



Lessons learned from pre-service teachers' narratives of math failure

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My research interests

Teacher development in pre-service teacher education, teacher identity and identity work, affect and emotions regarding mathematics, narrative research



In this talk...

About "Narrated Failures" project (Academy of Finland, 2018-2021)

What do pre-service teachers understand as mathematics failure and how do the experiences of failure shape their development as teachers, especially their teacher identity?

Findings of four studies

Lessons learned

01

How do pre-service elementary school teachers define failure in mathematics?

Lutovac, S., & Kaasila, R. (2021). 'There are so many ways to fail': pre-service elementary school teachers define failure in mathematics. *ICME-14 proceedings, Shanghai, China*.

Failure as underperformance and underachievement

"Failure in math is failure in exams." (16)

Failure as subjective

"Failure in math is largely self-reliant on what one sees as failure and success." (10)

Failure as related to one's own goals and expectations

"Failure in math is not achieving one's goals..." (6)

Failure as inadequacy

"Math failure is the feeling of not being good enough..." (5)

Failure as a learning opportunity

"Failure is human... All you have to do is learn from it." (3)

02

What do two pre-service mathematics teachers' narratives tell about their failure and resilience?

Lutovac, S. (2019). Pre-service mathematics teachers' narrated failure: stories of resilience. *International Journal of Educational Research*, 98, 237-244.



I have, in the moment of failure, comforted myself with sentences like: 'I don't need this information as a teacher', 'Good thing I'm not gonna be a researcher' and 'This wasn't even that important for me'. ...it is **not relevant for the sake of my profession if I'm barely passing the advanced math courses. The contents of the courses would not even be close to what I would **actually** be teaching. This is how I sort of **reject the whole failure** and feel that it never happened, and I can **still hold on to the identity of an achiever.****

Tiina, pre-service mathematics and science teacher

03

What kind of experiences count as math failure?

Lutovac, S., & Kaasila, R. (2021b). Towards conceptualising failure in mathematics as an autobiographical experience. *European Journal of Teacher Education*.

Pre-service mathematics teachers' experiences of failure (22)

- Barely passing or repeating exams at university (11)
- Solving the tasks or problems incorrectly in university studies (4)
- Obtaining a lower than expected grade and dissatisfaction with one's own performance in upper-secondary school (2)
- Performance tension and anxiety during school time (2)
- Learning difficulties in advanced mathematics courses in upper-secondary school (2)
- Lacking motivation in university studies (1)

Pre-service elementary school teachers' experiences of failure (45)

- Poor performance on the tests and low grades (15)
- Learning difficulties in advanced mathematics courses in upper-secondary school (7)
- Obtaining a lower than expected grade (6)
- Learning difficulties from early years of schooling (5)
- Learning difficulties due to a specific reason (e.g., competitive, time-restricted environment) (5)
- Obtaining less than the highest grade (striving for perfection) (3)
- Errors in doing maths in an out-of-school context (2)
- Unfair treatment and grading (1)

04

How does past failure influence pre-service teachers' possible teacher selves?

Lutovac 2020. How failure shapes teacher identities: Pre-service elementary school and mathematics teachers' narrated possible selves. *Teaching and Teacher education*.

Teacher traits

Noticing and supporting students who struggle
Taking into account all students
Making sure all students learn
Understanding different students
Avoid labelling
Avoid categorising
Not comparing students
Thinking before speaking
Being encouraging and motivating
Being inspiring

Instructional strategies

Individual learning support
Teach for understanding of all students
Differentiation
Fair assessment
Varied and interactive teaching methods
Concrete examples
Teaching for successful experiences
Fun and interesting lessons
Finding alternative strategies (e.g., students teaching students)
Creating competition-free classroom
Giving feedback to motivate

Student strategies

Care
Persevere
Work hard
Practice
Let go of perfectionism
Know that failure is natural
Know that failure is okay
Maintain your confidence
Think about your future studies
Know your strengths, acknowledge weaknesses
Learn from failure
Self-assess
Accept failure and move on

Teacher development

Stronger math knowledge
Better confidence
Better pedagogical content knowledge
Be kinder with oneself
More experience
Knowledge of students' needs

Lessons learned

01 Failure needs to be understood as an autobiographical experience

- a broad range of autobiographical experiences
- personal and subjective
- defined in various ways

Pre-service teachers need to be aware that various experiences can count as failure

Lessons learned

02 Failure experiences play an important role in the process of becoming a teacher

Past experiences of failure shape future teacher identities

and are a resource for potential future action

The process of developing a teacher identity between generalist and specialist future mathematics teachers may be more alike than earlier suggested

The need for shared learning experiences of generalist and specialist future mathematics teachers during university studies

Lessons learned

03 Narratives of failure as a pedagogical tool in initial teacher education

Narratives of failure stimulate a nuanced reflection upon the various dimensions of teacher's work

Enable learning from vicarious failure experiences

Joint discussion and reflection between generalist and specialist future math teachers is needed

**Thank you for
listening!**

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