

BPRI223- Engaging Mathematics for All Learners

ECTS Value: 5 ECTS

Contact Hours: 25

Lectures, Seminars and Tutorial Hours: 60

Assessment Hours: 40

Overall Objectives and Outcomes

Participants will be able to become aware of pedagogical theories specific to the area of mathematics. They will gain a deeper understanding of what it means to use a Maths for Mastery approach to teach fundamental numeracy skills within the primary classroom setting. Skills to develop schemes of work and lesson plans that are well-structured and detailed are given. Participants will also be exposed to a vast range of activities that provide ample opportunities for learners to develop critical thinking skills, collaboration and communication with specific emphasis on mathematics. They will be able to apply this knowledge to create appropriate anchor tasks for their learners and make use of the correct questions to engage learners in higher order thinking. Through this module, they will gain the necessary knowledge, skills and competences as well as pedagogical background to be able to deliver a good mathematics lesson which will contribute to building their confidence at teaching the subject within the primary classroom. Through this module, the participants will also engage in creating different effective resources and in seeking opportunities for using technology to enhance learning in the mathematics classroom. Assessment will also be a focus of the course and different assessment strategies to be used in the primary mathematics classroom will be discussed and tried out.

By the end of this module, the learner will be able to:

Competences

- a. produce schemes of work and lesson plans that are aligned to the Primary Mathematics Syllabus or Learning Outcomes Framework;
- b. ensure that problem solving is at the heart of designed lessons;
- c. design and make use of mathematics activities including anchor tasks which are based on the appropriate pedagogical theories;
- d. reflect about the development of their lesson plans through self-evaluation;
- e. embed strategies to differentiate between different types of learners e.g. auditory, visual and also advanced learners and learners with Mathematics Learning Difficulties;
- f. create resources for the use on the Interactive Whiteboard or on a computer;
- g. produce strategies to formatively and summatively assess the learners' grasp of mathematical knowledge, concepts, skills and competences;
- h. plan to ask the right questions to get the learner to engage in higher order thinking;
- i. select and use appropriate manipulatives such as Base Ten Blocks to support the learner's learning structure and help him/her build mental representations of the concept at hand.

Knowledge

- a. define appropriate ways of setting up a mathematics scheme of work and a lesson plan for the primary classes;
- b. list suitable strategies for teaching the main components of mathematics, namely, Number and Algebra, Geometry, Data Handling and Measure;

- c. describe ways of emphasising Mental work;
- d. list different resources that may be used to teach mathematics more effectively such as Base Ten Blocks and Cuisenaire Rods;
- e. identify appropriate assessment strategies which assess for mathematical skills, knowledge and competences;
- f. define the importance of the affective domain in the learning of mathematics and the impact mathematics anxiety may have on learning.

Skills

Applying knowledge and understanding

The learner will be able to:

- a. prepare schemes of work and lesson plans which are mapped to the Primary Mathematics Syllabus;
- b. design problem tasks which support analytical higher order thinking and reasoning skills and recall a set of heuristics as problem solving strategies which they may suggest to their learners in the classroom;
- c. create teaching/learning resources in relation to the different lessons developed;
- d. demonstrate an understanding of the importance of the affective domain in mathematics learning;
- e. prepare a plan for focusing on key mathematical language in their lessons;
- f. plan different activities for various areas of mathematics learning including number and algebra, geometry, data handling and measures;
- g. plan different forms of assessment for the different areas of mathematics learning;
- h. list different questions that may be asked to engage learners in higher order thinking;
- i. label a list of maths resources which can be used to provide an experiential and multisensory learning situation such as Base Ten Blocks.

Assessment Methods

This module will be assessed through: Designing Tasks and Lesson Plan.

Suggested Readings

Core Reading List

1. Haylock, D. (2010). *Mathematics explained for primary teachers* (4th Edn.). Los Angeles: SAGE.
2. Haylock, D., & Thangata, F. (2007). *Key concepts in teaching primary mathematics*. London: Sage.

Supplementary Reading List

1. Haylock, D., & Cockburn, A. (2013). *Understanding mathematics for young children* (4th Edn.). London: Sage.
2. Van De Walle, J. A., Karp, K. S. & Bay-Williams, J. M. (2013). *Elementary and middle school mathematics* (8th Edn.). Boston: Pearson Education.
3. Rowland, T. (2009). *Developing Primary Mathematics Teaching*. Los Angeles: SAGE.