



Teaching for Growth mindset in higher education

Continuous professional course curriculum

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Introduction

This continuous professional course curriculum, aimed to higher education teachers, was developed in the partnership of the Erasmus+ Growthminds project (2020-2022).

The purpose of the course, based on this curriculum, is to support tertiary level teachers in providing growth mindset-supporting learning environment for their students. The course may also support teachers in developing their own growth mindset.

Curriculum structures 40 hours of face-to-face training activities and 50 hours of self-directed online learning activities. Face to face training equips participants with a knowledge on central concepts of the mindset theory and elements of teaching that support growth mindset in students. The combination of lecture, group discussions and practical group activities in face-to-face part of the course allow for achievement of deeper learning goals. Through the Erasmus+ Growthminds project platform (<http://www.unigrowthminds.eu/>) participants can access web material for self-directed online learning activities. Those activities are prepared for each module, and provide further support for participants to widen the knowledge, meet learning objectives of the course and applicate growth mindset theory for own professional use and development.

First two models of the course provide theoretical basis - the first module about the mindset theory and the second module about the nature of brains and intelligence. Theoretical knowledge represents an important basis for understanding the logic behind activities, presented in modules 3, 4, 5 and 6.

Face-to-face parts of modules 1, 2, 3 and 4 are intended for the duration of one day (8 teaching hours) each, while modules 5 and 6 are to be conducted in the same day (4 teaching hours each).

In the appendix of this document one can find presentation slides, that can be used for face-to-face part of the course. Self-directed online learning activities can be found on the project website (<http://www.unigrowthminds.eu/>)

Module 1: Growth Mindset Theory in Higher education

Purpose of the module:

First course module is an introduction to the concept of the mindset. The module supports participants to gain knowledge and understanding of the concept of mindset on the deeper level, by connecting the theoretical underpinnings with educators actual teaching experiences and beliefs. The main aim of the module is for participants to understand the concept of mindset and differences between fixed and growth mindset. Trainers present to the participants, how mindset affect learning, academic motivation and academic achievements. Module covers both, the theoretical underpinnings as well as empirical findings on the correlation between mindset and various academic outcomes. Participants are trained to understand differences between fixed and growth mindset, and to be able to recognize different mindset from the verbal and behavior cues of their students. Teachers have also a possibility to reflect their own mindset in different areas (e.g. intelligence, math abilities, motor abilities etc.).

Further, the relevance of the mindset for the higher education environment is presented, as well as characteristics of the classroom climate, that support growth mindset in students.

At the end of this module participants will be able to:

- define the concept of mindset
- describe theoretical differences between growth and fixed mindset
- recognize thoughts and behaviors, related to fixed or growth mindset in oneself and in their students
- explain how and why students' mindset effects students' academic motivation and achievement
- explain how and why teacher's mindset effects teacher's practices
- make connections between their previous teaching experiences and their mindset
- recognize and develop characteristics of the class climate that support growth mindset
- reflect on their own beliefs regarding the nature of abilities, importance of effort and perseverance, meaning of failures, attitudes towards mistakes...
- become self-aware of own mindset about different abilities

Content of the module:

Mindset Theory

- Mindset
- Fixed and Growth mindset
- Academic motivation and academic achievements
- Common misconceptions about mindset

Mindset and higher education

- Teachers' mindsets (intelligence, creativity, math skills, teaching abilities...)
- Higher education students' mindset
 - Development
 - Behavior

Mindset and higher education teaching

- Elements of teaching, relevant for GM
- GM-supportive class climate
 - Challenging
 - Disciplined
 - Nurturing

Teaching methods and activities

Face-to-face learning:

- lecture
- group discussions
- work in groups

Self – directed online learning:

- multimedia
- quizzes
- self-assessment

Resources

- Dweck, C. (2014). Teachers' Mindsets: "Every Student has Something to Teach Me": Feeling overwhelmed? Where did your natural teaching talent go? Try pairing a growth mindset with reasonable goals, patience, and reflection instead. It's time to get gritty and be a better teacher. *Educational Horizons*, 93(2).
- Dweck, C. (2017a). *Mindset – Updated Edition: Changing The Way You think To Fulfil Your Potential*. London: Robinson.
- Dweck, C. (2017b). The Journey to Children's Mindsets – and Beyond. *Child Development Perspectives*, 11(2), 139-144.
- Haimovitz, K. in Dweck, C. (2017). The Origins of Children's growth and Fixed Mindsets: New Research and New Proposal. *Child Development*, 88(6), 1849-1859.
- Heyman, G.D., Dweck, C.S. & Cain, K.M. (1992). Young Children's Vulnerability to Self-Blame and Helplessness: Relationship to Beliefs about Goodness. *Child Development*, 63(2), 401-415.
- Limeri, L. B. et al. (2020). Growing a Growth Mindset: Characterizing How and Why Undergraduate Students' Mindsets Change. *International Journal of STEM Education*, 7(1).
- MacDonell Mesler, R., Corbin, C. M. & Harker Martin, B. (2021). Teacher mindset is associated with development of students' growth mindset. *Journal of Applied Developmental Psychology*, 76.
- Yeager, D. & Dweck, C. (2020). What Can Be Learned from Growth Mindset Controversies? *American Psychologist*, 75(9), 1269-1284.

Module 2: On the nature of brains and intelligence

Purpose of the module:

People with growth mindset perceive intelligence as malleable characteristics and the process of learning to a great extent as a controllable process.

The structure of intelligence. The malleability or non-malleability of basic intellectual skills. The effect of genetics and environment on intelligence. All those remain controversial topics in psychology, without any conclusive findings. However, one of the possible factors, contributing to mindset formation, is a formal knowledge that people have on those concepts (Limeri et al. 2020).

In the second module of the course higher education educators are presented with the basic theoretical knowledge on the concept of intelligence (definition, structure, types, measurement, the meaning of IQ). In this module conceptual distinctions between different models of the intelligence are addressed at first, but later trainers show how and to what extent those concepts are related.

Further in this module participants are introduced to the processes of neuroplasticity and brain development, to highlight that major changes can and do occur also in the brain of adults. Learning on neuroplasticity is believed to be a very successful intervention for growth mindset interventions.

This module includes both, a neurocognitive and cognitive perspective of the intelligence and learning. How intelligence is related to brain functioning and learning/memory processes is presented, as well as the complex and intertwined role of genetics and environment/ experiences for the development of brains and intelligence.

Profound theoretical knowledge gained in this module allow educators to better understand the nature of intelligence, the importance of the environment and experiences for intellectual development, the process of storing information into memory and neuroplasticity. After this module teachers are equipped with knowledge to provide basic information about those concepts to students and also to become aware of their own mindset regarding the nature of intelligence.

At the end of this module participants will be able to:

- understand the continuing processes of maturation of brains after the birth

- know the concept of the neuroplasticity
- understand the structure of psychometric intelligence and how it is measured
- know different types and models of intelligence
- understand the role of experiences, learning, education and environment in the development of the brains and intellectual abilities
- recognize the intelligence as only one of the predictors of the academic success
- understand how human memory works (Atkinson and Shiffrin's model of human memory is presented)
- provide basic information regarding the neuroplasticity to students
- critically think about the role of genetics and environment for intelligence development
- reflect on their understanding on intelligence as a (non)malleable characteristics

Content of the module:

Brain development after the birth: the processes of maturation and learning

- Brain maturation
- Role of experiences for brain development

Brain plasticity

- Definition
- 3 types of neuroplasticity

Intelligence:

- Definition
- One, two... or more of them?
 - Psychometrical models of intelligence: general intelligence; crystalized and fluid intelligence; CHC model of intelligence
 - Broader models: analytical, creative and practical intelligence, multiple intelligence, emotional intelligence
- Academic achievement: intelligence and other predictors
- How malleable is intelligence really?

Memory and learning

- Relationship between memory and learning
- Encoding, storage and retrieval
- A multi-store model of memory by Atkinson and Shiffrin (1975)

Teaching methods and activities

Face-to-face learning:

- lecture
- group discussions
- work in groups

Self – directed online learning:

- multimedia
- quizzes
- self-assessment

Resources

- British Neuroscience Association (2014). Prvi koraki v nevroznanost, znanost o možganih [prevedli Jure Bon ... et al.] – 2. dopolnjena izdaja. Ljubljana : Sinapsa, slovensko društvo za nevroznanost. Accessible: <https://www.sinapsa.org/radovedni/media/priponke/a317-Nevroznanost-2014.pdf>
- Blakemore S. & Frith, U. (2005). *The learning brain. Lessons for education*. Malden: Blackwell Publishing.
- Goldstein, S, Princiotta, D. & J. A. Naglieri (2015). *Handbook of intelligence*. Springer
- Kania, B. F., Wrońska, D., & Zięba, D. (2017). Introduction to neural plasticity mechanism. *Journal of Behavioral and Brain Science*, 7(2), 41-49. 2
- Limeri, L.B. et al (2020). Growing a growth mindset: characterizing how and why undergraduate students' mindsets change. *International Journal of STEM Education*, 7(35).
- Maguire, E. A., Gadian, D. G., Johnsrude, I. S., Good, C. D., Ashburner, J., Frackowiak, R. S., & Frith, C. D. (2000). Navigation-related structural change in the hippocampi of taxi drivers. *Proceedings of the National Academy of Sciences*, 97(8), 4398-4403.
- Pascual-Leone, A. (2001). The brain that plays music and is changed by it. *Annals of the New York Academy of Sciences*, 930(1), 315-329.

Module 3: Growth Mindset Language

Purpose of the module:

Until now participants of the course already possess a broad theoretical knowledge on the mindset theory and how students with growth minds think and behave. Module 3 is of more practical and interactive nature. It is aimed at developing teachers communication skills. While lecturing, giving non-formal feedback, expressing expectations, mentoring, encouraging or having one-on-one conversations with students teachers use expressions, comments and praises that can, if formed in certain way, support the development of growth mindset in students. During activities course participants reflect own language patterns and try to learn to form different language patterns, more consistent with the growth mindset thinking. In this module university teachers also practice how they can integrate the knowledge they gained on brain plasticity and the nature of intelligence into their communication with students.

At the end of this module participants will be able to:

- raise awareness how they reflect their mindset through their everyday language patterns
- understand the difference between labelling students and focusing on learning process
- recognize how educators' expectations shape students' motivation, effort and mindset
- understand the role of positive self-talk in developing growth mindset
- recognize different forms of feedback in relation to mindset
- use language patterns which supports the growth mindset of students
- frame mistakes, failures, effort, and learning strategies into growth mindset framework
- practice process-oriented feedback
- remind students about the connection between growth mindset and learning success
- encourage students with examples of positive self-talk

Content of the module:

- Growth mindset language patterns
- From labelling to learning process
- Communicating high expectations to all students
- Growth mindset feedback
- Growth mindset framing

- Positive self-talk
- Brain growth conversation in teaching practice

Teaching methods and activities

Face-to-face learning

- Lecture
- discussion
- quizzes
- group activities
- peer coaching

Self-directed online learning

- multimedia
- quizzes
- self-assessment

Resources

- Blanchette Sarrasin et al. (2018). Effects of teaching the concept of neuroplasticity to induce a growth mindset on motivation, achievement, and brain activity: A meta-analysis. *Trends in Neuroscience and Education 12*: 22–31.
- Limeri, L.B. et al (2020). Growing a growth mindset: characterizing how and why undergraduate students' mindsets change. *International Journal of STEM Education*, 7(35).
- MindsetWorks (2012-2016). Growth mindset framing. Accessible: <https://www.mindsetworks.com/websitemedia/resources/growth-mindset-framing-tool.pdf>.
- MindsetWorks (2012-2016). Growth mindset feedback. Accessible: <https://www.mindsetworks.com/websitemedia/resources/growth-mindset-feedback-tool.pdf>
- Robinson, C. (2017). Growth mindset in the classroom. *Science Scope 41*(2): 18-21. DOI: <https://www.jstor.org/stable/26387192>.

Module 4: Growth Mindset Tasks

Purpose of the module:

In this module participants learn what makes a learning activities or tasks growth mindset-supportive. Eight tasks' elements are thoroughly presented by trainer and put in practice by participants. A large part of face-to-face part is dedicated to preparing a practical activity in which participants are supported to create actual tasks for their professional use, trying to address as many growth mindset elements as possible. The module provides an opportunity to reflect and self-assess tasks preparation and share experiences among colleagues on task and teaching strategies, supporting growth mindset.

At the end of this module participants will be able to:

- recognize which tasks support a growth mindset of students
- understand what exactly benefits students' growth mindset in specific tasks
- understand the role of mistakes, deliberate practice, challenges, desirable difficulty, choice, learning goals, step-by-step learning, and multiple exposure in relation to growth mindset
- design learning activities which support growth mindset of students
- analyze learning activities and tasks for students from the perspective of growth mindset
- use growth mindset elements in planning learning activities and tasks for students

Content of the module:

Designing learning activities and tasks

Elements of growth mindset in learning activities and tasks for students:

- Mistakes
- Deliberate practice
- Challenges
- Desirable difficulty
- Choice
- Learning goals
- Step-by-step learning
- Multiple exposure

Examples of tasks

Teaching methods and activities

Face-to-face learning

- Lecture
- discussion
- group activities

Self-directed online learning

- multimedia
- self-assessment

Resources

- Dweck, C. (2017). *Mindset – Updated Edition: Changing The Way You think To Fulfil Your Potential*. London: Robinson.
- Ericsson K. A. & Harwell K. W. (2019). Deliberate Practice and Proposed Limits on the Effects of Practice on the Acquisition of Expert Performance: Why the Original Definition Matters and Recommendations for Future Research. *Frontiers in Psychology 10* DOI: 10.3389/fpsyg.2019.02396.
- Jaffe, E. (2020). Mindset in the Classroom: Changing the Way Students See Themselves in Mathematics and Beyond. *The Clearing House: A Journal of Educational Strategies, Issues and Ideas*, 93(5): 255-263, DOI: 10.1080/00098655.2020.1802215.

Module 5: Assessment and Growth mindset

Purpose of the module:

In this module participants learn how assessment processes should be designed in order to support growth mindset. Participants are presented with different forms of assessment. A special attention is provided to a formative assessment, the assessment, most resembling the growth mindset philosophy. The importance of diagnostic specific and timely feedback is highlighted. Further, the role of internal and external motivators in different assessment practices are presented on the basis of the self-determination theory by Deci and Ryan. Participants are introduced to several assessment strategies and examples that support growth mindset. Some of the assessment strategies are conducted during the face-to-face interaction. Participants will also reflect on their current assessment methods and possibilities to apply new knowledge about GM-supportive assessment into their teaching practice.

At the end of the module participants will be able to:

- recall different forms of assessment and their functions
- know which assessment forms and strategies support growth mindset and the process of learning
- understand the role of intrinsic and extrinsic motivators for growth mindset
- use assessment methods that support growth mindset and learning process (e.g. formative assessment strategies, self-testing etc.)
- support students overcoming the fear of failing and guessing during learning
- provide intrinsic additionally to extrinsic rewards
- form growth-mindset oriented feedback, praises and criticism
- set high goals and standards and stay persistent in evaluating them

Content of the module:

Forms of assessment

- Diagnostic, formative and summative assessment
- Formative assessment

Assessment and academic motivation

- Internal and external motivation
- Self-determination theory

Assessment for growth mindset

- Focusing on process: questions during teaching, diagnostic feedback
- Intrinsic rewards: self-testing, mock exams, choice of assessment, setting and sticking to high standards...
- Extrinsic rewards/punishments: grades, praises and critics

Teaching methods and activities

Face-to-face learning

- Lecture
- discussion
- group activities

Self-directed online learning

- multimedia
- self-assessment

Resources

- Jackel, B., Pearce, J., Radloff, A. and Edwards, D. (2017). Assessment and Feedback in Higher Education. A review of literature for the Higher Education Academy. Higher Education Academy. https://s3.eu-west-2.amazonaws.com/assets.creode.advancehe-document-manager/documents/hea/private/hub/download/acer_assessment_1568037358.pdf
- McConlogue, T. (2020). Assessment and Feedback in Higher Education: A Guide for Teachers. UCL Press. <https://doi.org/10.2307/j.ctv13xprqb>
- Sambell, Kay (2016) Assessment and feedback in higher education: considerable room for improvement? *Student Engagement in Higher Education*, 1 (1).
- Shute, V. J. (2008). Focus on formative feedback. *Review of Educational Research*, 78(1), 153-189.
- William, D. (2011). What is assessment for learning? *Studies in Educational Evaluation*, 37(1), 3-14.

Module 6: Growth Mindset Reflection

Purpose of the module:

The main goal of the last module is to equip university educators with knowledge and competencies to support students in their reflection of the learning process. Focusing on the learning process instead of the learning outcome is one of the basic ideas of the growth mindset. In this module several activities are presented and practiced which can be adapted by teachers in order to support students reflection about their own learning process. After finishing this module teachers will be able to support students in recognising that struggle is a normal part of the learning process, support them to observe own progress and learning strategies that they use. Whit such activities they support different aspects of growth mindset in students.

At the very end of the course participants reflect about challenges regarding the actual implementation of the growth mindset principles into theirs' teaching. Participants discuss with others which challenges present biggest obstacles and brainstorm how to overcome those obstacles. Participants prepare individual action plan for implementing growth mindset into their actual teaching practice.

At the end of the module participants will be able to:

- Support students in making connections between mindset and perceiving the struggle and efforts during learning
- understands how to adequately measure progress
- know about existing learning strategies and differences between them
- guide students to reflect on struggling experiences and the meaning of effort, trying different learning strategies...
- support students to monitor their progress
- guide students to reflect on their learning process (e.g. use of learning strategies, motivation etc.)

Content of the module:

Student's reflection:

- Struggling experiences

- Monitoring progress in goal acquisition
- Student's learning process

Teacher's reflection:

- Challenges in implementing GM in the teaching practice
- Individual action plan

Face-to-face learning

- Lecture
- Discussion
- storytelling
- group activities

Self-directed online learning

- multimedia

Resources

- Dweck, C. (2017a). *Mindset – Updated Edition: Changing The Way You think To Fulfil Your Potential*. London: Robinson.
- Dunlosky, J., Rawson, K. A., Marsh, E. J., Nathan, M. J., & Willingham, D. T. (2013). Improving students' learning with effective learning techniques: Promising directions from cognitive and educational psychology. *Psychological Science in the Public Interest*, 14, 4–58.
- Pečjak, S. in Gradišar, A. (2012). *Bralne učne strategije. 2 razširjena in dopolnjena izdaja*. Ljubljana: Zavod Republike Slovenije za šolstvo.
- Seli, H. in Dembo, M. H. (2020). *Motivation and learning strategies for college success : a focus on self-regulated learning*. 6th edition. New York: Routledge.