

# Flipped Assessment

DASERA conference, 25. November 2020

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Marika Toivola  
**FLIPPED  
ASSESSMENT**

A Leap towards  
Assessment for Learning



## What is the difference between Flipped Learning and so-called traditional teaching?

- For me, traditional teaching refers to teacher-led teaching in which the teacher goes through a subject's topic with the whole class and progresses at the pace set by the teacher. At the heart of it is the idea that a teacher fulfils his or her duty as a teacher by giving everyone the same opportunity to learn everything.
- Flipped Learning is a student-centred learning culture, which goals in addition to learning are to increase student's positive image of oneself as a learner and self-regulation. Learning is viewed in terms of individual student abilities, not the same for everyone. In a heterogeneous student group, Flipped Learning will inevitably lead to a situation where not everyone learns everything.



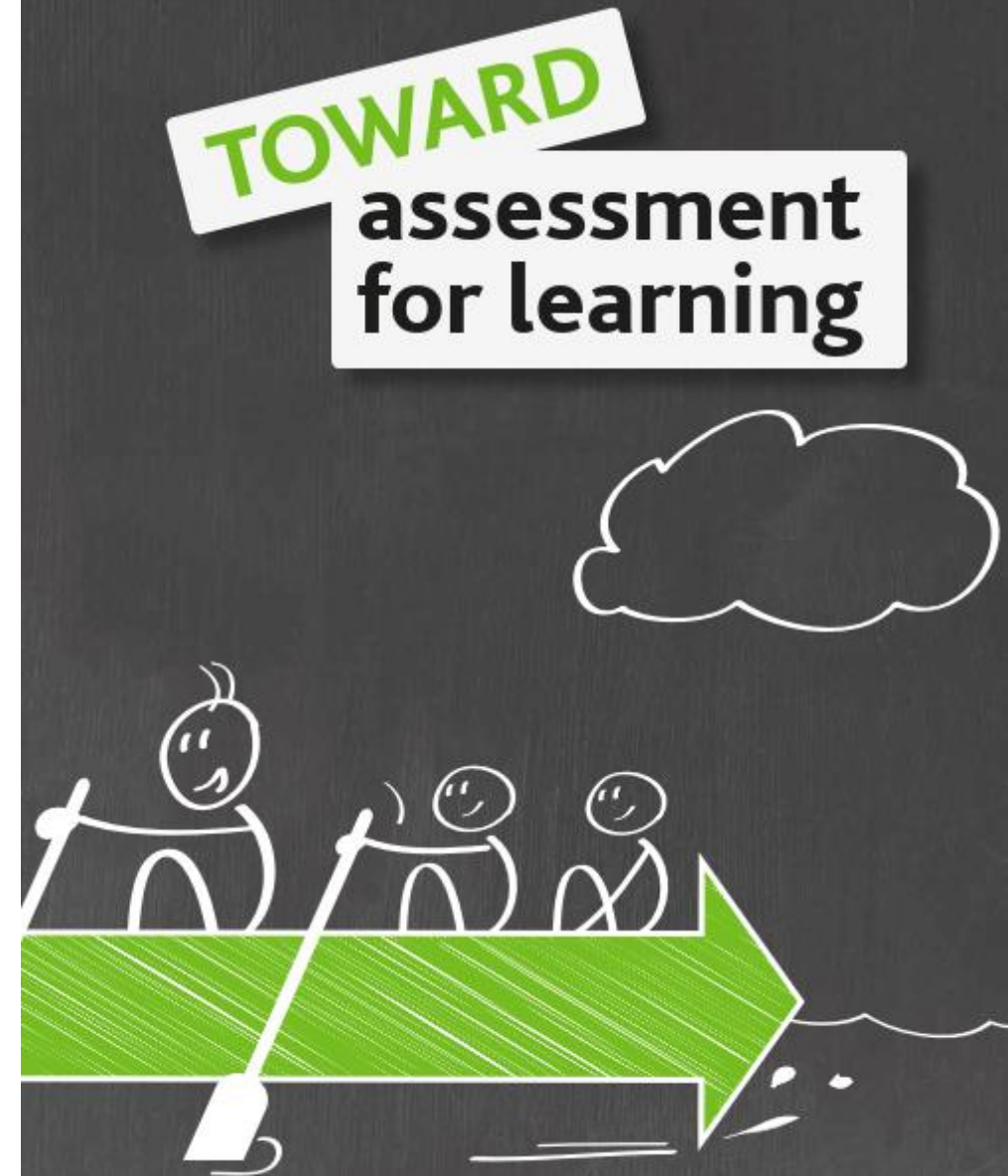
*“We need to prevent teachers from doing good things, to give them time to do even better things.”*

Q&A with Dylan Wiliam at Embedding  
Formative Assessment SSAT/EEF  
Celebration Event



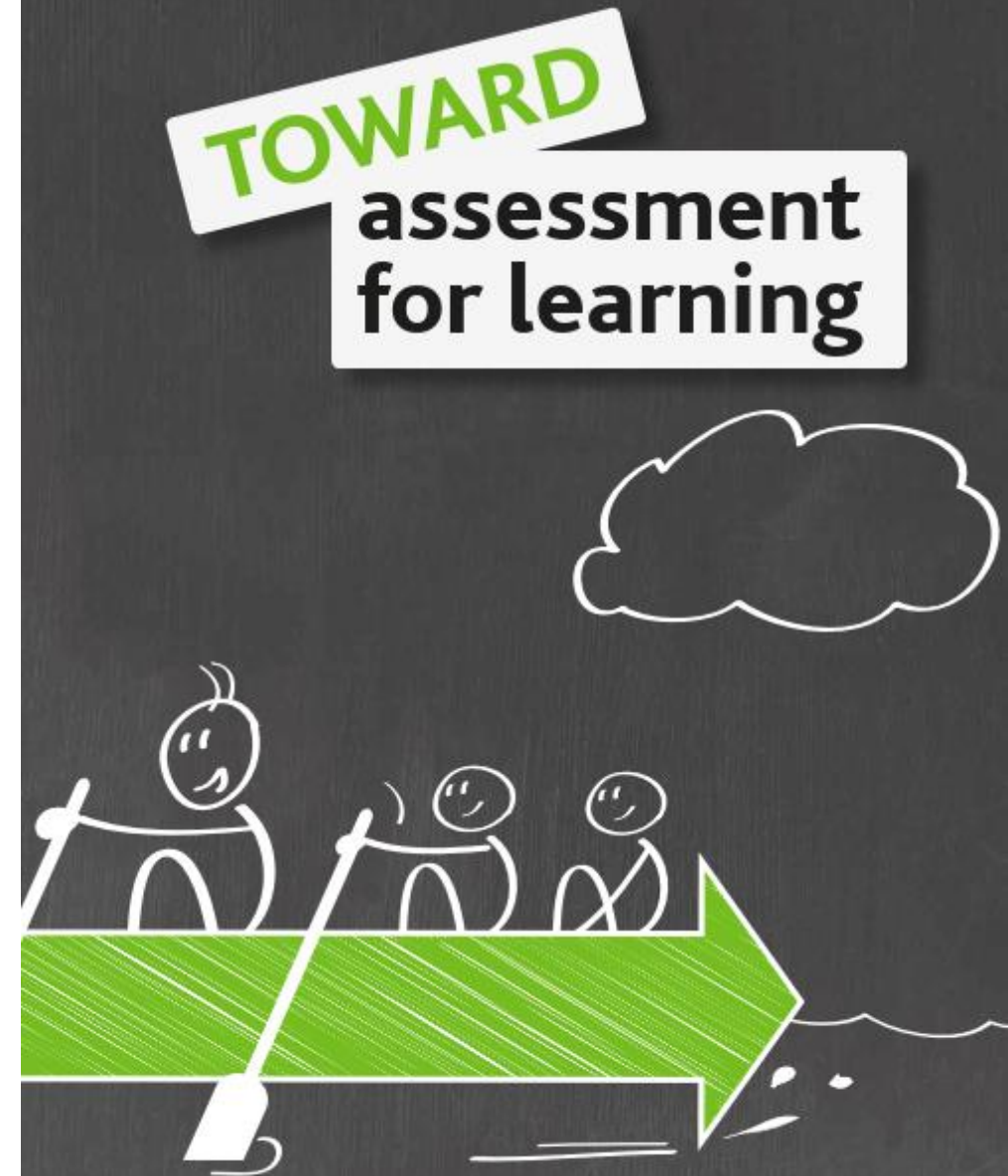
## A critique of the way things are ...

- I felt powerless in the front of students right not to study. In Finland, a student can fail one-third of all upper secondary school mathematics courses and can still receive a graduation diploma. I realized that I can fight against this laziness only by stopping make summative assessment (final course exams).
- I realized that I have ended up to play a ‘game called school’ with students. In this game, the information memorized just before the exam is vomited onto the test paper. Despite the fact that information put into short-term memory quickly goes away, I as a teacher saved the ‘knowledge’ into bank like a deposit until it is time to give grades on the semester certificate.



### **A critique of the way things are from the wider perspective ...**

- A Finnish longitudinal study, in which the same Finnish students were studied from third grade to the end of upper secondary or vocational school, reveal that the time students have completed twelve years of school, 4 % of students are mathematical proficient at the 2nd grade level and up to 18 % at 5th grade level or lower (Metsämuuronen, 2017).
- If nearly one-fifth of Finnish students can progress from one grade to the next without learning anything, the teachers' evaluation methods cannot be ethically acceptable!



*“Assessment: The Silent Killer of Learning”*  
- Eric Mazur, Physics professor at Harvard University



Too often, when we talk about formative assessment we are not really talking about it. One of the major problems in implementing formative assessment is its misunderstood intentions. Formative assessment is for learning, not for the judgment of learning. The goodness of formative assessment is not measured by how well it measures a student's competence, but by the impact that assessment has on a student's learning. It may not be possible to directly measure this impact, but it is reflected in how the student experiences their learning, their sense of social cohesion in the learning collaboration, and how well they can take on responsibility for their learning. Assessment for learning focuses on the core of the pedagogical task of assessment. It is concerned with responsible teaching, keeping the learning on track, and helping the student to achieve their goals.









<http://www.avoinoppikirja.fi/mat-ylakoulu>

Avoim matematiikka 7.lk, osio 1 (PDF)	Avoim matematiikka 7.lk, osio 2 (PDF)	Avoim matematiikka 7.lk, osio 3 (PDF)
Avoim matematiikka 8.lk, osio 1 (PDF)	Avoim matematiikka 8.lk, osio 2 (PDF)	Avoim matematiikka 8.lk, osio 3 (PDF)
Avoim matematiikka 9.lk, osio 1 (PDF)	Avoim matematiikka 9.lk, osio 2 (PDF)	Avoim matematiikka 9.lk, osio 3 (PDF)
Avoim matematiikka, Tilastoja ja todennäköisyyksiä (PDF)		

“*Avoim Matematiikka*” follow the Finnish secondary school curriculum and consists of ten open-course math textbooks, which I have made with Mrs Tiina Härkönen. The textbooks are published with CC-BY license and made for flipped learning. In total, we have produced more than 1,600 pages of text and more than 4,000 assignments. Everyone can load, use and edit books for free.

The students differentiate their learning with three different level exercises: the ground level, intermediate, and advanced. Starting from the seventh grade (age 13), the material includes old, brief mathematics university entrance exam assignments (meant for students age 18).

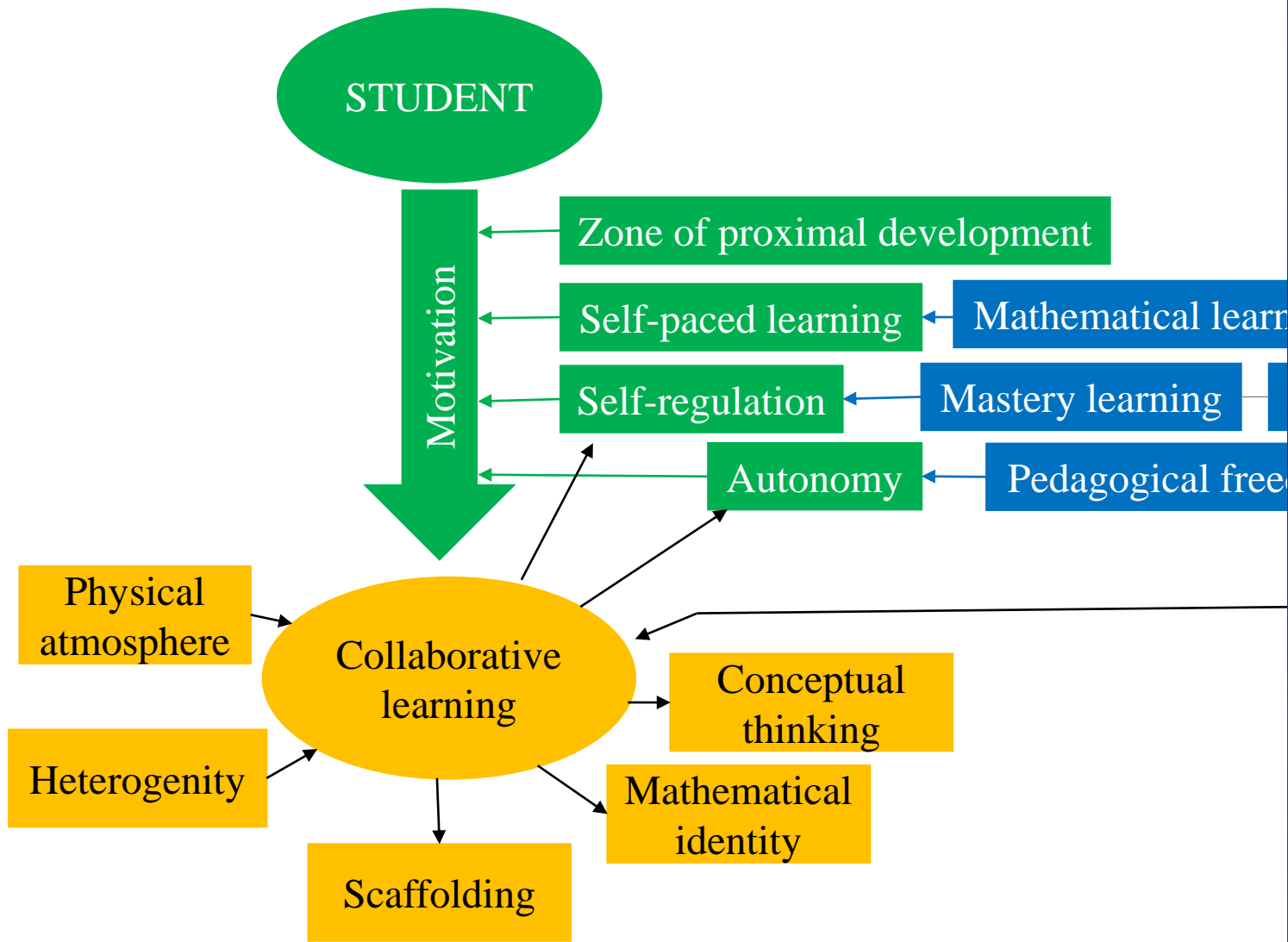
I try to create learning culture where the learning mathematics is differentiated, self-paced and looks the same despite the level of learning: *you challenge yourself, make mistakes, ask questions, and interact with others.*

**Self-regulation is not a means of education,  
but an objective set for education!**

**GROWTH**

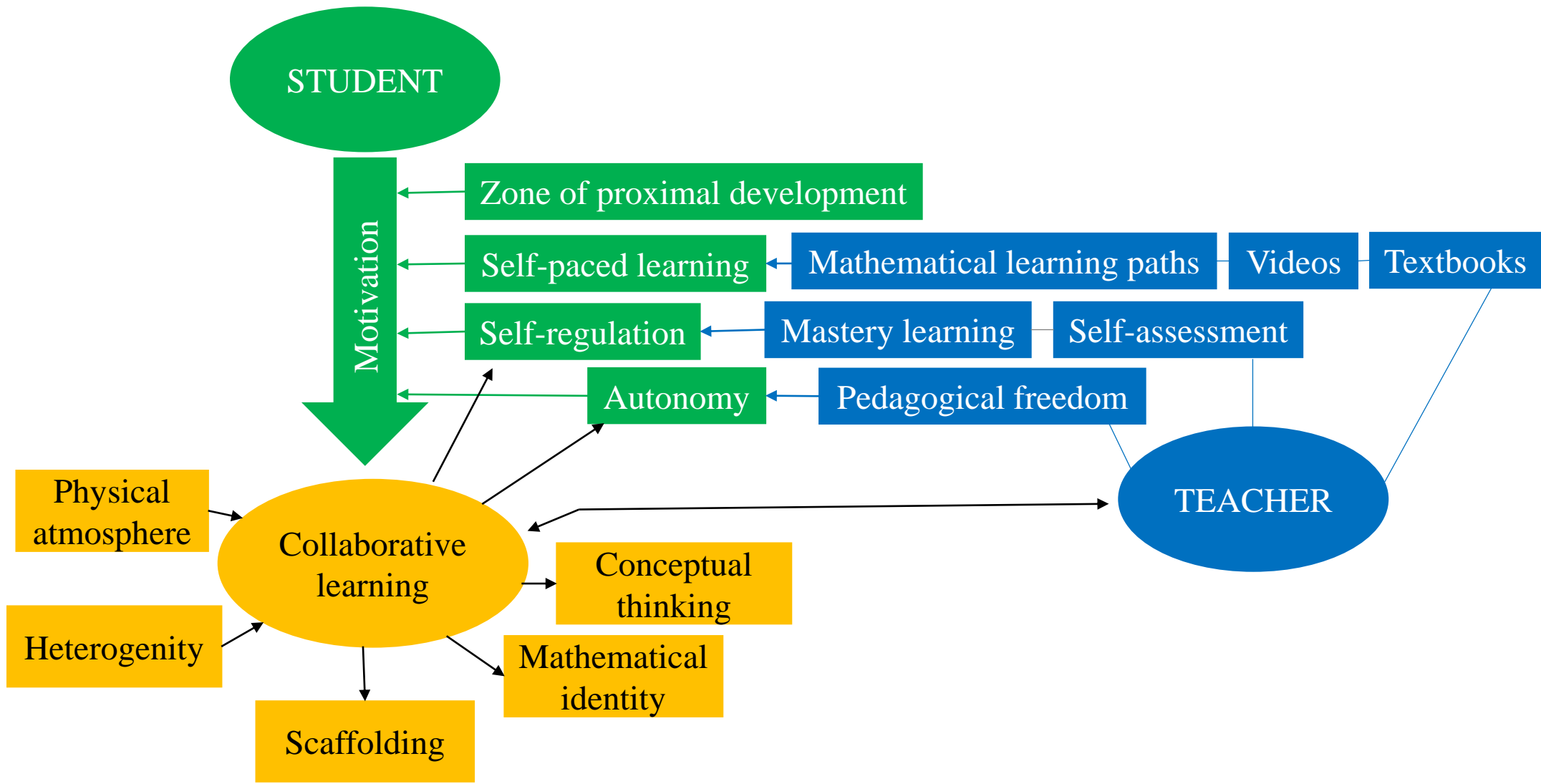
**towards  
self-regulation**



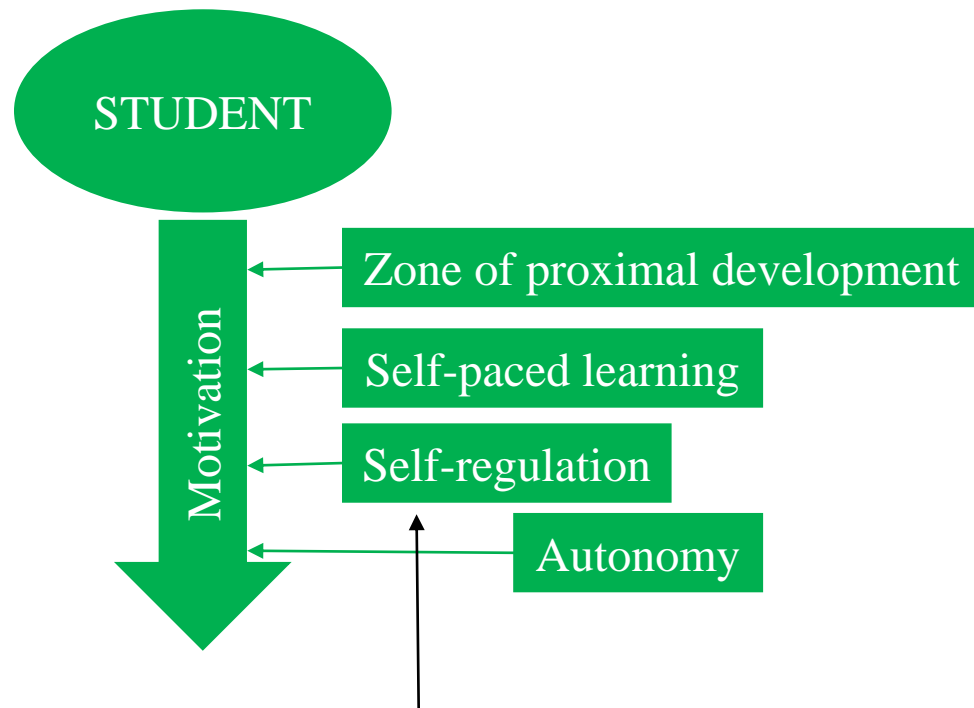


Toivola, M. & Silfverberg, H. (2016). The Espoused Theory of Action of an flipped learning. *13th International Congress on Mathematical Education (ICME)*.



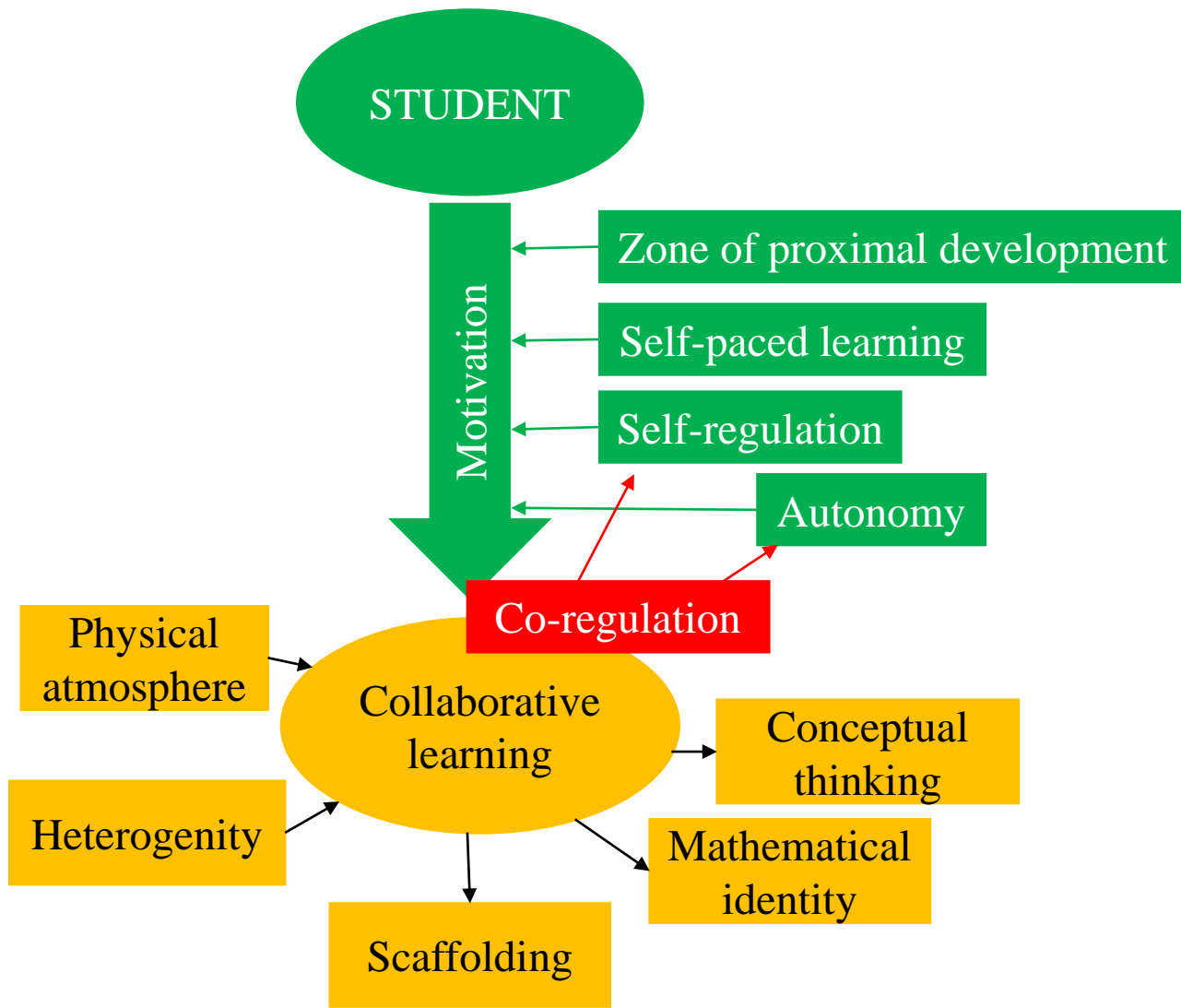


Toivola, M. & Silverberg, H. (2016). The Espoused Theory of Action of an Expert Mathematics Teacher Using Flipped learning. *13th International Congress on Mathematical Education (ICME)*. Hamburg.



When students are given the freedom to take *the ownership of their learning*, supporting students' *self-regulation* will become one of the teacher's key concrete targets.

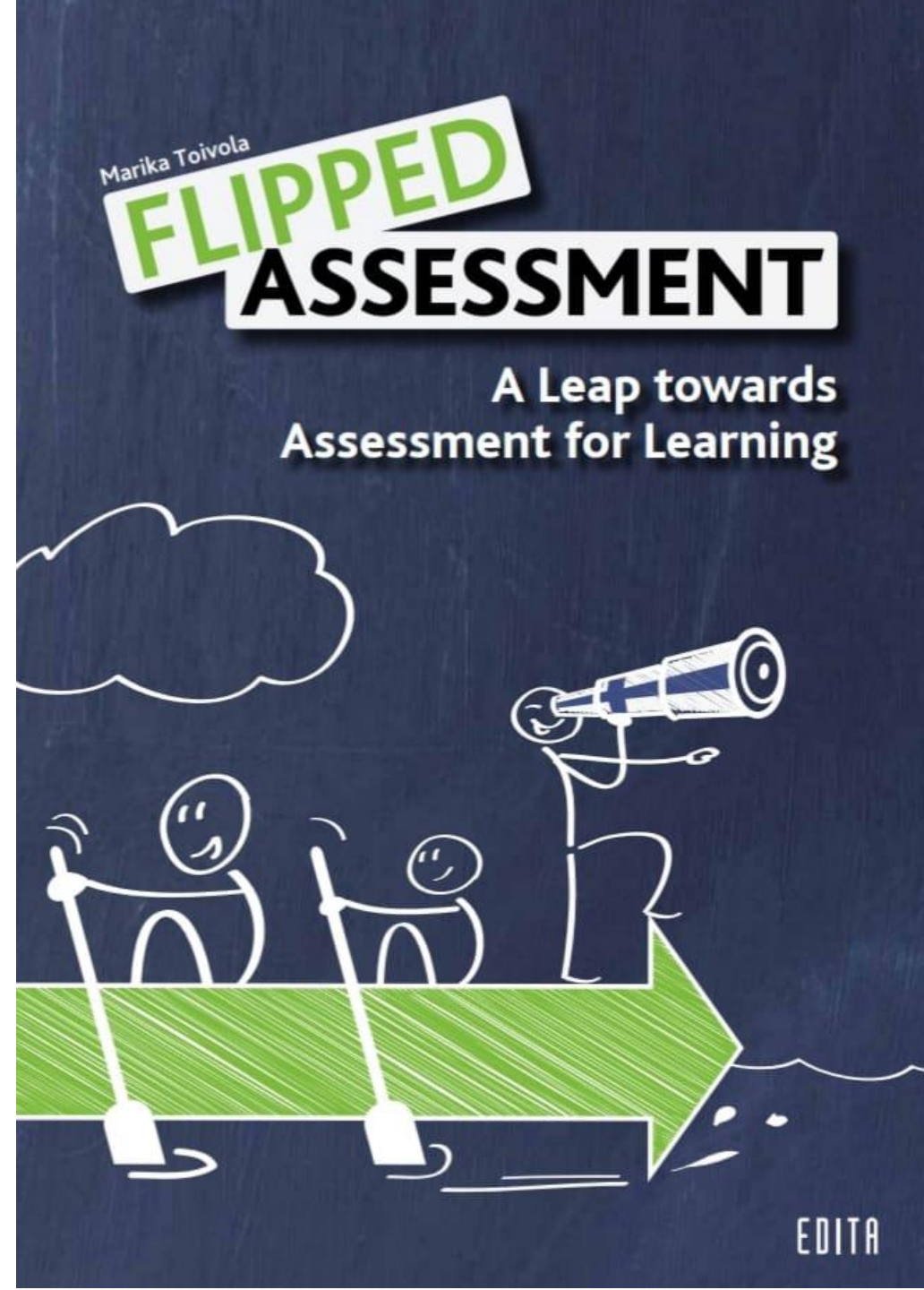
Self-regulation means a learner's ability to steer and assess their own learning (Pintrich & Zusho, 2002). To be a self-regulated learner the student must have a psychological need for autonomy, competence, and relatedness (Stefanou, Perencevich, DiCintio, & Turner, 2004). (self-assessment)



The *collaborative learning* is a shared learning situation in which two or more people learn or attempt to learn something together.

*Co-regulation* highlights the significance of the individual's metacognitive and scaffolded experiences in social systems and is used to illustrate the transitional process in the development of self-regulation (McCaslin, 2009; Volet, Vauras, & Salonen, 2009). (peer-assessment)

The clear distinction between this book and many other works on formative assessment is that my views are strongly based on practice. I justify theoretically that which I brought into practice, and not the other way around. The book's structure follows the journey that I, myself, have taken and gives also emotional support for teachers who want to take challenge to reform schools.





*Aspects of formative assessment* (Black & Wiliam, 2009)

	Where the learner is going	Where the learner is right now	How to get there
Teacher	<b>1</b> Clarifying learning intentions and criteria for success	<b>2</b> Engineering effective classroom discussions and other learning tasks that elicit evidence of student understanding	<b>3</b> Providing feedback that moves learners forward
Peer	Understanding and sharing learning intentions and criteria for success	<b>4</b> Activating students as instructional resources for one another	
Learner	Understanding learning intentions and criteria for success	<b>5</b> Activating students as the owners of their own learning	

Black, P. J. & Wiliam, D. (2009). Developing the theory of formative assessment. *Educational Assessment, Evaluation and Accountability*, 21(1), 5–31.

*Aspects of formative assessment* (Black & Wiliam, 2009)

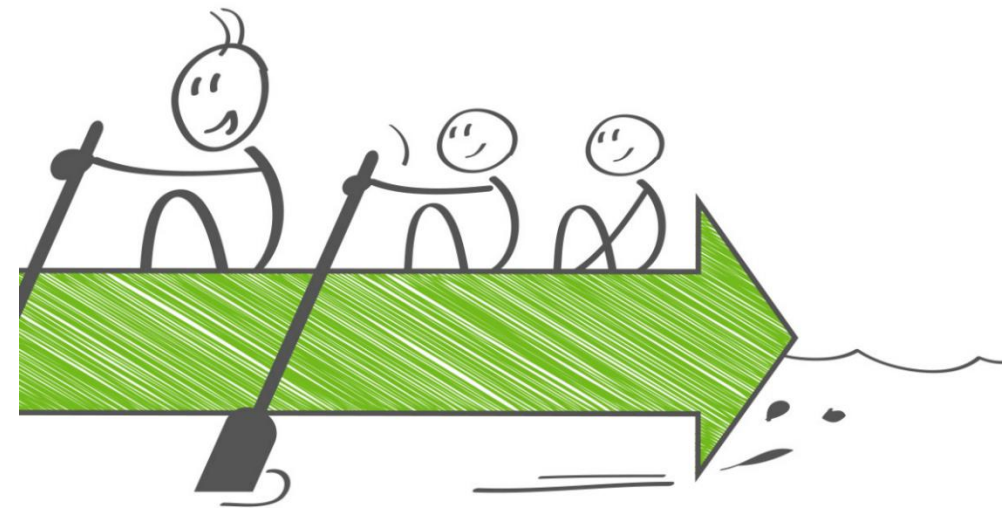
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Peer	Understanding and sharing learning intentions and criteria for success	<p><b>Students as an active participant</b></p>	
Learner	Understanding learning intentions and criteria for success		

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		<b>Peer-assessment</b>	
Learner	Understanding learning intentions and criteria for success	<b>5</b> Activating students as the owners of their own learning	
		<b>Self-assessment</b>	

**The vision of my own assessment culture was driven by three key objectives:**

1. Students should not memorize for an exam and get good grades based on short-term memory.
2. Assessment should help the student to develop a realistic understanding of his or her level of competence and to build a positive self-image as a learner.
3. Assessment should promote the formation of a learning-friendly learning culture where classmates become relevant to each other's learning.

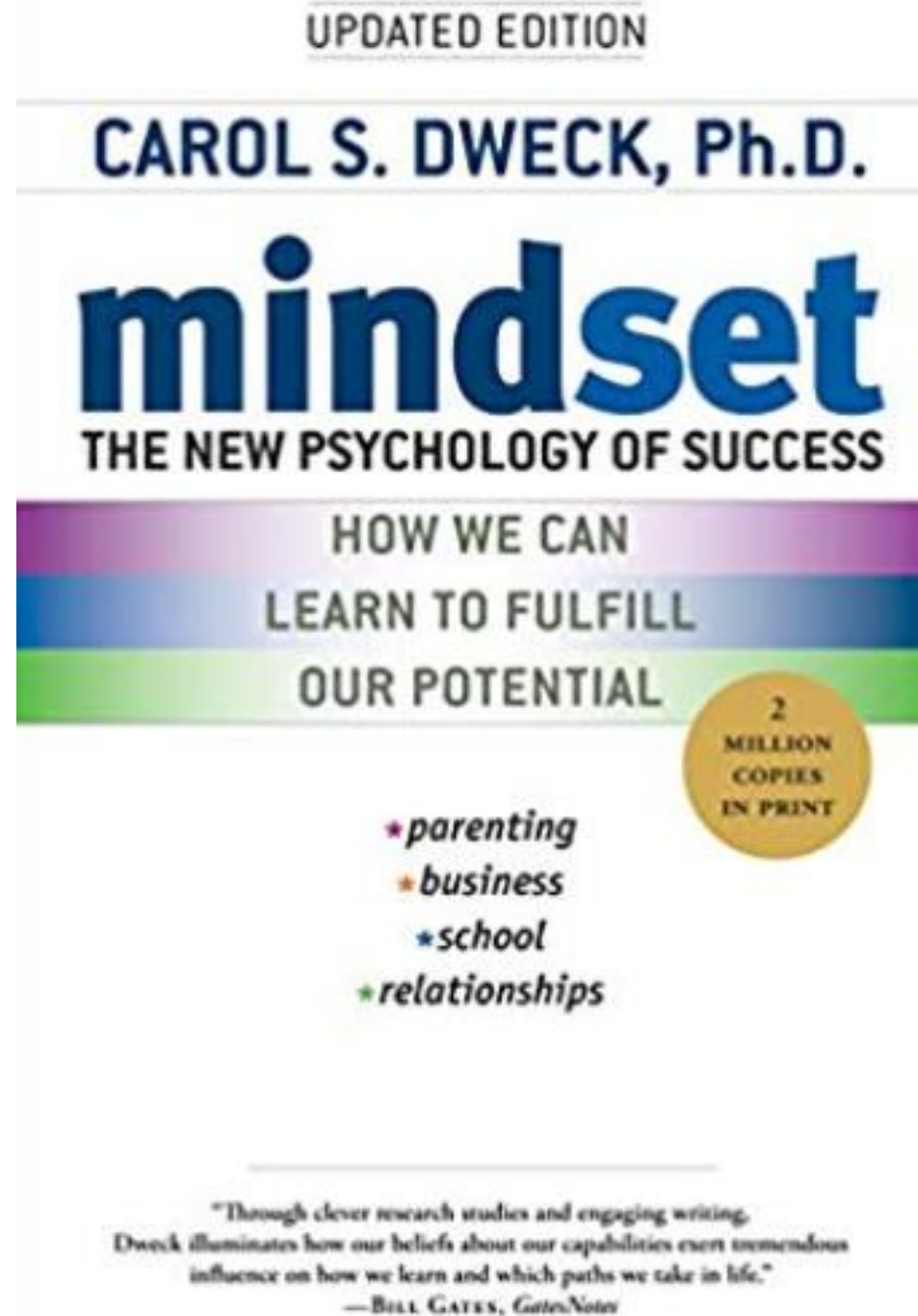


## My exam protocols in a nutshell

- When the student is at the end or midway through the study unit, he or she is *free to choose an exam at the grading levels of 7, 8-9 or 10* (out of 10). *I advise students not to read* for the math test because if they do so just in the previous evening they will be “cheating” in the test. When the students are cramming for a test, they will store the information into their short-term memory and this way destroy our possibility to see what they really have learned.
- I don't correct mistakes, nor will the exams ever be graded. I circle the incorrect answers and return it to the student to be corrected. Next, the students are offered precious *self-assess opportunities to relearn and remediate*. The students decide how they will correct assignments done incorrectly; with or without the text book and further alone or with the help of classmates (*peer-assessment*) or me.
- Because the students are doing the exams at different times I always have time to concentrate on every student as individual and *give feedback*. After looking the exam more carefully we will have a little discussion about what kind of choices the student has done, how he or she has studied, what are the results, are there any need for changes.
- At the end, I send *a brief message to the student's guardian* about how the young person's mathematics is progressing and how realistic I feel the grade target set by the student is. “I think your child is an underachiever in mathematics,” is a surprisingly positive message, when presented in the right context. It tells the guardian that I believe in this young person's ability to learn math and would like to demand more from him of her.
- And perhaps the most important thing: *the most advanced students will get a test so demanding that they won't get all correct at the first round*. They help the others to trust that I won't penalize them because of their mistakes. They show the others what learning math really is. To learn you need to challenge yourself, make mistakes, ask questions, and interact with others.

According to Dweck, there are two ways of mindset (“self-theory” that people hold about themselves): a *growth mindset* and a *fixed mindset*.

- In a growth mindset, people believe that their most basic abilities can be developed through dedication and hard work. Students who embrace growth mindsets view challenges and failures as opportunities to improve their learning and skills.
- In a fixed mindset, people believe their basic qualities, like their intelligence or talent, are simply fixed traits. They also believe that talent alone creates success - without effort. When students with fixed mindsets fail at something, as they inevitably will, they tend to tell themselves they can’t or won’t be able to do it (“I just can’t learn Algebra”), or they make excuses to rationalize the failure (“I would have passed the test if I had had more time to study”).
- In Flipped Assessment, with every students we are not focusing on to find a level to succeed but rather to find a level to fail. A level were the students can be creative without a fear of lost points and the level where they need collaboration to succeed.



**Does Flipped Assessment contribute to ongoing Finnish school reform?**

Thank you for your attention!

Marika Toivola

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