

***“Today champions in math, tomorrow in equal chances”*: a short overview of strengths and weaknesses of Flemish education**

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Abstract

In international PISA tests, the Flemish region is always situated in the top performers of Europe, especially for mathematics. Nevertheless it seems that we are doing not so well with regards to equal chances. The social background you are born in, is strongly related with the outcome of your educational career.

Flemish math inspection noticed that in the beginning of the secondary education, a lot of pupils do not reach the minimal curricula any more. This led to the Monard comity (2009), that worked out a new plan for the beginning of secondary education system. We discuss the main guiding lines of this comity since the practical changes will only start in September 2013. One of the main ideas is that children have to choose too early: now at the start of secondary school they make an important choice with regard to the level of their secondary education. In the new curriculum this will be postponed until the age of 14. The first two years of secondary will become a broad education in order to get a taste of all possibilities. This should deal with two major drawbacks of today's educational system: pupils choose the wrong study level and a great number of pupils leave school without diploma.

Keywords

Flemish educational system, learning outcomes, reform of educational system, cascade phenomena, PISA results, teacher training.

1. Introduction

The quote in the title was the title of the policy report of the Flemish minister of education after the elections in 2004 (see [14]). The report was based on the results of PISA 2003. Since that date the main efforts in Flanders focuses on equal chances, and this will result in an important reform of the beginning of secondary education (see § 5.2).

We describe shortly the current Flemish education system, analyse its strengths and weaknesses and describe what the new situation is expected to be. Most data and statistics can be found on the website of the Flemish ministry of Education [23] (mainly in Dutch) and of the OECD PISA tests [21].

2. The Flemish educational system: short overview of the current situation

In Flanders, there is compulsory education from the age of 6 until the age of 18. This is roughly divided into two major parts: primary education (age 6-12) and secondary education (age 13-18). In reality almost all children go to nursery school starting from the age of 2,5 (Eurydice 2012).

In primary school, there is only one curriculum for all pupils. A week consists of 28 hours of teaching¹ with 6 hours of math in every year (before 1998, this was 8 hours a week of math). Pupils spend (almost) all their time with the same heterogeneous group and one teacher who teaches all the subjects. At the end of every year the teacher advises whether a pupil can pass to the next year or not, nevertheless parents have the right to ignore this advice.

At the start of secondary school, a pupil chooses one of the four main types: general education, technical education, education in arts and vocational education. Within these four types there exist a lot of options, all of them with their own curricula. From now on, every subject in school has its specialized teacher. Also the pupils in the class room can change. A week consists of 32-36 hours, including 2-4 hours of math in the first two years. This can increase to 6 hours a week (or even 8 in some schools) or decreases to 0 depending on the options you choose later on.

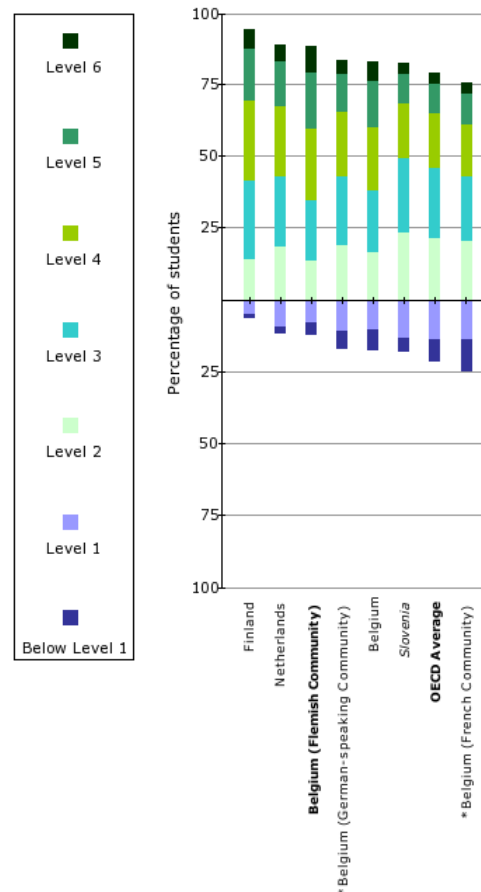
Every year the team of all teachers of a pupil decides whether he can pass to the next year (certificate A), whether he can pass to the next year but ruling out some options (certificate B, e.g. rule out all options containing Latin because of a deficit in the courses of Latin) or whether the pupil can not pass to the next year (certificate C).

3. Strengths

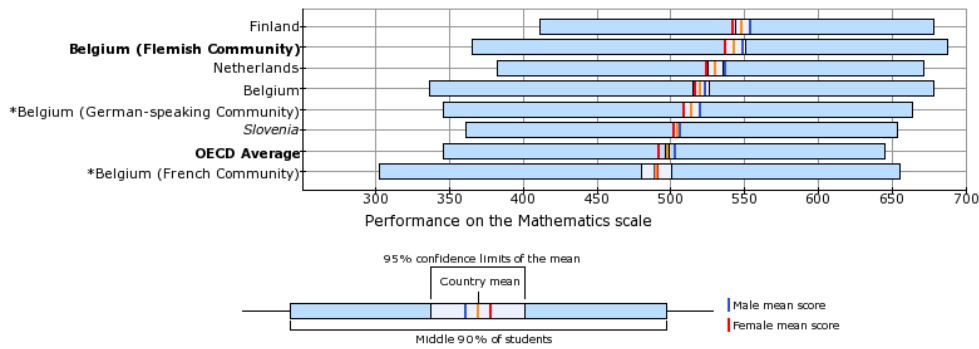
3.1 Learning outcomes. In international tests as in PISA, Flanders scores very well, especially for mathematics. In Europe we are always in the top group when we look at the learning outcomes, only Finland performs better. Also within our country, the Flemish region scores significantly better than the other regions. We include two typical graphics of the PISA results for mathematics to illustrate this. This difference is noticed in all PISA tests and not only for mathematics, but also for the other tests on reading and science, although the difference for science with other countries is less conclusive. What one can see in the statistics is that Flanders has a large group of top performers. Two explanations are that we spent a lot of teaching hours on mathematics and that we choose different levels of education at an early age (at 12).

We have a high percentage of 85% of pupils who leave secondary education with a diploma. This is the OECD standard.

Percentage of students at each level of proficiency on the Mathematics scale



¹ A 'teaching hour' in Flanders is in fact 50 minutes.



Tables 1 and 2: Results from the PISA 2006 test on mathematics (see [21])

3.2 Accessibility. Education is financially very accessible. There is a maximum of money a school can ask for in primary education (60 €/year) and there is no entrance fee during compulsory education. Also entrance fees at higher education level are quite reasonable comparing with surrounding countries (ca. 500 €/year) and a diploma of secondary education gives you unlimited access to higher education. So one can state with absolute certainty that higher education is the best investment for your future (income) in Belgium.

3.3 Compulsory education until 18. As mentioned in § 2, we have compulsory education from the age of 6 until the age of 18, although from the age of 16 you can choose in vocational education to be part-time in school and do part-time an internship supervised by the school. In reality every child of 3 years old, is in nursery education. There is a curriculum for nursery education in order to prepare every child for the start of primary education. In fact, you have to proof that you have been for at least one year on a regularly basis in nursery education before you can start in primary school. Otherwise you have to do a test that concerns mainly language-related subjects.

3.4 Teachers. Teachers are very well educated. Until twenty years ago, you had to be in the top of your class in general secondary education in order to be granted access in the special schools for teacher training. In this way a lot of very skilled young people were able to start a career as a teacher. It was often a chance to climb up in social status.

Teachers are very committed (McKenzie et al. 2004, § 109): they are supervising and evaluating the educational career of their pupils. Every decision with regards to stimulate pupils or to let pupils pass to the next year is taken by the whole team of teachers, all aware of the pupil's history. Next to that we have in all schools CLB (Pupils Guidance Centres), so we can conclude there is a lot of attention to the needs of every individual pupil.

Teachers are paid well, compared to most surrounding countries; although research points out that the workload is also higher (McKenzie et al. 2004, § 107-108). Teachers with a bachelor's degree are all paid the same regardless whether they teach in nursery, primary or secondary education. Teachers with a university degree get paid a little more. The salary rises a little with every two year of work experience. One concludes that the start salary is quite high but on the average teachers with a university degree earn less than people in Flanders with a comparable diploma.

3.5 Tradition & politics. Flanders does spend a lot of money to education: around 9 billion euro every year (this is 40% of the whole budget of the Flanders' region). We have a great tradition of freedom and autonomy in (good) education. In absolute numbers we have one teacher for every 8 pupils. Except for the minimal curricula imposed by the government, every person can start a school with its own methodology and parents have the freedom to choose the school where they send their children to. Schools are free to appoint the teachers they prefer and are responsible for the educational career and diploma of their pupils.

As a little country surrounded by big neighbours most of the pupils speak four languages: Dutch, French, English and German. Therefore most of the people are open to neighbouring cultures. Moreover the capital of Europe, Brussels, lies in the heart of the country, so there are a lot of expats living in Flanders.

4. Weaknesses and challenges

4.1 Variation in learning outcomes. Next to the fact that Flemish pupils performed extremely well in math, the results of PISA 2000-2003 were interpreted, certainly in the media, in a negative way. Flanders' pupils had a big variation in results and the socioeconomic status was very determining. Politicians concluded that Flanders was world champion in social inequality with regards to the educational outcome. Nevertheless this statement needs some comments: when one looks at the results, the mean of pupils in every option of vocational education in the PISA results is still above 400, the mean in every option in technical education lies above 500 and almost all options in general education have a mean score above 560 (De Meyer et al. 2002). The conclusion should be that almost everyone in secondary education performs well. Also the fact that pupils in special secondary education² were included in the test, together with the large group of top performers, explains the huge variation of the scores in PISA tests.

It should also be denoted that in PISA 2009, the variation of the results was not as high as before because of two effects: the weakest performers did score better results while the mean of the results is in steady decline.

Although 85% of the pupils have a diploma of secondary education is the OECD standard, this percentage has not increased in the last ten years. On the contrary, it has decreased in the last ten years from 88% in 2002 to 85% today. Although the aim of the last two ministers of Education to increase this percentage to 92,5% and despite a lot of measures and flexibilities in order to support weak pupils, still 15% of the pupils leave education without diploma. This group finds it very difficult to get a decent job. In fact, since there is compulsory education until the age of 18, a lot of these pupils are tired of school and just go to school until the day of their 18th birthday without positive intentions.

4.2 Cascade syndrome. Some pupils suffer from the waterfall/cascade syndrome. People still consider the different types of secondary education as different levels and most of the time, parents make their pupils start as high as possible. So a lot of pupils start in general or technical secondary education (88%) while vocational can only attract 12% in the first year of secondary education. In the last two years of secondary

² Pupils with very demanding special needs, such as mental or physical disabilities such that normal education is not considered to be useful, can profit from specialized education in special schools.

school, these percentages are 36% (general), 33% (technical), 2% (arts) and 29% vocational (Vlaamse Overheid 2011). So a lot of pupils were forced in secondary education to drop down. Often these pupils get low confidence in school and have problems with motivation.

4.3 Delay. We have a great number of pupils who have a delay in their educational career. Almost one fifth of all pupils have at least one year delay at the end of primary education, at the end of secondary education this has increased to 35%. Nevertheless there is a big difference in the type of secondary education: at the end of their secondary career about 10% of pupils in general education have a delay. This is 40% for pupils in technical education and up to 60% in vocational education (Van Petegem, Schuermans, 2005). It is clearly an effect due to the cascade syndrome.

4.4 Attracting teachers. The advantage of having well educated and skilled teachers becomes more difficult every year: our teacher training is not at university level (except for teachers in the last two years of secondary school) and teacher training is open for everybody. Often it is chosen as a second choice nowadays, because it is a job with a great job certainty (McKenzie et al. 2004, § 140). Nevertheless we see that young people, who become teachers today, have a smaller cognitive background than ten or twenty years ago. It is no exception that in teacher training students have problems solving the difficult exercises they have to teach to their pupils, certainly for mathematics or have problems talking in French, which is the second language. Often they have a background in technical or vocational secondary education and suffered from bad experiences with mathematics themselves. For most of them, the six hours a week of mathematics is not their favourite six hours: pupils feel this and their cognitive competences for math are decreasing every year by year. There is a steady decline in PISA results for math pupils in general, technical and vocational education, only the pupils in specialized secondary education score better.

So one of the main challenges of the next years will be: how can we attract skilled pupils to the teacher training. And for those who have finished the teacher training, how can we motivate them to become (and stay) a good teacher? E.g. in upper secondary education, most teachers of mathematics do not have a degree in mathematics: they studied engineering, economics, biology, geography. It is very difficult for them to transfer the joy of their subject to the pupils. The reason is simple: there are not enough mathematicians. Mathematicians often choose job with a better salary in financial or ICT companies.

4.5 Responsibility of schools/teachers. The tradition of freedom and autonomy (see § 3.5), starts to show its disadvantages. This has to do with the diminishing authority and knowledge of the teachers but also with the new way of funding schools (see § 5.1). Lots of teachers and schools are giving diplomas with greater ease in order to avoid problems with parents (by law suits) and in the belief that later on this problem will be fixed. Therefore a lot of pupils have problems at the start of the year, since they have not the competences they should have.

Next to that, a teacher's job is assessed mainly by the marks from his students. According to a lot of school's direction, this is the only 'objective measurement' of how well you are teaching. It is no surprise that teachers who give good grades to their pupils score better points in their students' assessments. The result is that teachers tend to focus on supporting pupils' development and neglect assessing

pupils' competences, although they are responsible for both (Bulterman-Bos 2004, chapter 3-4).

4.6 No national tests. A problem which reinforces the one in § 4.5 is the fact that there are no national tests whatsoever. Therefore it is impossible to get a comparison between pupils in different schools. So pupils who get the same diploma of two different schools can have a lot of different competence levels. This is most noticed in transition between primary and secondary and between secondary and higher education. Although according to diplomas and history, pupils are situated in homogeneous groups, it is often the case that in the first year these groups are quite heterogeneous. Therefore a lot of pupils loose one year in order to get in the right level of education (see § 4.3).

4.7 Language. Belgium, especially as the centre of Europe, has become a migration country. Since Dutch is not a widely spread language, a lot of pupils does not speak Dutch at home. Mainly in the large cities this becomes a difficult situation: e.g. in Antwerp over 60% of pupils in primary education are non-native Dutch speakers (Baillieul et al. 2011). There are schools where almost all students are immigrants and where the results in educational assessments are much worse than on average in Flanders. Today, immigrant pupils are placed in a school simply according to their age without specific training for the language.

5. Actions taken by the government and plans for the future

5.1 Actions in 2004-2012. Since 2004, the Flemish minister of Education has given a lot of attention to equal chances (GOK) since the PISA 2003 results (Vlaamse regering, Vandenbroucke F. 2004; Vlaamse regering, Smet P. 2009).

This resulted in a new system of funding schools. Instead of getting money (or better: teacher hours) proportional with the number of pupils, the socioeconomic status of pupils was taken into account. Pupils whose parents' income is low or who do not speak Dutch at home, get extra hours. The difference between pupils can go up to a factor 3. Schools with many of these GOK-pupils have much more teachers for the same amount of pupils.

Another new system, mainly for higher education, is the principle that funding of schools depends on the outcome of their pupils: the school only gets funding for every pupil that passes. This starts from the second year: so when a teacher decides to grade a pupil below 50%, the school will not get any funding for this pupil (proportional with the number of credits for that subject). The philosophy is: once you have passed the first year, the school should provide enough guidance in order to pass every subject in every year.

As mentioned in § 4.1, these action have not increased the number of students getting a diploma in secondary education. On the contrary, level of competences of students are dropping. Most probably, since pupils adjust their study behaviour to the demands of the school which have clearly dropped. As a result, pupils are doing less effort to their studies and even more pupils as before, end up without diploma.

The minister is introducing inclusive education: he plans to get rid of the special secondary education for most pupils who are in there now. He wants every pupil to follow regular secondary education.

5.2 Plan Monard for the future. Inspection teams of mathematics noticed that at the end of primary school the success rate for certain competences of the curriculum was between 60 and 80% (see table 3). On the contrary, after two years of secondary education, this drops for similar competences in math to 30%. In tables 3 and 4, one can verify the big differences between the curricula for numbers in primary school and for numbers/algebra after two years of secondary education. In table 5 the results are further divided into subgroups of pupils according to the type of secondary education they choose: ‘general education 1’ are all pupils in options in general education with Latin in the curriculum, ‘general education 2’ are all pupils in options in general education without Latin in the curriculum. Vocational education was not tested by this math inspection.

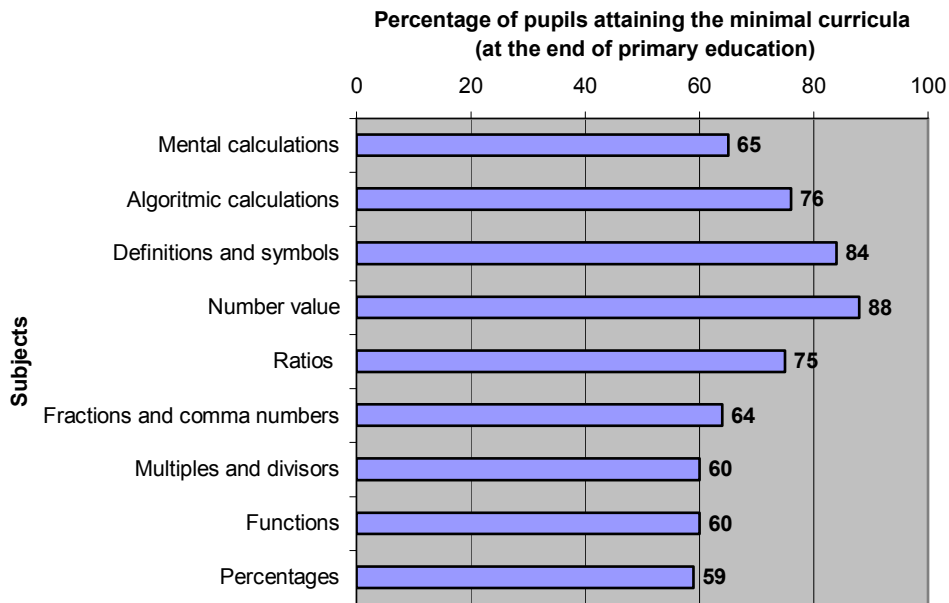


Table 3: extract from the 2009 math inspection in primary education (Vlaamse overheid 2010b)

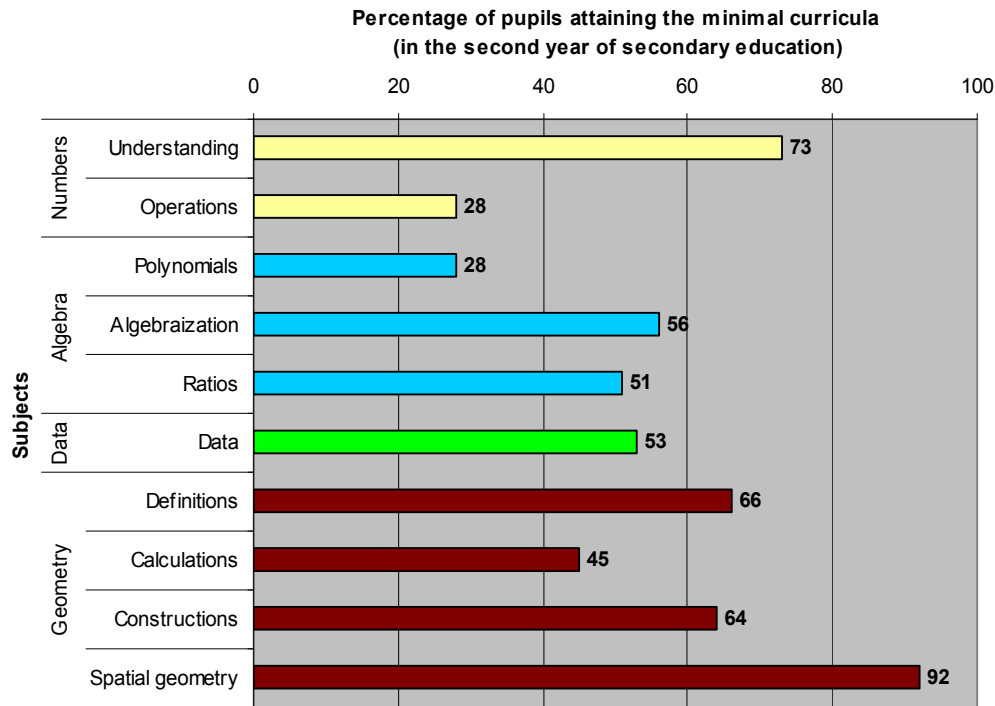


Table 4: extract from the 2009 math inspection in secondary education (Vlaamse overheid 2010a)

Domain	Subject	General education 1 (with Latin)	General education 2 (without Latin)	Technical education
Numbers	Understanding	93	78	53
	Operations	57	30	7
Algebra	Polynomials	58	29	7
	Algebraization	82	58	37
	Ratios	70	59	27
Data	Data	78	58	30
Geometry	Definitions	92	68	45
	Calculations	67	48	24
	Constructions	87	69	42
	Spatial geometry	97	95	84

Table 5: extract from the 2009 math inspection in secondary education (Vlaamse overheid 2010a)

Since similar statistics occurred in tests on other subjects, the politicians decided it was necessary to reform the beginning of the secondary education. In 2009 a group of 15 experts worked out a framework for a major reform of secondary education, called the comity Monard.

The discussion is still going on, the new situation will start in September 2013. The main ideas of the comity can be summarized into four major actions:

1. The four types of secondary education will disappear in order to get rid of the cascade phenomena. The first two years of secondary education will be broad and classes will be heterogeneous with one curriculum for every pupil (26 hours a week). There will be four domains of interest: health and society;

administration and economics; engineering and science; art, culture and languages (although in the latest texts this last domain is split into two different domains). In the first year every pupil will get acquainted with every subject. There will be 4 hours a week dedicated to this. In the second year he will have to choose two of them and get a deeper acquaintance. Finally at the start of the third year of secondary school, so at the age of 14, he will make his definitive choice, although there will remain possibilities to switch.

2. In order to deal with the great number of pupils who get a delay in their educational career, there will be no longer the possibility of certificates B or C (see § 2) in the first two year of secondary education.
3. Introduction of two hours a week of differentiation in secondary education. This will give the possibility for weak pupils to work on the subjects they encounter problems with and for the bright pupils to get two hours of extra curriculum.
4. Instead of changing the teacher every hour, like nowadays in secondary education, the reform intends to have larger blocks with the same teacher and class. This should make the transition from primary to secondary education easier for the pupils and increase their wellbeing.

Since these plans will change the teacher's job, there is also a discussion about the teacher's education schools. Today, there is a bachelor to become a primary school teacher who has to teach every subject, and a bachelor for secondary teachers where one has to choose two subjects to specialize in.

In future plans, this might become

- a bachelor for teachers in the first four years of primary school to teach every subject
- a bachelor for teachers of pupils of age 10-14 (so the last two years of primary education, together with the first two of secondary), to teach all subjects in one interest domain
- a bachelor (or master?) for teachers of pupils of age 14-18 where one has to choose one or two specific subjects to specialize in.

5. Comments on the reform plans

It is clear that the plan of the Monard comity get their ideas from the situation in the Netherlands and in comprehensive education (Herremans 2010). Since the concrete situation is still not clear, the comments are general remarks and questions by the people working in schools.

5.1. Only two hours of differentiation. Is two differentiation hours a week really enough to both challenge good pupils and remediate the weak? Furthermore, the options that are now attracting the best pupils, i.e. options with Latin (see table 5), will almost have to disappear. Latin can only be given in the two differentiation hours. With regards to mathematics: two hours a week will be the new standard, if you want more than this (like the four hours nowadays in general education) this will also be in the two differentiation hours.

5.2. Heterogeneous classes for two more years. It is noticed in the last two years of primary school that there is a big difference between the competences of the pupils, certainly with regards to mathematics and the second language. Is it hence useful to keep these different pupils together for these subjects for two more years (Feys et

al. 2009)? The Monard comity defend the heterogeneous classes, and point to Finland as the example. Nevertheless in countries where comprehensive education is the standard, pupils work until the age of 15 mostly around general subjects, while students in technical and vocational education in Flanders nowadays have already a lot of practical skills and experience at the age of 15. On the other hand, tests in PIRLS and TIMSS (see [22]) point out that the Flanders is not at all performing exceptionally well and seems not to have a large group of top performers. This is different than in PISA tests, suggesting that the first two years of secondary education are very effective. Meanwhile, table 3 suggests that more pupils reach the curriculum at the age of the PIRLS and TIMSS tests.

5.3. *Situation in the Netherlands.* The latest important reform of secondary education in the Netherlands was not successful. The comity Dijsselbloem (Goetheer, van der Vlugt 2008) reported on the drawbacks. One of the main comments was that the reform was inspired and influenced by pedagogical people and publishers, not by teachers. Nevertheless, the Flemish minister wants to introduce a reform very similar to the Netherlands (Herremans 2010). It is also hard to explain why Flanders wants to mimic the Dutch educational system, since in almost all international tests Flemish education scores better than Dutch education.

5.4 *Equal chances.* The conclusion that today's education in Flanders is not good for equal chances is not confirmed by everyone. E.g. in (Hofman et al., 2004) the conclusion is that Flanders has a fairly equity-providing education system. There is discussion about the interpretation of the statistics, but it seems that the inequality is not situated mainly in the beginning of secondary education. At the end of primary school, inequalities are detected in a similar way (Van Damme 2010). People involved in schools suggest that the minister should make more work of dealing with language problems in primary education instead of changing secondary education.

5.5 *Real change?* Will this reform change a lot? For every interest domain there will remain the choice between the options 'preparing for higher education' and 'preparing for the labour market'. This is very similar to the difference in the today system between general and vocational education. The four types of education will disappear, but will the perception of the parents and the labour market change equally: e.g. will options with tend to the general education (such as Latin or math-science) be considered as really the same level as options which tend to technical or vocational education such as construction or hairdressing?

5.6. *Decreasing teachers' involvement.* Teachers are suspicious of the fact that certificates B and C will disappear. They consider it as a very useful tool to point pupils in the right direction. They fear that their involvement will decrease and that learning outcomes will drop if there are no means to redirect or stop pupils that do not meet the minimal curricula. Their criticism can summarized by the concern that "equal chances for everyone" does not mean "equal outcome for everyone".

5.7 *Failure of a previous similar reform (VSO).* In 1970-1989 a renewed secondary education system (VSO) was introduced, and in fact imposed to many schools, without success. This VSO system also tended to heterogeneous classes and comprehensive methodology. Nevertheless parents started to send their children to schools which applied the 'old' education system since the results were better in that

schools. Both the strong and weak pupils suffered from the renewed education system. Teachers in the VSO system stated to follow the textbooks since the curriculum was formulated in a vague manner (Feys et al. 2010). Teachers who witnessed VSO system refer to the plans of Monard as VSO-2, as to denote their concern that these plans are going in the same direction as the VSO system. Furthermore the belief that learning should be exclusively 'activating, interdisciplinary and competence-based' as in the plan Monard, is not general accepted (e.g. Young 2008, Furedi 2009).

6. Conclusion

Although Flemish education performs very well in international tests with regards to learning outcomes, the politicians struggle with the observation (or believe) that the socioeconomic status has a great correlation with the outcome.

The last ten years, there were great attention and investments in order to deal with this observation. Nevertheless, there are no big differences in nowadays statistics when compared to 10 years ago although learning outcomes seems to decrease.

In 2013, the start of secondary education will have a major reform: the four different types, often regarded as different levels, in secondary education will disappear, there will be a one curriculum for every pupil and classes will become heterogeneous until the age of 14.

The focus of the politicians on equal chances with the outcome funding is a concern for a lot of schools. Since schools and teachers still have a great autonomy, the success of the reform will also depend to a great extend of their actions.

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