While some educators question whether thinking skills can be successfully taught to students if they are not embedded in curricular content and others argue that direct skills/process instruction must occur prior to use in content learning, these two districts have taken another position. They have discovered that students learn well when content instruction is presented in a mastery format and when those thinking skills that complement the specified content and facilitate learning it are directly taught at identified points within the scope and sequence of the curriculum.

Baltimore County began implementing a mastery learning mathematics program in 1980 and subsequently expanded it to other content areas (see sidebar, p. 6). In 1984, they developed an implementation plan for teaching thinking skills. Rather than consider the previous focus on mastery learning as now less important, however, they dovetailed the two instructional models, emphasizing overlaps in beliefs, philosophies, methods, and strategies. As the effort progressed, school staff became convinced that their emphasis on integration was more powerful than either model would have been alone.

Since thinking is a knowledge-based activity, the coordination of the optimistic tenets of mastery learning with thinking processes is truly a way of teaching for thinking.

In the East Islip School District, the staff took an integrative approach to teaching thinking from the outset (see sidebar, p. 8). In the early 1980s, they began developing an outcome-based curriculum that focused instruction toward student mastery of identified thinking skills and processes within content areas. They spent considerable time and effort delineating the thinking skills to be taught, reinforced, or simply used, within each content

Toward Mastery of Thinking Skills in East Islip

William J. Smith

During the past four years, staff in the East Islip (New York) School District have developed an outcome-based curriculum and instructional format that focuses on student mastery of thinking skills. Like other practitioners familiar with the potential (as well as the criticisms) of the mastery process, our staff realized the need for sophisticated and carefully planned implementation (Block et al. 1989). They especially recognized that the success of their efforts would depend largely on implementation strategies that integrated the mastery process with learning theory and with other instructional models, such as cooperative learning, learning styles, and thinking skills.

To realize our district's mission statement—"Virtually all students are capable of achieving excellence in learning"—East Islip teachers developed five goals, which were then integrated into all curricular areas:

1. Each student will develop high self-esteem.
2. Each student will master the skills of knowledge, comprehension, application, analysis, synthesis, and evaluation.
3. All students will use these skills for developing processes for problem solving, decision making, and communication.
4. Each student will become a self-directed learner.
5. Each student will demonstrate genuine concern for others. In order for our students to demonstrate mastery of these five goals over the course of their 13 years of schooling, the teachers prepared a K-12 thinking skills continuum to be taught within each instructional area. They then identified the skills critical to each discipline. For example, after examining the 12th grade English curriculum, our staff concluded that students should demonstrate proficiency in listening and speaking skills, vocabulary development, spelling, reading and literature, and writing. To master these skills, they needed to be taught comprehension, critical thinking, oral discourse, analogical thinking, synthesizing, and evaluating. For this scope and sequence teachers developed specific learning objectives. The identified content areas and skills provided the scaffolding for instruction and also the framework for examinations.

As the learning objectives are translated into classroom instruction, teachers emphasize the integration of the identified skills within content knowledge. For example, in vocabulary development, the concepts selected from the reading and literature program are then used in the writing process, in speaking and listening, and in spelling. The curriculum is structured to help students make connections (see fig. 2, (p. 9) for an example of this structure).

Since both content knowledge and generic thinking skills and processes are identified and taught at each grade level, assessment is easier. Formative and summative tests assess both skills and content, providing specific information about the strengths and weaknesses of student learning. Corrective activities are designed to remedy deficits, and extension activities provide more opportunities to apply thinking skills in content learning.

In connecting outcome-based mastery learning with thinking skills, we have provided the framework that enables students to connect one fragment of instruction to another, one class period to another, one grade level to another—and, ultimately, to extend learning from the schools into students' daily lives.

Reference

Block, J.H., H. Efthim, and R. Burns. (1989). *Creating Effective Mastery Learning Schools*. New York: Longman.

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