

Course Description

MEDD6387 Research into the teaching and learning of mathematics

Course description

This course gives an overview of theories and research on the teaching and learning of mathematics. Research in the teaching and learning of some major areas in mathematics such as algebra is reviewed. In addition, examples of investigation of mathematics teacher's pedagogical content knowledge, teacher conception, and assessment related to the teaching and learning of mathematics, classroom research, small-scale and large-scale studies will be discussed. The course and assessment are designed in such a way for an introduction to a virtual experience of research culture for mathematics teachers and professionals. It is hoped that in the course the students will read, talk about, reflect upon how research may have an implication in their profession. They are expected to make presentations, plan their own research, and develop an awareness of how a research culture can be an enhancement of their life-long professional development. At the end of the course, students should be able to: (1) be aware of the issues and topics related to research in the teaching and learning of mathematics; (2) carry out literature review for specific issues of interest, reflect and discuss in relation to the local context and their workplace; (3) write a research proposal for school-based development for the mathematics teaching and learning.

Coursework / Examination ratio: 100 % Coursework, 0 % Examination

Course objectives

Please refer to the course description above

Course learning outcomes

1. Be aware of the issues and topics related to research in the teaching and learning of mathematics;
2. Carry out literature review for specific issues of interest, reflect and discuss in relation to the local context and their workplace;
3. Write a research proposal for school-based development for the mathematics teaching and learning.

Course assessment methods

Assessment method	Type of assessment (e.g. description of assignment)	Weighting (%)	Aligned course learning outcome(s)
	e-forum		
	Innovative teaching & learning package		

Course content and topics

Introduction
Overview of the course
A virtual visit to an international conference
From arithmetic to algebra: A constructivists' view
Assessment and learning
Large-scale studies: Trends in International Mathematics and Science Study (TIMSS) and PISA
Bringing about changes in teaching
Reading week (no lessons)
Bringing about changes in teaching
Large-scale studies: The Learner's Perspective Study (LPS)
Teacher perceptions and beliefs
PCK, research lessons
Learning community

Required / recommended readings and online materials

1. Clarke, D., Emanuelsson, J., Jablonka, E., and Mok, I.A.C. (Eds.) (2006). Making Connections: Comparing Mathematics Classrooms Around the World. Sense Publishers B.V.

2. Clarke, D., Keitel, C. and Shimizu, Y. (Eds.) (2006) Mathematics Classrooms in 12 Countries: The Insiders' Perspective. Rotterdam: Sense Publishers B.V.
3. Second handbook of research on mathematics teaching and learning: a project of the National Council of Teachers of Mathematics / Frank K. Lester, Jr., editor. NCTM, c2007
4. Second international handbook of mathematics education / edited by Alan J. Bishop ... [et al.]. Dordrecht ; Boston : Kluwer Academic Publishers, c2003.

Other additional course information

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