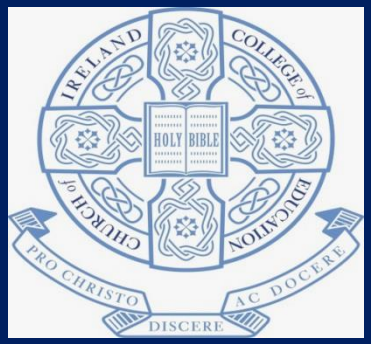
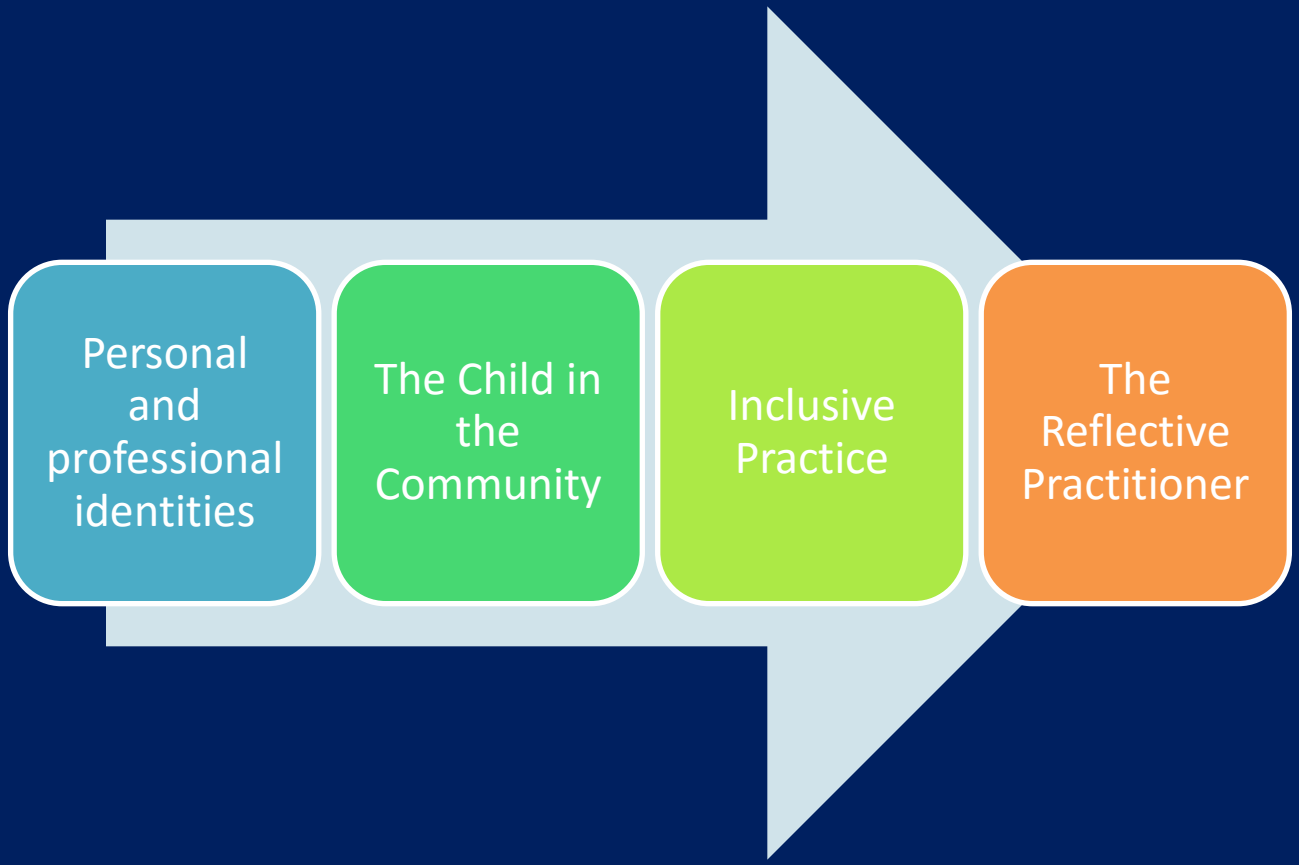
STUDENT TEACHERS' EXPERIENCE OF REFLECTIVE PRACTICE IN THE MATHEMATICS CLASSROOM

Lorraine Harbison, Ingrid Duncan, David McAndrew, Sarah O'Brien




Personal and professional identities
The Child in the Community
Inclusive Practice
The Reflective Practitioner

Researcher

- Identify an appropriate area for research
- Design and undertake a small scale investigation
- Have knowledge of research methodologies
- Select and use appropriate research methods
- Become familiar with the established literature
- Consult, where appropriate, a range of critical sources, including conference papers and journals;
- Construct and sustain a well-argued discussion
- Present material in a manner appropriate to the topic
- Maintain consistent standards of academic presentation.

Ingrid's Experience

- An evaluation of the extent to which parent's are involved in supporting their children's mathematical learning through helping with homework

Why look at maths homework?

- Teaching fourth and fifth class for a duration of three months
  - I observed that the children who received mathematical support at home and completed Maths homework frequently, seemed to have better termly Maths scores than other children who completed their Maths homework unaided.
- National Adult and Literacy Association (NALA) conference September (2014) – Elish Kelly

Research in partnership with families

- Captured views from four families about Maths homework.
- Gave one activity/game to be completed each night for one week as part of their Maths homework.
- Conducted interviews with these parents and children on their thoughts of the shared Maths approach.

The consensus

- Maths homework should be a paired task that is fun and enjoyable for both parent and child
- It is important for parents to have a positive attitude towards Maths
- Parents are generally always willing to help and expect to be involved with their child's homework but not to teach
- It is a valued attribute for the parent and teacher to have a good relationship surrounding the Maths homework
- A combination of activities and written homework seemed to be beneficial for both the parent and the child

Points of consideration

- Research carried out found that an alternative method for Maths homework is required.
- Parents need to be shown the method for certain mathematical topics before they are given for homework.
- Completing the research allowed me to make changes relating to teaching and learning of Mathematics in the classroom and through homework.
- Qualitative research gave me the opportunity to critically reflect on my practice while gathering the opinion of other stakeholders, namely the school, parents and most importantly, children.

David's story

The issue identified:

Children were unable to complete simple problems. What impact will this have on them in life?

- Children come to school as natural problem-solvers
  - Are we inadvertently fostering computational procedures over mathematical reasoning?

The Research

- Learning content through engaging with problems and using problem solving skills
- Creating relevant and interesting problems – mathematics that people want and need to do
- Using testing, surveys, teacher conferencing, and teacher observations to gather information.

Results

- Improved engagement in and enjoyment of mathematics
- Increased performance in tests
- Better use of problem-solving strategies
- Greater awareness of mathematics in the world around us
- Enhanced discussion about the practicality of mathematics

Conclusion

- Mathematics is highly engaging when it is relevant and interesting
  - Move towards mathematical reasoning over computational skills
  - Let students play an active part in creating the problems
  - Allow freedom to solve the problems – don’t give all the hints

Sarah's Journey

- An evaluation of teaching multiplication mental strategies to support children's learning of mathematics in the primary school classroom

Why this topic was important to me

- The context
  - Teaching third and fourth class for a duration of 3½ weeks.
  - I observed that the children solely used rote memorisation of number facts for calculating multiplication and did not display an understanding of the underlying skills and concepts.
- However, mental mathematics strategies, used for multiplication, had not been specifically taught to the children.

My hopes

- The primary school mathematics curriculum (1999), emphasises the importance of understanding over memorisation of number facts solely by rote.
  - I hoped that benefits would include an increase in overall understanding, improved proficiency and an acceleration in learning.
  - I also hoped that children would have a range of strategies to use to suit their needs, rather than learning off facts that could easily be forgotten or incorrectly answered.

What my research involved

- Pre-test
  - The children each completed a one-minute multiplication test and a test compiled of fifteen multiplication computations.
- Intervention
  - Three multiplication strategies were taught to the children: repeated addition, doubling and partitioning. Each strategy was taught over a period of a week and the strategies were then revised in full.
- Post-test
  - The children then completed the same two tests that were used in the pre-test. These tests were then analysed and results were compared.

What I found out

- The pre-test
  - Boys answered more questions correctly than girls.
  - Repeated addition was the most used strategy.
  - Partitioning was the most successful strategy used to produce correct answers.
  - The strategy of doubling produced the most incorrect answers.
- And following intervention…
  - In the one-minute multiplication test, the number of questions completed and the number of correct answers gleaned increased significantly.
  - The use of repeated addition decreased and the use of doubling and partitioning increased.
  - As could be expected, fourth class answered more questions correctly than third class.

How did this help my teaching of mathematics

- Research carried out found that mental mathematics in the classroom improves accuracy, fluency and speed when completing mathematical number problems.
- The three mental mathematics strategies used for multiplication taught to the children improved their ability to carry out computations in their head.
- Completing the research allowed me to make changes relating to teaching and learning.
- Action research encouraged me to critically reflect on my practice, stimulating changes in my thinking and practice, and promoted self-awareness and self-improvement.

Like to hear more?

- Contact us at lharbison@cice.ie