

Its Part of my Life: Reactions from Pre-service Teachers

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It's Part of My Life

Abstract

Its Part of my Life is a collaborative project between RUN universities which aims to improve the confidence and competence of mathematics and science pre-service teachers. Mathematics pre-service teachers prepare their lessons with discipline and pedagogical experts, teach the lesson and then identify critical moments within the lesson when their emotions are highest. They reflect on these with expert and peer support. In subsequent lessons some pre-service teachers are able to act on teachable moments and move their students forward in their learning. This enhancement-lesson-reflection cycle has implications for initial teacher education.

Introduction

Many people seem disconnected from the mathematics and science developments in our modern industrialised society. Even people who have some knowledge, skills or experiences with mathematics and science, don't necessarily recognise the mathematics and science in the world around them.

Its Part of my Life: Engaging university and community to enhance science and mathematics education focuses on this important disconnection, and asks pre-service teachers and other educators, as well as students they teach, to consider that mathematics and science is very much a part of the fabric of their life. By also incorporating a novel reflection protocol where pre-service teachers identify critical moments in their teaching when their emotions are highest (either positive or negative) and reflect on these collaboratively they have improved their confidence and competence for teaching Yeigh et.al. (2016) and addressing the disconnect between mathematics and science and the world.

The Project

The project involves a series of iterations of an Enhancement-Lesson-Reflection (ELR) process shown in figure 1. The process follows Lesson Study (Doig & Groves, 2011) and Design Study models which are widely used across the globe.

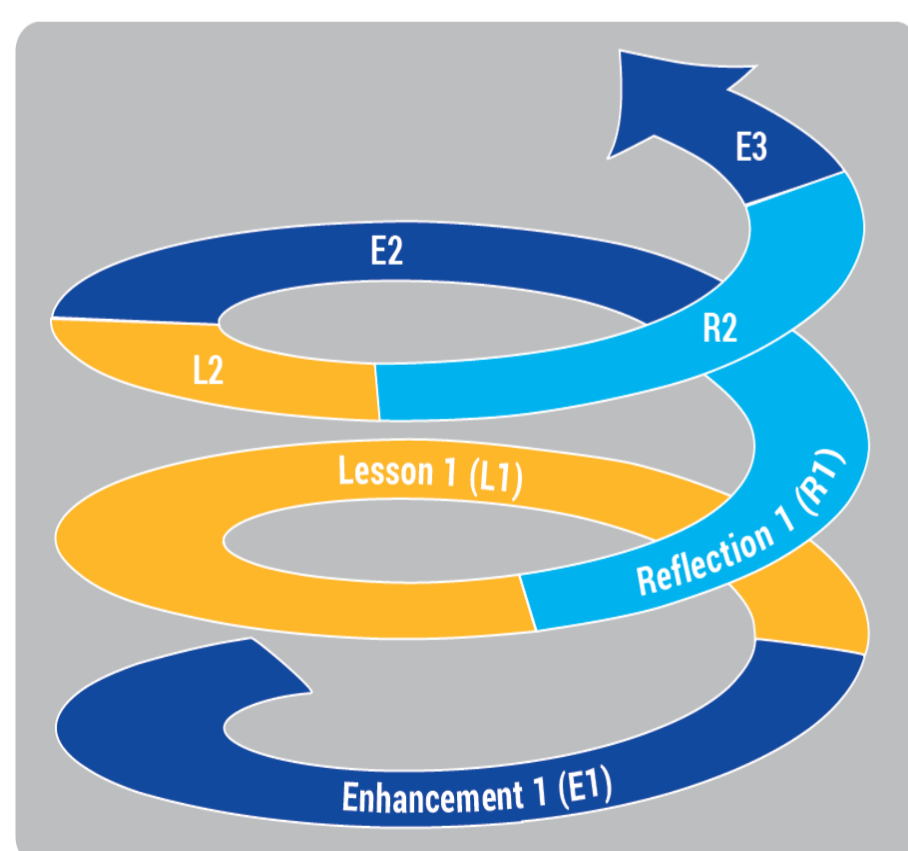


Figure 1. The Enhancement – Lesson – Reflection cycle

Emotion	Please describe briefly what you were doing, what was happening and at whom the emotion was directed.
Excitement/Enthusiasm	
Happiness	
Enjoyment	
Pride	
Anxiety/Worry	
Frustration	
Disgust/Contempt	
Annoyed/Irritated	
Disappointment	
Embarrassed	
Interested	
Confident	

Figure 2. Critical moment diary

Enhancement: Enhancement involves collaborative discussions to produce a plan for a teaching a Lesson. At USC pre-service teachers have worked with statisticians/mathematicians and education specialists to prepare lessons which are related to what is happening in the region and the world of the students. This is linking pre-service teachers to the research being done in the university. Videos are being prepared to ensure this process is sustainable.

Lesson: Pre-service teachers then conduct these inquiry-based or problem solving lesson in local schools. These lessons are videoed to support reflection and feedback. School students provide feedback to pre-service teachers based on the emotions they experienced during the Lesson.

Reflection: The Teaching Lesson is followed by self-reflection and collaborative reflection around affect-based critical moments in teaching – how you felt while you were teaching and why you felt that way. This serves as a non-judgemental focus for teacher improvement.

Critical moment protocol: Building on Tobin and Richie's (2011) suggestion that emotional arousal is related to pre-service teachers' teaching confidence and competence, pre-service teachers observe the video of their lesson and using the emotion diary in figure 2 identify six segments in their lesson (each about one minute long) when their emotions were highest (either positive or negative).

Individually they reflect on the questions: *What happened that made you see this as a critical moment? What were you thinking just before this moment?*

Collaborative reflection then occurs with academics and their peers using the stimulus questions: *What was your main emotion you felt at the time? What did others think about your emotion? Was it the same as your view? What have you learnt for future lessons?*

Presented below are some pre-service teachers' reflections on the research question:

Did using the critical moment protocol help improve your confidence and competence to teach mathematics?

Results and Discussion

Although initially the pre-service teachers were nervous about watching themselves on video they found it very valuable.

PST1: Before watching the video back of my lesson I was not overly enthusiastic – nor was I overly enthusiastic about watching it with three other people. However after reflecting on the six critical moments I feel that the video was a really great reflective tool.

Generally people tend to reflect on the whole lesson and can find it overwhelming. One of the valuable parts of the reflection was being able to focus on the little things rather than the lesson as a whole.

PST1: It broke down into smaller parts so it was good it made you think about little things – it is easier to work on little things than it is to work on improving an entire lesson delivery at once

– but it also made you pick up on little things that you did well that you didn't realise (a small confidence booster!) ...

A common statement by pre-service teachers has been their increased confidence because their frustrations or moments of panic were not observed by others.

PST2: This teaching experience provided us with the knowledge that even though we felt anxious or stressed our peers did not notice this and hence this meant the students wouldn't have noticed either. This has given us extra confidence in going onto our next practicum.

Teaching as a profession is very much about relationships and pre-service teachers believe that acknowledging emotions has helped to build their confidence.

PST2: The opportunity to have a peer observation and reflection program in a real classroom setting allowed us to allay our fears and stresses with our peers and university educators as observing mentors. That our feelings were feeling acknowledge helped to build our confidence. On prac the mentor never actually asked "How do you feel?"

Conclusion/Implications

Pre-service teachers believe that this Enhancement-Lesson-Reflection process helps to improve their the confidence and competence in the classroom and believe that it should be part of their teacher education studies at university. This is highlighted in the comment:

PST1: I believe that the idea of incorporating a taped lesson as a reflective tool would be beneficial for pre-service teachers ... I believe it has helped me to be better at reflecting on my teaching and thinking critically about how I can improve.

The Enhancement and Reflection can exist as independent modules. These and the Enhancement-Lesson-Reflection being embedded within teacher education curriculum at RUN universities.

Acknowledgements

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