A course for Coaches of Mathematical Resilience
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Introduction
Definition: Mathematical Resilience
“a positive approach to mathematics that allows learners to overcome affective barriers presented when learning mathematics.” (Lee & Johnston-Wilder, 2014).

Components of Mathematical Resilience include:
- Value
- Inclusion
- Struggle
- Growth mindset
- Conjoint agency
- Resources

The study
Small scale, design research study to develop a course for Coaches in Mathematical Resilience. Coaches support learners rather than teach.

Research questions
- Would the course enable personal mathematical resilience?
- Would participants be positioned to help others develop resilience when learning mathematics?

Participants
12 women trainers for apprentices, mainly hairdressers and health care workers.
- These apprentices are required to increase their knowledge of mathematics.
Participants self-identified as anxious about mathematics.

Approach
The course
- used known good practice in teaching mathematics, such as inclusion, discussion and investigation
- used Egan’s skilled helper coaching model (Egan, 2013)
- consisted of ten sessions
Each session focused on an aspect of coaching and an aspect of learning mathematics.
Two leaders, one identified specifically with coaching and one with mathematics.

The growth zone model
Emotional aspects of learning mathematics were discussed using a growth-zone model (Lugalia et al, 2013), which fostered explicit awareness of feelings when in the growth zone and management of panic when in the danger zone.

Data gathered from
- Initial and final quantitative survey
- Field notes
- Appreciative inquiry interviews
- Participants’ portfolios

Results
At the start, when asked to do maths, participants felt:
- anxious and panicked
- confused and frustrated
- empathy for their own learners

Participants appreciated peers who:
- Listened and took a back seat
- Asked questions
- Developed confidence in others
- Gave constructive feedback
- Showed respect and inclusion
- Calmed and reassured
- Made suggestions
- Used useful strategies
- Worked together, supported each other and shared

Participants:
- gained personal mathematical resilience (learned to manage their own anxiety, developed resilient ways of learning, learned to support each other in managing anxiety

At the end, they valued:
- Using the Growth Zone model
- A safe learning environment conducive to learning
- Getting and giving feedback
- Getting support and encouragement from tutors
- Having fun
- Being challenged, confident, and comfortable
- Learning coaching and mathematical resilience skills
- Being aware of using maths in everyday life
- Working together as a team, supporting and accommodating each other
- Sharing ideas, and feelings, and valuing each other’s contribution,
- Being non-judgemental
- Having time for reflection
- Doing something ‘for me’.

Conclusion
This study shows that it is possible, within a 30 hour course, for mathematically anxious adults to learn how to manage and overcome their own anxiety to become effective supporters of peers learning mathematics.

There are plans to offer courses to larger groups and at more advanced levels.

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References:


Acknowledgments
Coaches identified with the image of a swan, apparently serenely curious, with all the paddling out of sight.

Painting by Audrey Johnston..