

ED 4161 The Teaching of Mathematics in the Intermediate and Secondary School. *Instructor Margo Kondratieva.* December 2, 2009

Question: How will **you** make a decision about the choice of teaching method? When do you lecture? When do you organize a group activity? When do you assign an individual worksheets activity? What about other methods?

Hint: think about your goals in teaching, skills and learning objectives, the types and forms of information you exchange (definitions, statements, rules, problems, questions), principles of learning, assessment practices, your beliefs about the role of teacher and the students in the classroom, etc. Now you are in the position to make an informed decision.

A summary of answers received from my former students. You are welcome to add your ideas – just email me mkondra@mun.ca.

1. Teachers need to **utilize several different methods** and strategies in order

to accommodate **all** learners who may have different learning styles;

- to keep students **focused** on topic, and to show various aspects of the subject; to make class interesting and enjoyable;
- not just to force knowledge on students but **guide** them as they explore and experiment, help them to grow and expand.

2. When **making a decision** about which teaching method to use, the following are to be **taken into consideration**:

- needs, interests, and maturity of **students** (e.g. “they need to pass a public exam”, “they like sports and movies”, “they are junior or senior”),
- the nature of **topic to teach** and learning outcomes (e.g. new topic, review, skill development etc),
- personal preferences and experience of the **teacher**.

3. The following are some teaching tips:

- introducing a topic, **motivation** and students’ **engagement** are very important. For that both group activity and whole class discussion through questioning technique are useful. There must be simple, open-ended, based on students’ intuition and experience. Let students to accustom with the question/problem and enhance their curiosity for further learning of the topic. Games and humor are good icebreakers.

- Use **lectures** to provide students with new information such as definitions, rules, examples, statements, to review and illustrate connections with other topics, to summarize an exploration activity, to discuss common mistakes, to give an example of a problem solving or a logical reasoning approach, to give a closure of a lesson.
 - To strengthen students' understanding, they must be given **exercises, problems, and projects** to work on. **Group work** makes peer teaching possible and encourages development of social skills. **Individual work** allows each student to understand material on his own pace, promotes self-learning, and allows the teacher to assess students' individual progress. Students solving problems on the board that their classmates can see confirms students' mastery of the subject.
4. Assessment is an integral part of learning. Variety of teaching approaches suggests **variety of assessment methods**.
 5. A good **balance** of various teaching approaches, particularly the balance between the time for learning the theory and the time for activities in the classroom can be achieved if the teacher
 - knows the subject (math) broadly and in depth;
 - develops a “toolkit” of pedagogical knowledge and mathematical resources;
 - consults and observes his colleagues' teaching approaches;
 - reflects on own practice and experience.

Making informed decisions about which teaching method to apply in any particular situation is difficult but necessary part of teacher's profession.

6. No matter what teaching method or approach you use, always remember that you are teaching mathematics and thus respect:
 - **Numbers** – (Is my calculation exact or approximate?)
 - **Words** - (Am I using proper terminology and definitions?)
 - **Clarity** – (Isn't my question ambiguous or self-contradictory?)
 - **Logic** – (Do I distinguish a proof of a statement from an example illustrating it?)
 (see more on that in the *Margo's advice* handout.)