Dimension 1: Program Scope and Planning

This dimension is about how the mandated curriculum is being implemented with respect to the expectations/outcomes of the strands of mathematics and the mathematical processes through long-range, unit, and daily plans and the use of curriculum-appropriate resources.

STRANDS

The arrangement of the curriculum into strands makes it easier to design curriculum; it also makes it easier for teachers to understand the content that must be covered. However, these strands were not designed to be distinct. It is the responsibility of teachers to use their professional judgement when planning units to integrate the strands where possible. As well, there should be an appropriate balance of coverage of all the strands throughout the year. (Also see NCTM *Content Standards. The Strands* on page 7 and *Curriculum Comparisons Across Canada* on page 8.)

KEY IDEAS

Recently, mathematics educators have been helping teachers to group the many curriculum expectations/outcomes into "key ideas" or "big ideas" so that teachers and students can better understand the interconnectedness of mathematics. When teachers are planning, they should be taking these key ideas into account to ensure that new learning is appropriately linked with prior learning. (Also see *Key Ideas—Connecting the Curriulum* on page 9.)

PROCESSES

When teachers are planning instruction and assessment, they should ensure that they consider which one or more of the mathematical processes are most appropriate to include in a lesson. The processes should also be considered when planning for assessment. (Also see NCTM *Process Standards for Mathematics* on page 4.)

PLANNING

Teachers are required to do three levels of planning—long range or yearly plans, unit plans, and daily lesson plans. Administrators should look at plans to determine if teachers are including the necessary information. It is helpful to both teachers and administrators if there are school planning templates, recognizing that teachers may vary these when appropriate.

Comprehensive yearly plans will help teachers prepare appropriate unit plans. The daily plan can be easily extracted from a well-prepared unit plan.

There are a number of approaches that teachers can take to planning. Some teachers refer to the curriculum to plan, while others use the textbook and accompanying teacher resource. There is merit in using the teacher resource if the textbook matches the curriculum. However, if it does not, expectations/outcomes may be missed or have a different emphasis or approach than the intended curriculum. As well, "extra" content may inadvertently be taught in an already tight schedule. Regardless of what resources are used, teachers should, at some stage in the planning, plan collaboratively by grade and also meet with teachers of the previous and next years' grades to discuss issues and questions that arise during planning.

Long-Range or Yearly Plans

Yearly plans help the teacher consider how the full curriculum will be covered. Anyone looking at a yearly plan will see whether all strands are included and integrated, as appropriate. It would also reveal that a teacher has planned to ensure that the same strand comes up in different parts of the year, at different levels of complexity.

A yearly plan should include the general/overall, rather than the specific expectations/outcomes to be covered at different times throughout the year. The yearly plan should also indicate, in a general way, which resources will be used throughout. There might also be some indication of links to other subject areas and how special projects might fit into the year.

YEARLY PLANS

Yearly plans should include
- a tentative timeline
- general resources to be used
- each strand of mathematics
- all general/overall outcomes
- appropriate curricular links

Unit Plans

It is at the unit plan stage where a teacher identifies the specific outcomes/expectations to be addressed. The teacher also needs to make decisions about which key ideas are applicable, which processes can most effectively be highlighted, and what specific resources will be used.

A reasonable timeline should be allocated to the unit, providing some flexibility for compacting or extending the unit based on student needs. It should also be clear that the teacher has considered the need for differentiating instruction for students who require significant variation. This includes a variety of instructional strategies and groupings, as well as lesson adaptations and alternative activities for students with various special needs.

A unit plan should include an assessment plan, which shows planning for diagnostic, formative, and summative assessment, using a variety of strategies. (Also see *Dimension 9: Assessment* on page 38).

There should be some attention to the use of homework and its distribution during the course of the unit, as well as any intention to communicate with parents about the work in the unit.

UNIT PLANS

Unit plans should include
- timelines
- specific resources
- key ideas
- general and specific expectations/outcomes
- mathematical processes
- assessment strategies
- instructional strategies
- differentiation and modification strategies

Lesson or Daily Plans

Lesson plans convert the unit plan into more manageable portions. Lesson plans allow the teacher to be more specific in planning with respect to what assumptions have been made about the skills and concepts students have (including vocabulary), how to introduce the lesson, which outcomes/expectations and key ideas will be the focus, specific strategies for differentiating instruction and grouping students, specific materials required, and pacing for each part of the lesson. Lesson plans should also include reminders of the vocabulary to be introduced, key questions to be asked (for example, to highlight the focus key ideas and expectations/outcomes), and a sense of what the main idea of the lesson is (which will also help shape the closing discussion for the lesson). All specific assessment strategies and tools should be identified. Teachers should also note what the nature of the homework will be, if applicable.

LESSON PLANS

Lesson plans should include
- pacing for the lesson
- specific materials required
- specific focus expectations/outcomes and key ideas
- prerequisite skills and concepts
- an introduction
- a differentiating instruction plan
- grouping plans
- key questions to ask
- the main idea for students to leave with a good closure for the lesson
- specific assessment strategies and tools
- homework

RESOURCES FOR TEACHING

Some teachers use the same resource for planning and for teaching most of the math program. This is probably the simplest approach. Ideally, teachers should use a variety of resources for teaching, always striving to expand their scope. It is reasonable that beginning teachers focus on fewer resources to guide their initial teaching experiences, but even beginning teachers should show evidence in their plans that they have sought out some alternative resources. If the teacher is comfortable and familiar with the curriculum, choosing curriculum-appropriate resources will be more straightforward as will choosing curriculum-appropriate activities and tasks from other resources. Inexperienced teachers should ask questions of their colleagues and review resources carefully against their curriculum to ensure the resources, activities, and tasks they are using do, in fact, reflect their curriculum.

HOW THE ADMINISTRATOR CAN SUPPORT THE TEACHER

The administrator can help the teacher in this dimension by

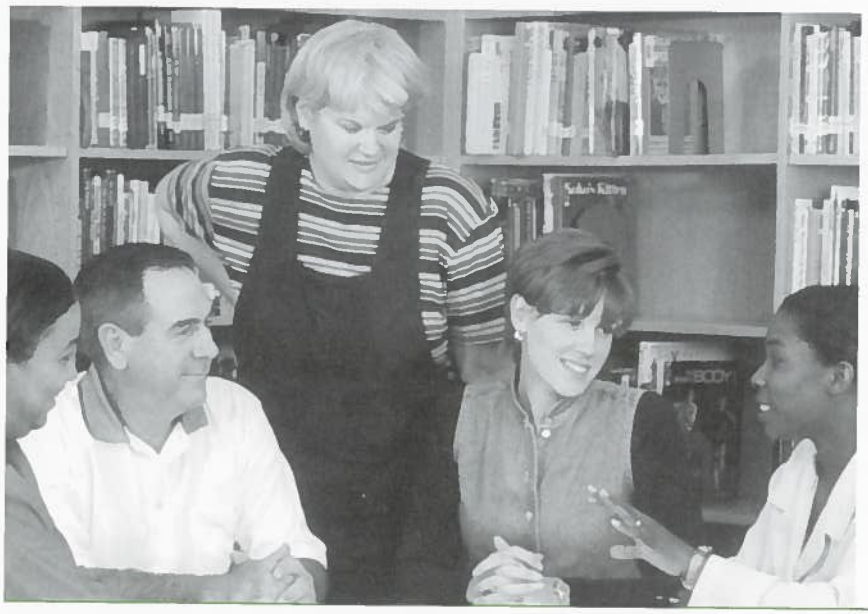
- ensuring teachers have the appropriate curriculum documents
- providing templates or exemplars of year, unit, and daily plans
- providing or working with staff to develop a common set of key ideas for mathematics
- ensuring the school subscribes to mathematics journals that teachers could use for planning
- arranging for mentors or coaches to help new teachers interpret the curriculum and plan
- encouraging same-grade teachers to plan collaboratively
- providing feedback on plans that are submitted
- ensuring teachers have curriculum-appropriate resources
- supporting teachers on staff to get involved in the selection of mathematics resources and materials at district or board level and sharing what they have learned with the staff

PRIMECONNECT

PRIME Developmental Maps

The PRIME Developmental Maps for each mathematics strand are structured according to key ideas. This will help teachers see the connections among curriculum expectations/outcomes, which will result in a better understanding of their curriculum.

(See page vii.)



Teachers can plan collaboratively to discuss curriculum issues; share ideas, resources, and materials; and establish consistency within the same grade and appropriate sequencing across the grades.

LINKING THE NCTM PRINCIPLES AND STANDARDS

This dimension links to all the NCTM principles, process standards, and content standards or strands (see pages 4–8 in Section 1).