

INSTRUCTIONAL FOCUS

Learning in mathematics is richer and more engaging when instruction and assessment develop a direct relationship between conceptual and procedural understanding. Students should be engaged in making connections among concepts both within and across topics to make mathematical learning experiences meaningful.

Teachers should consider the following points when planning for instruction and assessment.

- Students in Manitoba bring a diversity of learning styles and cultural backgrounds to the classroom and they may be at varying developmental stages. Methods of instruction should be based on the learning styles and abilities of the students.
- Learning outcomes need to be organized into units of study. Each course suggests at least one possible order but teachers need to decide which order works best in their unique context.
- The mathematical processes that are identified with the learning outcome are intended to help teachers select effective pedagogical approaches for the teaching and learning of the outcome.
- All seven mathematical processes must be integrated throughout teaching and learning approaches, and should support the intent of the learning outcomes.
- Wherever possible, meaningful contexts should be used in examples, problems, and projects.
- Instruction should flow from simple to complex and from concrete to abstract.
- Students are expected to have consistent access to technology for all mathematics courses.
- Routinely incorporating conceptual understanding, procedural thinking, and problem solving within instructional design will enable students to master the mathematical skills and concepts of the curriculum.
- Continuous professional learning related to exemplary practices supported by pedagogical research should inform instruction and assessment.
- The assessment plan for the course should be a balance of assessment *for* learning, assessment *as* learning, and assessment *of* learning.
- The assessment plan for the course should be a balance of multiple assessment tools including
 - assignments
 - journal entries
 - performance tasks
 - portfolios
 - projects
 - quizzes
 - tests
- Positive, timely, descriptive feedback should be used to allow students to deepen their understanding of the mathematical concepts and processes.
- Teachers should organize reports about learning in mathematics by learning outcome rather than by assessment tool to show a profile of student strengths and challenges. Grading should reflect achievement of the learning outcomes, separate from effort, participation, or attitude.

“Students in a mathematics class typically demonstrate diversity in the ways they learn best. It is important, therefore, that students have opportunities to learn in a variety of ways—individually, cooperatively, independently, with teacher direction, through hands-on experience, through examples followed by practice. In addition, mathematics requires students to learn concepts and procedures, acquire skills, and learn and apply mathematical processes. These different areas of learning may involve different teaching and learning strategies. It is assumed, therefore, that the strategies teachers employ will vary according to both the object of the learning and the needs of the students” (Ontario 24).