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MATH30002

Mathematics Education

Unit code:	MATH30002
Credit Rating:	10
Unit level:	Level 3
Teaching period(s):	Semester 2
Offered by	School of Mathematics
Available as a free choice unit?:	N

Requisites

None

Aims

The programme unit introduces theories of learning in the context of mathematics. Through reflection on their own learning, observation in classrooms and reading mathematics education research and evidence, students will have the opportunity to develop understanding about some of the complexities of learning and teaching mathematics.

Overview

This unit provides opportunities for anyone interested in mathematics education to find out more. Suitable for both those considering becoming a teacher, or those who are fascinated in how people learn mathematics and understanding why it is such an emotive subject.

The course will include collaborative group work, reflection on personal experience and classroom observation.

Assessment methods

- Other - 80%

- Oral assessment/presentation - 20%

Assessment Further Information

Coursework – project report; weighting within unit 80%, submitted via Turnitin
Presentation; weighting within unit 20%

Learning outcomes

On completion of this unit successful students will be able to:

- critically reflect on learning experiences drawing on theory and research;
- analyse classroom interactions drawing on relevant theory;
- articulate the difference between procedural and relational understanding and explain why both are important;
- exemplify and apply the interconnectedness of mathematical ideas to selected topics in school mathematics.

Syllabus

1. Why is mathematics part of the school curriculum? [1 lecture]
2. How do people learn mathematics? [2 lectures]
3. Big ideas in school mathematics [3 lectures]
4. What happens in mathematics classrooms? [2 lectures]
5. What works in mathematics classrooms? [2 lectures]
6. Action research project – misconceptions in learning mathematics (5 weeks, including 5 half days in a school)
7. Project presentations

Recommended reading

Textbooks

Gates, P. (2001) *Issues in Mathematics Teaching*, London: Routledge

Leslie, D. & Mendick, H. (eds.) (2014) *Debates in Mathematics Education*, London: Routledge

Ryan, J. & Williams, J. (2007) *Children's Mathematics 4-15: Learning from Errors and Misconceptions*, Buckingham: Open University Press

Skemp, R. (1993) *The Psychology of Learning Mathematics*, London: Penguin

Swan, M. (2005) *Collaborative Learning in mathematics: A challenge to our beliefs and practices* Leicester: NIACE

Watson, A., Jones, K. & Pratt, D., (2013) *Key Ideas in Teaching Mathematics: Research-based guidance for ages 9-19*, Buckingham: Oxford University Press

Journals

For the Learning of Mathematics

Mathematics Teaching (Association of Teachers of Mathematics)

Mathematics in School (Mathematical Association)
Educational Studies in Mathematics
Journal for Research in Mathematics Education
Research in Mathematics Education

Websites

Association of Teachers of Mathematics www.atm.org.uk
British Society for Research into the Learning of Mathematics www.bsrlm.org.uk
Mathematical Association www.m-a.org.uk
National Centre for Excellence in Teaching Mathematics www.ncetm.org.uk/home
NRICH www.nrich.maths.org
Nuffield www.nuffieldfoundation.org
National STEM centre www.nationalstemcentre.org.uk/elibrary/maths/

Feedback methods

Seminars will provide an opportunity for students' work to be discussed and to provide feedback on their understanding.

Study hours

- Lectures - 10 hours
- Seminars - 10 hours
- Supervised time in studio/wksp - 10 hours
- Independent study hours - 48 hours

Teaching staff

Louise Walker - Unit coordinator

Rosa Archer - Unit coordinator