OneNote Class Notebook – together with our learners. OneNote Class Notebook includes three types of notebooks: • Student Notebooks – private notebook that are shared between each teacher and their individual learners. • Content Library – a read-only notebook for teachers to share course materials with learners. • Collaboration Space – a notebook for all learners and the teacher in the class to share, organize, and collaborate. Digital notebook enables learners to learn wherever, whenever, by using different devices and by anybody's help. Lessons are directed to development of an individual which enables a perfect individualization.

Bogatenje angleškega besedišča s pomočjo digitalnega učbenika

Enriching English vocabulary by using a digital textbook

Maja Kovačič, Osnovna šola Prežihovega Voranca Jesenice, Jesenice

Povzetek: V zadnjem času so učencem in učiteljem poleg klasičnih tiskanih učbenikov na voljo tudi digitalni učbeniki za angleški jezik: e-učbeniki (interaktivna oblika tiskanega učbenika) in i-učbeniki (interaktivni učbeniki), ki spodbujajo rabo IKT tako v šoli kot doma. Prispevek sem umestila v tematski sklop Ustvarjamo za učenje, saj bi rada predstavila prednosti učenja angleškega besedišča s pomočjo e- in i-učbenikov v praksi. Učenje besedišča na tak način je lažje in hitrejše, saj se pomen besed lahko takoj preveri v elektronskem slovarčku (razlaga pomena besed v angleščini in prevod v slovenščino), poleg tega so na voljo slikovne kartice, ki omogočajo še preprostejše pomnjenje besed. Interaktivne vaje (dopolni povedi z besedami iz okvirja, odkljukaj pravilno rešitev, dopolni povedi tako, da izbereš ustrezno besedo ali besedno zvezo, poveži dele povedi ipd.) učencem omogočajo, da dobijo takojšnjo povratno informacijo o znanju oz. napredku, kar jim pomaga pri nadaljnjem načrtovanju učenja. Pri nekaterih nalogah imajo celo možnost izbire nivoja zahtevnosti (lahka, srednje težka ali težka naloga). Prednost tovrstnega inovativnega učenja je kritičen izbor nalog glede na predznanje učencev in njihov interes, saj ni nujno, da rešimo vse naloge oz. da jih rešujemo po vrsti. Ključni cilj prispevka je predstavitev možnosti poteka usvajanja besedišča pri pouku angleščine, ki učence po navadi navduši, zaradi česar nadaljujejo z reševanjem nalog tudi doma. Na splošno imajo radi različne oblike in metode dela, prikazani način dela je dobrodošel, saj je drugačen in zaradi uporabe tehnologije mladim blizu. Po drugi strani pa lahko predstavlja morebitno past, saj se učenčeva pozornost zlahka preusmeri drugam (socialna omrežja, predvajanje videov, glasbe ipd.). V učnem procesu bodo udeležencem prikazane nekatere vaje iz e- in i-učbenika za bogatenje angleškega besedišča, druge interaktivne vaje, ki so dostopne na svetovnem spletu, ter nekatere aplikacije, ki omogočajo samostojno izdelavo pripomočkov za učenje angleškega besedišča (npr. za izdelavo slikovnih kartic, križank, pisanje kratkih zgodb ipd.). Udeleženci bodo aktivno sodelovali pri izvajanju dejavnosti (individualno delo, delo v parih ali skupinah) in na koncu podali povratno informacijo (prednosti in slabosti rabe digitalnih učbenikov za učenje angleškega besedišča v primerjavi z učenjem s pomočjo učbenika v tiskani obliki).

Abstract: In addition to print textbooks students and teachers can recently use digital textbooks for the English language: e-textbooks (interactive form of print textbooks) and i-textbooks (interactive textbooks) which promote the usage of ICT both at school and at home. I placed my presentation in theme section titled Creating for Learning as I would like to present the advantages of learning English vocabulary through e- and i-textbooks in practice. Learning vocabulary in this way is easier and quicker, because the meaning of words can be easily checked in an electronic glossary (explanation of words in English and Slovene translation), and there are also flashcards that even simplify memorizing. Interactive exercises (complete the sentences with words in the box, tick the right answer, choose the correct word or phrase to complete the sentences, match parts of the sentences, etc.) allow students to get immediate feedback on their level of knowledge or progress which is useful for creating further learning plans. Students have even the possibility to choose the level of difficulty (easy, medium or hard) with some exercises. The advantage of this type of innovative learning is a critical selection of exercises depending on the students knowledge and their interest, because it is not necessary to solve all the exercises and to solve them in the order given. The main objective of my contribution is to present the possibility of enriching vocabulary during English lessons. Students are usually enthusiastic about this approach and therefore continue doing exercises also at home. In general, students are fond of various forms and methods, and this method of learning is well accepted among them, because it is different and due to the use of technology close to them. However, it can represent a potential trap because students' attention easily diverts elsewhere (social networks, videos, music, etc.). In the learning process, participants will be familiarized with some of the exercises for enriching English vocabulary by using e- and i-textbooks, other interactive exercises that are available on the World Wide Web, as well as some applications that allow creating individual props for learning English (e.g. flashcards, crossword puzzles, writing short stories, etc.). Participants will be actively involved in the implementation of activities (individual work, work in pairs or groups) and at the end they will be asked for feedback (pros and cons of using digital textbooks in comparison with using print textbooks for learning English vocabulary).

Ustvarimo novico

Let´s make a piece of news

Vanja Kolar Ivačič, Osnovna šola Bistrica ob Sotli, Bistrica ob Sotli

Povzetek: Suvereno in uspešno javno nastopanje je ena ključnih kompetenc uspešnega odraslega. To in dejstvo, da velja pridobljena znanja, zmožnosti in spretnosti s področja slovenščine kakovostno utrditi in ponoviti, je vodilo do ideje o ustvarjanju in snemanju novice. Udeleženci bodo imeli možnost, tako kot so jo imeli učenci 4. razreda, da soustvarjajo svoj učni proces in ustvarjalno izkažejo znanje na najvišjih taksonomskih stopnjah. Skozi sodelovalno delo v manjših skupinah bodo ob dejavnem stiku z besedili z uporabo digitalne tehnologije varno, ustvarjalno in kritično pridobivali ter uporabljali podatke/informacije. Ozaveščali in presojali bodo možnost uporabe in zlorabe digitalne tehnologije oziroma pridobljenih informacij in ob tem razvijali svojo digitalno zmožnost. Po motivacijskem začetku s QR-kodami bodo v skupinah določili temo aktualne novice. Nato se bodo prelevili v novinarje, poiskali podatke prek svoje naprave ali s spraševanjem mimoidočih ter oblikovali novico s tipičnimi značilnostmi besedilne vrste. Določili bodo snemalca in poročevalca. Slednjega bodo uredili za javni nastop. Izbrali oz. ustvarili bodo okolje, sceno snemanja ter posneli video. Lahko bodo zmontirali tudi napovednik in podnapise. S tvorjenjem govorjene novice ter nebesednim izražanjem bodo razvijali svojo sporazumevalno in ustvarjalno zmožnost. Posneta besedila bodo na koncu tudi vrednotili in utemeljevali svoje mnenje. Načrtovali bodo lahko izboljšave svojih govornih nastopov. Četrtošolci so z ustvarjanjem novice na zabaven in učinkovit način uporabljali načela uspešnega govornega nastopanja, priporočeno strategijo sporočanja in prek sodelovalnega učenja razvijali digitalno zmožnost. Vse aktivnosti so zahtevale malo več časa, a tako so lahko učenci svoja znanja uporabili in razvili v zanimiv izdelek, ki je privlačen za širšo javnost.

Abstract: Confident and successful public speaking is one of the key competencies of a successful adult. This competency and the fact, that the acquired knowledge, abilities and skills in the field of Slovene, should be consolidated and repeated, has led to the idea of creating and recording data. Participants will have the opportunity, as they have a 4th grade students, to help to create their own learning process and demonstrate creative skills to a higher taxonomic levels. Through cooperative work in small groups and the active contact with the texts, the participants will use digital technology safely, creatively and critically acquire and use data / information. They will raise awareness and assess the possibility of the use and abuse of digital technology and the information obtained, and develop their digital capability. After the motivational beginning with QR codes, the participants in the groups will set topic of current news, they will transform themselves into journalists, seek information through their devices or by asking passers-by and create news with typical

characteristics of text types. The participants will choose the cameraman and the reporter, he will be visually arranged for public performance. The participants will also create an environment, the recording scene and finally record the video. They will also edit trailer and subtitles. With the formation of the spoken news and non-verbal expression they will develop their communicative and creative ability. The recorded texts will ultimately be evaluated and justified. Fourth grade students have used the principles of a successful oral performance and the recommended strategy in a fun and effective way. Through collaborative learning they have developed their digital capability. Activities may require more time, but pupils skills were used and developed into an exciting product that is attractive to a wider crowd.

Od hipoteze do sklepa

From hyphotesis to conclusion

Valentina Mavrič Klenovšek, Šolski center Novo mesto,
Srednja elektro šola in tehniška gimnazija, Novo mesto

Povzetek: Učitelj bere članke, obiskuje konference, se uči, da bo znal učiti. Učenec vstopi v razred, poišče svoje mesto in pričakuje, da ga bo učitelj naučil. Kako? Tako, da domov ne bo nesel le nekaj informacij, ampak sled, o kateri bo premišljeval. Takšen pouk lahko danes učencem zagotovimo lažje kot kadar koli prej. Na voljo imamo aplikacije, ki ohranjajo učiteljevo vlogo vodenja učnega procesa, učenčevo ustvarjalnost in sprotno povratno informacijo. Pri pouku biologije v programu tehniške gimnazije sem začela uporabljati aplikacijo Nearpod. V drugem letniku smo spoznavali rastline, v tretjem pa kemijsko analizirali vodo in tla. V aplikacijo sem naprej naložila e-prosojnice, članke, kjer smo skupaj spoznavali teoretične osnove. Pri temi rastlin so imeli gradivo v obliki prosojnic, pri kemijskih analizah pa v obliki člankov. Dejavnost se je nadaljevala z reševanjem kviza. Tako sem dobila povratno informacijo o poznavanju in razumevanju teoretičnih osnov teme. Nadaljevali smo s praktičnimi aktivnostmi. Pri rastlinah so s pomočjo spletnega ključa določali nabrane rastline, pri analizah pa so naredili zahtevane kemijske teste. Vse ugotovitve in rezultate so ponovno vnašali v pripravljeno stran v aplikaciji. Ker smo imeli na eni strani zbrane vse podatke, smo jih primerjali in iskali odstopanja. Tisti, ki so se ukvarjali z rastlinami, so rešili še nekaj nalog in s pomočjo mikroskopa določevali vrste pelodnih zrn v medu. V pripravljeno stran aplikacije so narisali opazovana pelodna zrna. Dejavnost sem sklenila z igro spomin na temo rastlin. Pri kemijskih analizah so dijaki napisali poročilo o analizi, kjer so imeli poudarek na razpravi in oblikovanju sklepov. Na temelju izvedenih primerov lahko potrdim, da je to ena od aplikacij, ki zagotovo omogoči aktiven in zato učencem zabaven pouk. Kljub temu da učitelji biologije nimamo i-učbenikov, je naš pouk lahko interaktiven. Svoje ure ustvarjamo sami in pri tem upoštevamo značilnosti teme in razreda. To pa je dodana vrednost, ki je nima nobeno vnaprej pripravljeno i-gradivo.

Abstract: On the one hand, teachers constantly need to improve themselves by reading different articles or attending seminars and conferences, on the other, however, there are students, who simply enter the classroom, sit down and wait to be taught. Is it possible to alter this simple, one-sided direction, where students are mere “receivers” of information without giving it a deep thought? According to my experience, the answer is positive. In order to involve students into a lesson more actively, there are quite a few applications available, which enable the teacher to supervise the teaching-learning process, to assess the learning outcome and to provide the necessary feedback. In my lessons with students of tehniška gimnazija(technology

gymnasium) I successfully applied the above-mentioned technique by introducing the application Nearpod, with which students of year 2 learned more about plants and students of year 3 did some chemical analyses of water and soil. To finish with, a quiz was conducted to asses the students' theoretical knowledge of the subject matter. This part was followed by a more practical one, where students were supposed to determine the earlier picked plants by using the internet clues, while those who did some water/soil analyses had to carry out the experiments in practice. Afterwards the results were filled in the table provided on the application site. The data were comparatively analysed to see all the diversions. The students who dealt with the plants were given some additional tasks by using a microscope to determine the type of pollen in honey, and to graphically present it in the available application. The students who dealt with the chemical analyses were expected to write a report in which they had to discuss the outcomes and draw some conclusions. To sum up, I can point out that the above-mentioned application enables students to participate in an active way and delve into a subject matter with great enjoyment and fun. Despite the fact that there are no e-course-books available for biology classes, they can still be interactive by teachers' own innovative and creative approaches, based on students 'needs in class as well as the topic itself. All in all, this is what creative teaching-learning is all about.

Postanimo vseživljenjski učenci v 21. stoletju – Prošnja in življenjepis v Oblaku

Let us become lifelong learners in the 21st century – Application and CV in the Cloud

Nataša Robič in **Janja Polenšek Davidovski**, Osnovna šola Dobje, Dobje

Povzetek: Znanje je ključ do uspeha, ki nam daje možnost večje možnosti preživetja v vedno bolj konkurenčni družbi. Skrb za pridobivanje novih kompetenc in nadgrajevanje že obstoječih skozi celotno naše življenjsko obdobje postajata del našega vsakdanjika. Živimo v času hitrih sprememb tehnologije in posledično smo učitelji tisti, ki smo odgovorni za izgradnjo uspešne kariere posameznikov – naših učencev. Želimo, da bi bili naši učenci s svojimi veščinami na trgu dela v prednosti pred drugimi in da bodo znali prepričati bodoče delodajalce, zato jim uporabna znanja podajamo z različnimi in sodobnimi učnimi metodami, ki jim že lahko pomagajo pri pridobivanju zaposlitve. Učimo jih, da »klasična« oblika prošnje z življenjepisom po učnem načrtu za slovenščino danes ni več dovolj in da morajo biti pri oblikovanju le-te inovativni (metoda digitalnega pripovedovanja Digital Storytelling v Swayu ali PowerPoint Office Mix), da bodo opaženi. Scenarij: 1. Uvodna motivacija za udeležence. 2. Prijava udeležencev v Oblak 365. 3. V OneNote ClassNotebook odprejo zvezek (prošnja in življenjepis). 4. V skupni prostor zvezka s spleta prilepijo različne prošnje in življenjepise, kjer jih skupaj komentiramo. 5. Udeleženci si po navodilih predavateljev ogledajo »klasično« prošnjo z življenjepisom, tako da z orodji znotraj aplikacije podčrtujejo, dopolnjujejo, označujejo … in z interaktivno vajo sestavijo svojo. 6. Udeleženci po v naprej pripravljeni predlogi z navodili v Swayu ali programu PowerPoint Office Mix pripravijo življenjepis kot digitalno zgodbo in jo delijo s preostalimi udeleženci.

Abstract: Knowledge is the key to success, which gives usgreater possibilities of survival in an increasingly competitive society. Care to acquire new skills and upgrade existing ones, throughout our lifetime, is becoming a part of our everyday life. We live in a time of rapid changes in technology and, consequently, teachers are the ones, who are responsible for building a successful career of individuals - our students. We want our students to have an advantage over others in the labor market with their skills. Because we want, they will be able to convince prospective employers, we use different, modern teaching methods, which can be useful in obtaining employment. Students learn that »classic« form of application with curriculum vitae according to the curriculum for the Slovenian language is no longer enough and that they should be innovativein designing it (method Digital Storytelling in Sway or PowerPoint Office Mix) if they want to be seen. Scenario: 1. Introductory motivation

for participants. 2. Registration of participants in the Cloud 365. 3. Participants open a notebook in OneNote Class Notebook (application and CV). 4. They copy paste different applications and CVs from the Internet, which we then comment together. 5. Participants under the direction of lecturers look at the »classic« application with a CV, so that they use tools within the application for underlining, supplementing, marking ... and form a new one by using an interactive exercise. 6. Participants with help of a pre-prepared template and with instructions in Sway or PowerPoint Office Mix make a CV as a digital story and share it with other participants.

Kahoot! Naj učenje postane zabava

Kahoot! Make learning easy

Tina Osterman, Osnovna šola Ivana Groharja, Škofja Loka

Povzetek: Današnja mladina dnevno uporablja sodobno tehnologijo, predvsem telefone, ki pa še zdaleč niso namenjeni samo telefoniranju, temveč drugim dejavnostim. Zato se mi zdi pomembno, da te veščine uporabimo tudi pri pouku. Ključni cilji takšnega načina poučevanja so soustvarjanje nalog, kritično razmišljanje, analiziranje podatkov ter ne nazadnje zdrava tekmovalnost pri izvedbi preverjanja doseženega znanja. Scenarij poteka učnega procesa: Učitelj frontalno predstavi kislinsko bazične indikatorje (fenolftalein, metiloranž, lakmus ter barvilo rdečega zelja). Demonstracijsko pokaže spremembo barve indikatorjev v različnih medijih (kislo, bazično in nevtralno) ter izmeri pH. Učence razdeli v skupine. Vsaki skupini prinese pladenj, na katerem sta preiskovalna raztopina ter indikator. Učenci s pomočjo indikatorjev ugotovijo, ali je preiskovalna snov kisla, bazična ali nevtralna, ter svojo ugotovitev potrdijo s pH-lističi. Svoje ugotovitve predstavijo preostalim učencem. Nato vsaka skupina sestavi pet vprašanj izbirnega tipa (vsako vprašanje mora imeti štiri možne odgovore, od katerih je pravilen samo en). Učitelj vnese vprašanja v računalniški program Kahoot!. Učenci se s svojimi mobilnimi telefoni ali tablicami prijavijo v program ter odgovarjajo na vprašanja in s tem utrjujejo svoje znanje. Pri učnem procesu zelo radi soustvarjajo, so zelo kreativni pri izbiri vprašanj, prav tako pa se snov naučijo brez posebnega odpora, saj takšnega načina dela pravzaprav sami ne smatrajo za učenje. Prednosti uporabe programskega orodja Kahoot! je predvsem pri preverjanju usvojenega znanja, ponovitvi snovi in utrjevanju. Malo manj je uporabno pri osvajanju novih učnih vsebin. Ker so učenci rangirani na lestvici ne le po pravilnosti odgovora, ampak šteje tudi hitrost, to predstavlja še dodatno motivacijo.

Abstract: Todays young people use modern technology on a daily basis, especially mobile phones that are not by a long shot meant only for calling other people, but for other activities too, because the phones enable that. Therefore, I think it is important that these skills can also be used in the classroom. The main aims of this kind of teaching are co-creation tasks, critical thinking, data analysis, and all in all healthy competition during the actual verification of the achieved knowledge. The learning process procedure: A teacher frontally present acid-base indicators (phenolphthalein, methylorange , litmus dye and red cabbage pigment). The teacher demonstrates the indicators' colour change in various media (acidic, basic and neutral) and measures the pH. Students are divided into groups. Each group gets a tray with one investigative solution and one indicator. Students determine whether the investigative material is acidic, alkaline or neutral by using indicators, and their findings are confirmed with pH strips. Their findings are presented to other students.

Then each group makes up five multiple choice questions (each question should have four possible answers of which only one is correct). The teacher enters the questions into a computer program Kahoot !. Students register the program with their mobile phones or plates and answer questions and in that way revise and refresh their knowledge. Students love to help create the learning process, they are very creative in making up questions, as well as they learn the subject matter without any resistance, because this kind of work is actually not considered to be learning. The advantages of using software tools Kahoot! are mainly in the verification of the acquired knowledge, revision of the material and refreshing the topic. It is a little less useful in getting to know new learning topic. Because pupils classify not only on the basis of correctness of the answer, but also on the basis of their speed, this activity represents even bigger motivation.

Izdelava lastnega pripomočka za upravljanje nizkonapetostnih signalov s pomočjo programabilnega logičnega krmilnika (PLK). Načini usvajanja učnih vsebin z njegovo pomočjo

Self made aid for controlling low voltage electrical signals with Programmable Logical Controller (PLC). How to adopt the learning contents by its help.

Gašper Grat, SPSŠ, Šolski center Slovenske Konjice – Zreče, Slovenske Konjice

Povzetek: Dijaki SPSŠ Zreče so pokazali precej kreativnosti, saj so s pomočjo mentorjev izdelali didični pripomoček za krmiljenje nizkonapetostnih električnih signalov s pomočjo krmilnika SIEMENS S7-200. Pripomoček pokriva področje uporabe logičnih operacij za usmerjanje signalov. V šoli ga lahko uporabljamo v kombinaciji s pnevmatičnimi in/ali električnimi sistemi ali pa kot samostojno učno enoto.

Za usvajanje učnih vsebin je precej univerzalen in ga dijaki uporabljajo na naslednjih področjih:

- pri usvajanju predpisanih učnih vsebin,
- pri izvedbi tehniških in informativnih dni za predstavitev devetošolcem,
- pri predstavitvah šole na različnih osnovnih šolah ter tematskih prireditvah.

Pri usvajanju predpisanih učnih vsebin dijaki osnove krmilne logike že poznajo saj delo s krmilnikom predstavlja višjo stopnjo avtomatizacije na srednjih šolah. Najprej kot učitelj predstavim osnove: namen, razlike med predhodno naučenimi metodami krmiljenja in posebnosti. Preučimo in preizkusimo osnovne krmilne sheme v različnih kombinacijah. V tej fazi zraven didaktičnega pripomočka uporabljamo tudi druge periferne naprave, ki služijo predvsem vizualizaciji krmilne naloge (elektromagnetni ventili, pnevmatični valji idr.). V drugem delu tega tematskega sklopa imajo dijaki proste roke za lastno kreativnost. Pri tem imajo na voljo za uporabo le dotični pripomoček, ki s pomočjo lučk, vgrajenih v njegove tipke, nudi vizualizacijo izhodnih krmilnih signalov, ne da bi za to potrebovali še dodatne periferne naprave. Sam jim predlagam različne praktične naloge, kot so utripanje ene luči pod različnimi pogoji (čas, število utripov, hitrost utripanja), izmenično utripanje dveh ali več luči, časovno pogojen varnostni dvoročni vklop izhodnega signala itd. Teh nalog se morajo lotiti samostojno, brez kakršnih koli dodatnih navodil. Vsekakor imajo proste roke za preučitev in izvedbo krmilnih nalog po lastni presoji. Tako so samoiniciativno izvedli npr. funkcijo krmiljenja semaforja, železniškega prehoda idr. V tretjem delu tega sklopa pa se po deduktivni metodi lotimo iskanja napak v sistemu. Dijaki so seznanjeni s

funkcijo, ki bi jo predhodno sestavljeni krmilni sistem moral opravljati, vendar je ne, saj je v enem ali več podsistemih (stisnjeni zrak ne pride do pnevmatične komponente, električni vodnik ni povezan ali ni dobro spojen, zapis krmilnega programa je napačen itd.) vgrajena napaka. Dijaki morajo napako diagnosticirati in nato seveda odpraviti.

Pri izvedbi tehniških in informativnih dni za predstavitev devetošolcem napravo uporabljamo v kombinaciji s pnevmatičnimi in električnimi sistemi. Cilj je namreč, da jim prikažemo čim večji možni obseg krmilnih sistemov. Predstavitev temelji predvsem na principu, opisanem v tretjem delu sklopa prejšnjega odstavka (prikaz možnosti pojava napak, njihovo odkrivanje ter odpravljanje).

Pri predstavitvah šole na različnih osnovnih šolah ter tematskih prireditvah pa pripravimo manjše delavnice, kjer udeležence najprej poučimo o treh osnovnih logičnih funkcijah IN, ALI ter NE, nato pa z usvojenim znanjem ter pripomočkom izvajamo preproste naloge prižiganja lučk na različne načine. Osnovnošolci po navadi pri tem pokažejo precej interesa in kreativnosti, saj niso obremenjeni z drugimi teoretičnim podlagami in zakonitostmi v krmilni tehniki.«

Uporaba računalniške simulacije Energetska mešanica pri učenju in poučevanju.

Abstract: Students SPSŠ Zreče showed much creativity, because they created, with a help of their mentors, a teaching aid for controlling the low voltage electrical signals by the controller SIEMENS S7-200. Utility covers the scope of the logic operations for routing signals. In school it can be used in combination with a pneumatic and / or electrical systems, or as a self-learning unit.

For the acquisition of learning contents the device is quite universal and is used for the following areas:

- to acquire the prescribed learning content,
- the implementation of technical and informational days for the presentation to pupils from elementary schools,
- or the representing our school at various elementary schools and themed events.

In acquiring the prescribed learning content students the basics of the control logic already know. Working with the controller represents a higher degree of automation in secondary schools. At first I as a teacher introduce some basics: the purpose, the difference between the previously learned methods of control and special features. The basic control schemes in various combinations are studied and tested at first. At this stage, next to the didactic aid, some other peripheral devices are used. These devices serve mainly for visualization of the control functions (solenoid valves, pneumatic cylinders ...). In the second part of this thematic section students are free for their own creativity. Only didactic aid is available for performing controlling tasks. Instead of pneumatic cylinders and valves there are lamps, installed in the push buttons on device. Lamps provides the visualization of the output of the control signals, without need for a further peripheral device. I suggest to the students a number of practical tasks such as flashing of a light under different conditions (time, number of beats, speed flashing) alternately flashing two or more lights,

time-dependent two-handed safety switch for an output signal ... The students must deal with those tasks alone, without any additional instructions. In any case, they have a free hand to examine and control the execution of the tasks at their own discretion. Thus, the students own initiative carried out for example, function control traffic lights, level crossings ... The final method is the deductive method, when students must find the errors in the system. Students are familiar with a control task that the control system had to perform, but it is not because there is in one or more subsystems (compressed air does not apply to pneumatic components, electrical conductor is not connected or not well connected, control program is wrong ...) embedded error. Students must diagnose the situation and then of course eliminate the error(s).

When implementing technical and information days at our school for presentation to elementary school pupils, the device is used in combination with pneumatic and electrical systems. The aim is in fact to show them as much as possible the scope of control systems. This presentation is based primarily on the principle described in the third example in the preceding paragraph (see the possibility of errors present in the system, their detection and correction).

When our school represent different activities by visiting various elementary schools and themed events, there are smaller workshops prepared, where participants must be firstly educated on three basic logic functions AND, OR, and NOT, and then combine consumed knowledge with didactic aid to perform some simple task of turning the lights on in different ways. Elementary school pupils usually finds out a lot of interest and creativity, because they are not occupated with other theoretical bases and basic laws in control technology.

Reševanje informacijskega problema in učenje programiranja

Solving information problem and learning programming

Mirko Đukić, Škofijska gimnazija Antona Martina Slomška, Maribor

Povzetek: Prispevek predstavlja projektni pristop poučevanja (informatike), ki je izrazito usmerjen v učečega in izkorišča idejo formativnega načina dela, kjer se učenci učijo skozi ustvarjanje in lastno delo. Dijaki v obliki projekta predelajo temi Reševanje informacijskega problema in Algoritmični način razmišljanja in programiranje. Scenarij je tak: ob začetku sklopa smo se dogovorili za projektni način dela. Vsak dijak bo izdelal preprosto igro. Določili smo okolje in programski jezik (Scratch) in se lotili dela. Moja (učiteljeva) vloga je bila usmerjati dijake skozi korake projekta oziroma učenja. Tako so si najprej izbrali konkretno igro, jo opisali, narisali in našteli elemente/objekte/entitete igre. Nato so te objekte usmerjeno opisali – vsakemu objektu so določili lastnosti in obnašanje. Vse to so v Googlovem dokumentu zapisovali kot "projektno dokumentacijo" oziroma vodilo skozi učenje. Ko so igro podrobno opisali, so hitro ugotovili, da (še) nimajo dovolj znanja za izgradnjo. Da se bo treba naučiti programirati … Dogovorili smo se, da se bomo programiranja učili ob reševanju problemov, ki so jih zapisovali v opisu. Tako smo se skupaj pogovorili o strategijah reševanja problemov (učenja) in ugotovili, da ne obstaja le ena pot do znanja. Da se lahko učimo tudi v skupini, med vrstniki, iz virov ali iz zgledov iz okolja (Scratch). Da ni edina pot čakanje na učiteljevo poučevanje ali demonstracijo. Zatem smo se lotili zapisovanja problemov. Ugotavljali smo, kaj že vemo in česa še ne vemo. Zapisovali smo svoje probleme (tisto, česa še ne vemo) na liste in jih pritrjevali na tablo. Nato smo si (na začetku skupaj, nato pa v majhnih skupinah ali sami) izbrali en, po navadi skupni problem, ki smo ga želeli rešiti. Izbrali smo najustreznejšo strategijo reševanja problema in se lotili dela. V uvodnih urah sem pogosteje pojasnjeval/demonstrairal jaz, kasneje pa so vedno pogosteje dijaki posegali po drugih pristopih, kot so učenje s preizkušanjem, učenje v skupini, učenje s pomočjo zunanjih virov, medvrstniška pomoč itd. Ko so imeli izdelani in delujoči okoli dve tretjini projekta, smo se lotili določanja kriterijev. Ob koncu obravnave teme so dobili oceno, tako da so v besedilnem dokumentu z deli kode iz svojega programa pojasnili kode in utemeljevali, da so dosegali zastavljene kriterije. Izkazalo se je, da so bili mnogo bolj motivirani za učenje, ko so reševali svoj izbrani problem (izdelava izbrane igre). Prav tako so bili mnogo bolj učinkoviti, ko so si lahko sami izbirali različne metode dela.

Abstract: The article is pointed in presentation of project-based teaching (of Informatics), which is highly pointed in learner and is using the idea of formative way of work, where students are learning through their own creativity and work.

Uporaba računalniške simulacije Energetska mešanica pri učenju in poučevanju

Use of computer simulation Energetic Mixture at learning and teaching

Garsia Kosinac in **Melita Lenošek Kavčič**, GEN energija d. o. o.

Povzetek: Energetske in okoljevarstvene teme so zelo pogoste pri pouku in različnih dnevih dejavnosti v šoli, še posebej zanimiva pa je tema o proizvodnji in porabi električne energije v Sloveniji.

Udeleženci delavnice se bodo s pomočjo računalniške simulacije Energetska mešanica preizkušali v vlogi operaterja elektrarn in s svojo izbiro virov energije oblikovali energetsko mešanico Slovenije ter raziskovali, kako njihove odločitve vplivajo na zanesljivost oskrbe, izpuste toplogrednih plinov in stroške oskrbe z električno energijo. Pri simulaciji so upoštevane vse razpoložljive elektrarne v Sloveniji z realnimi podatki.

Med ugotavljanjem idealne energetske mešanice bodo udeleženci delavnice ustvarjali gradiva za pouk, upoštevajoč, da oskrba z električno energijo prinaša številne izzive:

- Želimo si, da bi bila zanesljiva: z zanesljivo proizvodnjo lahko v domovih, pisarnah in tovarnah vsak trenutek zadovoljimo svoje želje in potrebe po storitvah, za katere potrebujemo električno energijo.
- Proizvodnja električne energije naj bo nizkoogljična: povzroča naj čim manj izpustov toplogrednih plinov in drugih vplivov na okolje.
- Želimo si, da je znesek na naši položnici za elektriko čim nižji.

Kako to doseči? Katere vire, v kakšni kombinaciji in kdaj katere izbrati? To so nekatera vprašanja, ki si jih zastavljajo udeleženci med procesom učenja s pomočjo računalniške simulacije.

Abstract: Energetics and Saving the Environment are frequent topics at school classes as well as extra-curricular activities. But a very interesting one is about the production and consumption of electric energy in Slovenia.

The participants of the workshop will take over the role of a power plant operator with the help of a computer simulation called Energetic Mixture. They will form a daily energetic mixture of Slovenia and try to find out how their decisions will influence the reliability of electric energy supply, greenhouse gases emissions and energy supply expenses. The simulation takes into consideration all available Slovenian power plants with real data.

Kako vam gre?

So how do you do?

Dominic Graveson in **Hilary Wigston**, Velika Britanija

Povzetek: Kako vam gre? Sprožanje sprememb in spodbujanje inovativnosti je izziv, s katerim se trenutno sooča veliko število šol in izobraževalcev. Vendar pa sta zgolj razpravljanje o in centralno narekovanje sprememb na eni strani, ter dejansko ustvarjanje trajnostne, učinkovite kulture in okolja, v katerem imata inovacija in sprememba možnosti za razcvet, dve različni stvari. Načrtovanje storitev (service design) je eden od pristopov, kako doseči, da se kaos sprememb spremeni v nekaj, kar bo razumljivo vsakomur in pri čemer lahko vsakdo sodeluje. Zagotavlja pošteno in transparentno osnovo za vsakogar, ki želi povedati svojo zgodbo o tem, kako dela in identificirati področja, ki jih je potrebno spremeniti in izboljšati. Ko so inovacije znane in objavljene, načrtovanje storitev zagotavlja tudi okvir za kolegialno podporo, omogoča uresničevanje inovacij ter merjenje njihovih rezultatov. V 90-minutni delavnici se boste naučili: Kako shematiziranje procesov omogoča vsakomur, da pove svojo zgodbo o tem, kako opravlja ključne naloge v šoli, na univerzi ali v upravi; kako lahko prepoznate najboljše nove ideje, spodbujate inovativnost, ter pri tem smiselno vključite kolege; kako spodbujati inovativnost v svoji instituciji in meriti rezultate na transparenten način. Udeleženci bodo razmislili o procesu, ki bi ga želeli bolje razumeti in ki potrebuje izboljšavo, ter o tem tudi razpravljali. Lahko je to načrtovanje pouka, administracija, vpis učencev ali ocenjevanje.

Abstract: How do you do? Making change happen and encouraging innovation is a challenge that many schools and educational leaders are currently facing. But simply talking about and dictating transformation from the centre, and actually creating a sustainable effective culture and environment where innovation and change can take off are very different things. Service Design is one approach to making the chaos of change something that everyone can understand and take part in. It provides a fair and transparent platform for anyone to tell the story of how they work and identify areas for change and improvement. Once these innovations are uncovered, it also provides a framework for getting support from colleagues, making them happen, and measuring the results. In this 90 minute workshop you will learn: How process mapping can allow everyone to tell the story of how they do key tasks in school, university and administration How you can identify new ideas from the front line, encourage innovation, and engage colleagues in meaningful ways How to drive improvement in your institution and measure the results in a transparent way. Participants should think about a process they would like to understand more about and that needs improvement and come prepared to discuss this. This could be lesson planning, administration, student enrolment or assessment.

Učenje se dogaja povsod

Vsak otrok ima prirojeno sposobnost učenja. V svojem vsakdanjem življenju raziskuje, ustvarja in sodeluje z drugimi otroci ter tako spoznava okolje. Z izkoriščanjem te prirojene sposobnosti učenja pomagamo učencem doseči večji uspeh. SMART s svojo vizijo in najnovejšimi tehnološkimi rešitvami pomaga graditi učilnice, ki vzpodbujajo naravni način učenja. V takšnih učilnicah se učenci na naravni način učijo sodelovati in biti uspešni pri učenju in medsebojnih odnosih.

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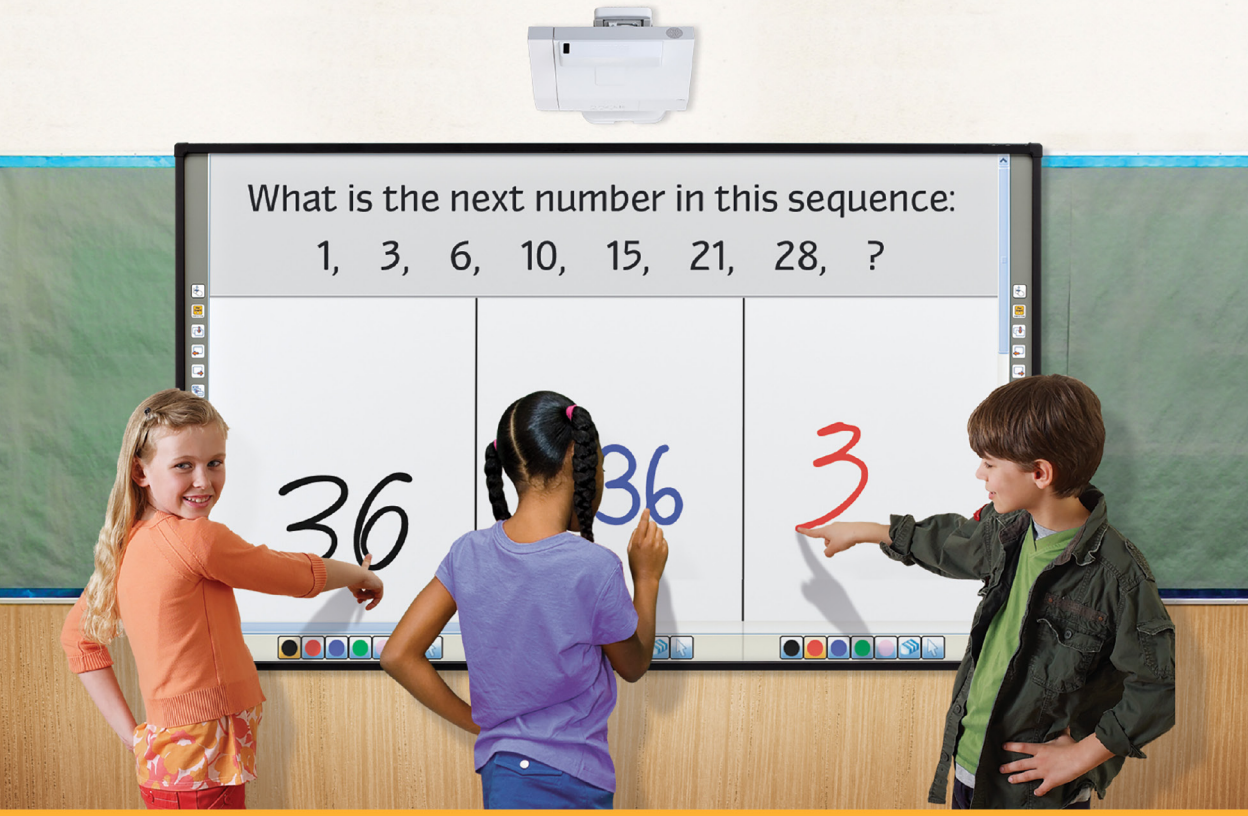

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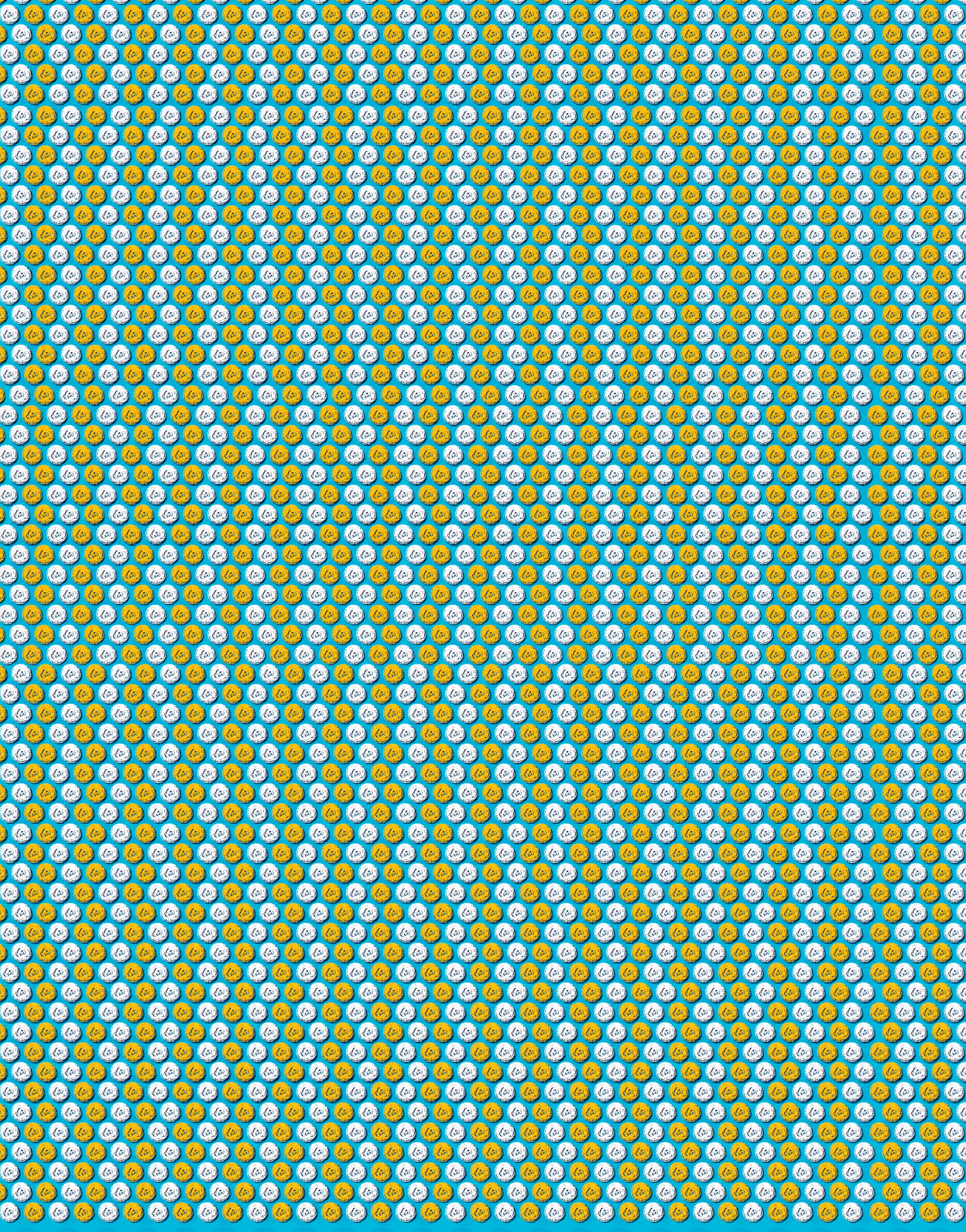

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