

Course Code: SM-6522

Course Title: Integrating Constructivism in the Secondary Mathematics Classroom

Rationale:

In traditional mathematics classrooms, teachers teach mathematics using direct instruction. Research findings show that students learn mathematics passively. As a result, students find mathematics uninteresting and they have a shallow understanding of the concept taught. When teachers employ constructivist teaching, students learn mathematics actively. Constructivist teaching will result in students learning mathematics in a more meaningful and interesting way. This is because constructivist teaching is based on the view that students learn by actively constructing new knowledge whereby they integrate the new knowledge received with their prior ones.

Objectives:

The main objective of the course is to help participants gain knowledge on constructivism and acquire skills in applying constructivist approaches in the classroom.

At the end of the course, the participants should be able to:

- understand the nature, purpose and philosophy of constructivism;
- gain knowledge on meaningful learning and student-centered learning;
- design instructional activities that address students' prior knowledge, motivation, and level of interest;
- gain skills in applying constructivist approaches in secondary mathematics classes;
- develop constructivists-based assessment tools;
- apply the action research on constructivist approaches in secondary mathematics; and
- develop and showcasing lessons / activities based on constructivist approaches in secondary mathematics classrooms.

Course Contents:

The course will be activity-oriented and allow active involvement of participants in group discussions, sharing of experiences, demonstrations, planning and developing sessions in the area of constructivism. Lectures will be kept to a minimum.

The major areas include:

- Philosophy of mathematics education;
- Learning theories, and activity theory;
- How children learn mathematics:
 - Conceptions and misconceptions
 - Learning difficulties in mathematics
- Teacher centered instruction and its limitations;
- Constructivism in education:
 - Radical constructivism
 - Social constructivism
- Researches in constructivism in education & their findings;
- Exemplars of constructivist approaches in teaching secondary mathematics;
- Strategies to gather learner's conceptions and prior knowledge;
- Constructivist-based assessment; and
- Planning / designing / developing and showcasing sample lessons / instructional materials with emphasis on constructivist approaches for secondary mathematics classrooms.

General Components

- Basic computer literacy
- Classroom-based action research
- Multiplier effect

Duration: Four weeks

Participants: Secondary mathematics teachers and mathematics educators