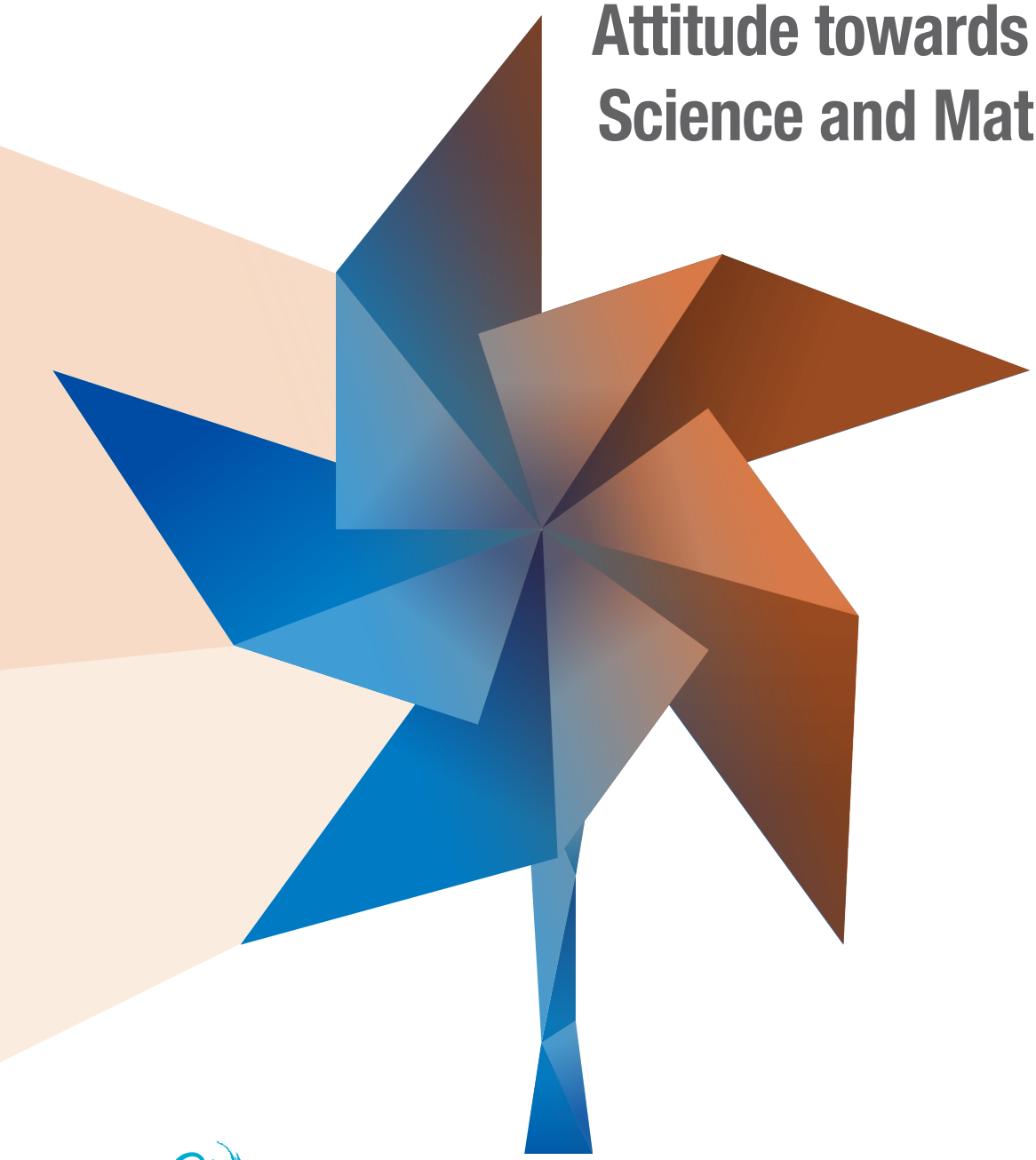
NA-MA POTI

LEARNING MOTIVATION

Attitude towards Learning Science and Mathematics



National Education Institute Slovenia

NA-MA POTI

REPUBLIC OF SLOVENIA
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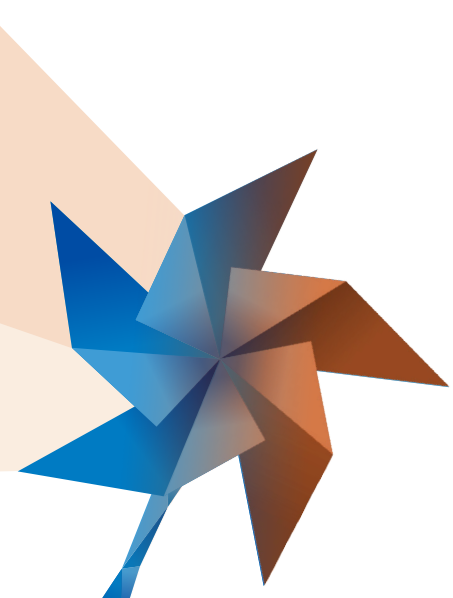
DEFINITION OF ATTITUDES TOWARDS LEARNING

In the broadest sense, motivation is defined as a psychological process that encourages and directs our behaviour (Petri and Govern, 2004; in Kobal Grum, Musek, 2009). Interweaving of different motivational components (physiological processes, needs, goals, emotions, values…) encourages us to start an activity and in it more or less consciously we persist until we reach the goal. When motivational components stimulate learning, we talk about learning motivation. These are mental processes that give impetus to learning, guide it, determine its intensity, duration and quality.

List of abbrevations

LM – learning motivation
NA-MA POTI – Scientific and Mathematical Literacy: The Development of Critical Thinking and Problem-solving



BUILDING BLOCKS OF LEARNING MOTIVATION

1st building block of learning motivation

The learner can coordinate the learning objectives with his/her personal goals and find personal meaning in them,

which he/she demonstrates in the following way:

1.1. experiences/views his/her efforts towards achieving the learning objectives as a personal decision, which is the result of one or several motivational encouragements

1.2. adapts personal goals to his/her abilities and to the decision regarding how much effort he/she is willing to invest in attaining them.

1.3. through his/her way of thinking about learning and knowledge, through his/her attitude towards both, and through his/her behaviour, the learner demonstrates appreciation of both.

2nd building block of learning motivation

The learner can regulate his/her (pleasant and unpleasant) emotions, attention and willpower so that they encourage him/her to attain the objectives successfully,

which he/she demonstrates in the following way:

2.1. has a well-developed emotional self-awareness

2.2. under the given circumstances the learner is able to organize the learning environment and learning method to make learning as pleasant as possible

2.3. can regulate emotions with a negative valence (fear; anger; frustration when encountering obstacles and failure; shame, etc.) so that they guide him/her towards constructive problem solving and overcoming barriers

2.4. can monitor how his/her attention fluctuates while learning and can maintain it

2.5. uses different strategies to activate and maintain willpower

3rd building block of learning motivation

The learner thinks about himself/herself in a way that enables him/her to focus on attaining the learning objectives in a specific learning situation (and not on defending self-worth),

which he/she demonstrates in the following way:

3.1. has a well-developed self-awareness of how he/she thinks in a learning situation

3.2. believes that he/she can attain the learning objective

3.3. believes that progressing towards the planned learning objectives is primarily the result of the quality of his/her decisions about learning

4th building block of learning motivation

The learner uses a social network to learn effectively and to establish or maintain a high level of learning motivation,

which he/she demonstrates in the following way:

4.1. can establish and maintain quality relationships with people

4.2. can establish and maintain a constructive attitude towards authority

4.3. efficiently strives towards common goals when learning in a group

DESCRIPTION OF BUILDING BLOCK/SUB-BUILDING BLOCK	HOW THE LEARNER DEMONSTRATES IT
LM1: The learner can coordinate the learning objectives with his/her personal goals and find personal meaning in them, which he/she demonstrates in the following way:	
LM1.1: Experiences/views his/her efforts towards achieving the learning objectives as a personal decision, which is the result of one or several motivational encouragements.	a) Can derive personal goals from the learning objectives and put them into words; b) In a learning environment the learner reacts by researching, thinking, etc.; c) Uses complex learning strategies, which lead to higher taxonomy levels of knowledge; d) Takes responsibility for his/her learning (e.g. attributes his/her successes and failures to the quality and volume of learning; seeks help when encountering obstacles; looks for critical feedback and takes it into account; objectively evaluates his/her achievements, etc.); e) Independently regulates his/her learning.
MOTIVATIONAL ENCOURAGEMENTS a) Learning circumstances that the learner finds new or unexpected, or under which he/she cannot function properly using the existing knowledge/understanding, trigger curiosity, amazement or cognitive conflict in the learner; b) Sees the attainment of learning objectives as an opportunity for personal growth and development (e.g. the desire "to be big" in a preschool child; noticeable progress on the path towards achieving the objective; realizing his/her life goals, etc.); c) Integrates individual elements of the learning situation with personal experience, or responds to them emotionally; d) Knows his/her areas of interest and is able to see the learning objectives as an opportunity to develop his/her interests; e) Has a (more or less) clear vision of his/her career and can recognize the attainment of learning objectives as milestones on his/her career path; f) Can recognize that the learning objectives will be of use in his/her life; g) The desire to attain the learning objectives stems from the learner's responsible attitude towards nature and society (caring for sustainable development, for the welfare of the social community; to be a "world citizen", etc.).	
LM1.2: Adapts personal goals to his/her abilities and to the decision regarding how much effort he/she is willing to invest in attaining them.	a) Can realistically assess his/her knowledge, his/her strengths and weaknesses; b) Sets concrete, realistically attainable learning objectives (e.g. according to SMART criteria).
LM1.3: Through his/her way of thinking about learning and knowledge, through his/her attitude towards both, and through his/her behaviour, the learner demonstrates appreciation of both.	a) Demonstrates the belief that knowledge and learning are values; b) The learner also proves this with his/her behaviour.

LM2: The learner can regulate his/her (pleasant and unpleasant) emotions, attention and willpower so that they encourage him/her to attain the objectives successfully, which he/she demonstrates in the following way:	
LM2.1: Has a well-developed emotional self-awareness.	a) Can feel (describe in words) the physical changes that accompany the experiencing of emotions under specific circumstances; b) Can understand his/her emotions: put them into words, connect them with his/her needs under specific circumstances and with his/her way of thinking under such circumstances (e.g. can answer the following questions: what are you experiencing, what has upset/frightened you..., what do you need at this moment, etc.); c) Can accept his/her emotions (especially unpleasant ones) as a normal current state in a constantly changing mind (e.g. understands that he/she is currently angry at a friend but that the anger will likely go away; when the learner is experiencing unpleasant emotions, he/she does not view himself/herself negatively – is compassionate towards himself/herself, etc.).
LM2.2: Under the given circumstances the learner is able to organize the learning environment and learning method to make learning as pleasant as possible.	a) Has created an effective learning style, which he/she perceives as pleasant and interesting. Learns that way whenever possible; b) Organizes the learning environment so that he/she feels good in it; c) Is proud of his/her progress/achievement and "celebrates" it in his/her own way.
LM2.3: Can regulate emotions with a negative valence (fear; anger; frustration when encountering obstacles and failure; shame, etc.) so that they guide him/her towards constructive problem solving and overcoming barriers.	a) Sees unpleasant emotions as useful, as a message to oneself: "Take care of yourself!"; b) Understands what triggered the unpleasant emotions and what he/she needs at that moment; c) Can hold back an impulsive reaction: takes the time and space needed to calm down in order to regain control over his/her behaviour; d) Expresses negative emotions in a way that does not hurt others; e) Focuses the energy triggered by unpleasant emotions into constructive (long-term) solving of the problem that had caused them (and not into activities that would temporarily relieve his/her tension or enable an escape from the unpleasant situation).
LM2.4: Can monitor how his/her attention fluctuates while learning and can maintain it.	a) Can "disregard" disruptive stimuli; b) Notices as soon as his/her attention is diverted, and steers it back to the activity, which will lead to attaining the set objectives; c) Is aware of what is going on in his/her mind and can therefore discover the causes of attention problems at that moment; d) Uses strategies that help to maintain attention while learning (e.g. organizing the learning environment – removing disruptive factors, choosing learning strategies that stimulate attention); e) Can recognize when he/she is tired and can organize an appropriate break.
LM2.5: Uses different strategies to activate and maintain willpower.	a) Can start an activity, persist until the goal is achieved, and persevere despite obstacles; b) Knows different strategies to maintain willpower and uses them.

LM3: The learner thinks about himself/herself in a way that enables him/her to focus on attaining the learning objectives in a specific learning situation (and not on defending self-worth), which he/she demonstrates in the following way:	
LM3.1: Has a well-developed self-awareness of how he/she thinks in a learning situation.	a) In a specific learning situation, the learner can consciously think about himself/herself, about the circumstances, and about the learning objectives (e.g. the "I can" feeling); b) Is aware of his/her strengths and weaknesses (prior knowledge, learning style, cognitive abilities, etc.); c) Knows his/her opinions and values, which he/she has adopted from the cultural environment.
LM3.2: Believes that he/she can attain the learning objective.	a) Sets to work eagerly; b) Uses effective learning strategies and adapts them to the characteristics of each learning objective; c) Guides his/her learning flexibly (e.g. when discovering that the chosen path does not lead to the goal, he/she finds another); d) Perseveres when encountering obstacles and temporary failures.
LM3.3: Believes that progressing towards the planned learning objectives is primarily the result of the quality of his/her decisions about learning.	a) Believes that with hard work and by choosing the right learning and thinking methods, he/she can progress; b) Attributes his/her success/failure to factors that can be influenced (e.g. volume and quality of learning); c) Tackles more difficult learning challenges confidently and is willing to risk making a mistake; d) While learning, the learner actively searches for and makes use of all possible sources of information and support; e) Sees mistakes and temporary failures as an opportunity to learn and strengthen his/her abilities; f) Persists in practising skills, consolidating knowledge and other repetitive learning processes, because that way he/she can monitor progress in attaining the set objectives; g) Looks for feedback about his/her knowledge and learning method, and takes it into account; h) Is self-critical. Failure encourages him/her to analyse the causes, to change the learning method, to increase the effort, etc.; i) If needed, he/she finds help and uses it constructively (to deepen understanding which leads to later independence in attaining the learning objectives).

LM4: The learner uses a social network to learn effectively and to establish or maintain a high level of learning motivation, which he/she demonstrates in the following way:	
LM4.1: Can establish and maintain quality relationships with people.	a) Has a respectful attitude towards others (especially towards those who are different); b) Can accept help and help another; c) Responds compassionately to another's distress; d) Asserts his/her desires and needs constructively (e.g. conflict resolution); e) Can reject other people's expectations that he/she finds unacceptable; f) Can establish friendly relations.
LM4.2: Can establish and maintain a constructive attitude towards authority.	a) Sees the teacher as a source of support and help; b) Follows the teacher's guidance while preserving autonomy (e.g. follows instructions because they seem sensible); c) Strives towards maximum independence in thought and action (gives encouragement, expresses opinions, makes critical assessments, etc.).
LM4.3: Efficiently strives towards common goals when in a group.	a) Takes on and carries out tasks responsibly; b) Cooperates with others: listens, gives suggestions, analyses and looks for common solutions; c) Fosters good relations within the group and makes sure all the members feel good.

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