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CHAPTER 4

CLARIFYING LEARNING GOALS

The first task in implementing mastery learning is to clearly articulate what we want students to learn and be able to do at the end of each learning unit. In other words, we need to begin with the end in mind by clarifying our learning goals. In some contexts, learning goals are referred to as standards, competencies, outcomes, proficiencies, targets, or objectives. They may even be framed as “essential questions.” But regardless of the label, our starting point is to specify precisely what we want students to achieve.

Clarifying learning goals and standards involves identifying the concepts, skills, dispositions, and abilities students should acquire as a result of engaging in specific learning activities. Some authors refer to this process as “unpacking” the goals and standards (Brown, 2007; Cianca, 2020; Marzano & Haystead, 2008). It requires making key decisions about what is most important for students to learn and at what level. Clear learning goals and standards bring focus to instructional activities and accuracy to procedures for assessing students’ learning progress. In mastery learning classes, they also provide the basis for developing formative assessments and accompanying feedback and corrective activities.

Some educators worry that specifying learning goals and standards inappropriately narrows students’ focus to only those ideas, concepts, and skills teachers feel are important. They point out, and it’s certainly true, that a great deal of student learning takes place in the absence of direct teaching.

But by its very nature, teaching is a purposeful and intentional activity. It involves helping students develop specific new knowledge and skills. Acquiring that new knowledge and those new skills requires students to engage in learning activities that help them organize new understandings and establish connections to their previous knowledge and experience (Bloom, 1981; Bruner, 1960; Prawat, 1989). Thus, even educators who advocate a “constructivist” view of learning (Mills et al., 2016; Palincsar, 1998; Prawat, 1992a, 1992b) and who see teaching as inducing conceptual change in students rather than as simply infusing knowledge (Brophy, 1992; Pinker, 2002) recognize the importance of clarity and focus in teaching.

Furthermore, clarifying learning goals need not be exclusively teacher-driven. Many teachers, especially those at the middle school level and beyond, involve students in this process. Although students’ perspectives may be limited due to insufficient background knowledge and lack of experience, teachers who

encourage students' input help students understand that learning is a shared experience. It also adds authenticity to the learning goals.

Other educators argue that the true purpose of teaching is not to help students acquire knowledge, but rather to help students develop specific “cognitive strategies.” These strategies may be labeled learning skills, cognitive skills, cognitive processes, or heuristics (Evans, 2006). They serve as guides or mental tactics students can use to solve problems or answer essential questions. Some educators consider cognitive strategies to be the principal goal of learning, while others regard such strategies as an essential step to reaching the true learning goal of having students construct personal meaning from text or solve complex problems (Macklin, 2001; Rosenshine, 1993). Later in this chapter, we will discuss the distinction between “knowledge” and “cognitive strategies” or “processes.” But regardless of the outcome, clarifying such learning goals remains a critically important first step.

Many states, provinces, and school districts develop curriculum guides or frameworks to aid teachers in deciding what knowledge and skills are most important for students to learn. In addition, many commercial publishers and online resources provide lists of the particular learning goals and standards their materials and programs are designed to help students attain. Some commercial materials and online resources further reduce the preparation work required of teachers by including assessments for checking on students' learning progress. Although these frameworks and lists vary widely in their quality and detail, many teachers find them helpful in selecting learning materials and choosing instructional methods or programs to fit the needs of their students.

Still, no set of commercial materials or online program is universally applicable. All need to be refined or adapted to meet the needs of particular groups of students or the instructional preferences of different teachers. Therefore, in addition to considering the decisions teachers need to make in clarifying learning goals and standards, in this chapter we will also review procedures for reviewing and adapting prepared instructional materials and online programs.

THE IMPORTANCE OF A FRAMEWORK FOR LEARNING

When scholars or researchers reach a certain level of sophistication in a subject, they tend to see definitive relations among the subject's main ideas and concepts. These relations help them understand more complex phenomena and aid them in conducting further study. Curriculum writers, most of whom are also experts in the subject, frequently assume that the way experts see a subject is synonymous with an appropriate structure for teaching and learning that subject. Unfortunately, that's not always true.

For example, several modern mathematics and science curricula were based on the belief that if the sophisticated organizing principles that experts find useful

could be provided to young people learning a subject, they would find it easier to learn. It was quickly discovered, however, that while these organizing principles are valuable for specialized scholarship, they are not always useful in helping students learn. As Benjamin Bloom, J. Thomas Hastings, and George Madaus (1971) point out:

The usefulness of a structure for learning has to do with the ability of students to comprehend it and use it as an organizing factor in their learning. There is no relation between the usefulness of a structure for scholars and its usefulness (and meaningfulness) for students. (p. 12)

Students certainly learn more easily when provided with a framework that helps them organize their learning and relate ideas and concepts. Such a framework helps students make connections with their previous learning and gain deeper meaning from what might otherwise be a large number of unconnected specifics. Many teachers try to provide this framework at the beginning of learning units by highlighting organizational patterns to help students better assimilate new information or ideas. Before students read about the French Revolution, for example, the teacher might present a conceptual scheme of the words or phrases of a revolutionary movement—words such as *anarchy*, *despotism*, *rebellion*, *uprising*, *insurrection*, and *mutiny* that relate to an outbreak against authority.

Researchers refer to these conceptual frameworks as “advance organizers” (Ausubel, 1979, 1980). In most cases, they are simple verbal or visual bridges, described by the teacher, to help students link their previous knowledge with the new learning. Research studies on advance organizers show that providing students with such a framework can have a significant positive effect on both learning and retention (Luiten et al., 1980; Preiss & Gayle, 2006; Slate & Charlesworth, 1989; Stone, 1983).

Similarly, investigations show that instructional “scaffolds” can be highly effective as well. Scaffolds refer to temporary supports, provided by the teacher or more capable students, to help students bridge the gap between their current understanding and the learning goal (Frey & Fisher, 2010; Palincsar & Brown, 1984, 1988; Paris et al., 1986). Scaffolding reduces the complexities of learning tasks for students by breaking down problems into manageable chunks that students have a real chance of solving (Huggins & Edwards, 2011). Essentially, it reduces the demands of the problem and allows students “to participate at an ever-increasing level of competence” (Palincsar & Brown, 1984, p. 122).

Scaffolds include providing simplified problems, modeling by the teacher, guided practice, and thinking aloud explanations as the teacher solves the problem. In essence, they are like the training wheels used to help children learn how to ride a bicycle. As students become more competent and independent, the scaffolds are generally faded or withdrawn, although some students may continue to rely on them or may even request them when they

encounter particularly difficult problems (Belland & Drake, 2011; Rosenshine, 1993; Rosenshine & Meister, 1992).

Regardless of the format, a framework for learning should provide students with a mechanism they can use to better understand the instruction and to organize the concepts they are learning. It should also provide students with a way to move from one level of learning to higher, more complex levels. We must keep in mind, however, that an effective framework for learning is based primarily on learning or pedagogical considerations, and may not be the same as an expert's or scholar's view of the field.

ORGANIZING LEARNING UNITS

Developing or organizing an appropriate framework for learning generally involves three specific steps:

1. Clearly describe the final learning goal or standard. In most cases, this means developing a clear picture of the competent student who has truly mastered the unit concepts and skills and is able to appropriately communicate or adequately demonstrate precisely what was learned.
2. Analyze the final learning goal or standard to identify the steps needed to reach the goal or achieve the standard. Many teachers refer to this as “unpacking” the goal or standard.
3. Determine the optimal order of these steps. This typically involves deciding on the most meaningful sequence of instructional activities to facilitate learning and provide for steady and regular progress toward mastery of the goal or standard.

Although these three steps may seem implicit in all teaching, one or more is often neglected. For example, sometimes the daily burdens of teaching divert a teacher's focus from the final learning goal and, as a result, instructional efforts lose their direction and cohesion. Similarly, concentrating solely on the goal or standard without careful attention to the instructional steps required to reach that goal frequently leads to frustration for teachers and students alike. Both the final goal or standard and the sequence of steps required to reach that goal need to be kept in mind for teaching and learning to be effective.

Steps in Developing an Appropriate Structure for Learning

1. Clearly describe the final learning goal or standard.
2. Identify the steps necessary to reach the goal or standard.
3. Organize the steps in an optimal sequence for learning.

A PRACTICAL EXAMPLE

Analyzing the learning goal and organizing the steps necessary to reach that goal are essential aspects of all teaching and learning activities. Consider, for example, how you might go about teaching someone to play tennis. You would begin with a mental picture of an “excellent” tennis player—the learning goal you want the student to attain at the end of the learning process. Your mental picture might include approaching the ball, positioning the racket correctly, swinging smoothly, returning the ball to the other side of the court, and recovering for the return. You would also need to identify specific criteria for judging the student’s performance and finally develop a rubric describing various levels of proficiency on each of these steps.

As a teacher or tennis coach, that mental picture would be the starting point from which you need to work backward. From there, you would need to analyze each aspect of the desired final performance and identify the specific steps that need to be mastered. You would probably think about matching the racket to the student’s size and strength; adjusting the student’s grip for backhand and forehand returns; explaining the importance of staying behind the ball; and demonstrating the backswing, swing, and follow-through. You would introduce important terms, such as *service line*, *backcourt*, and *volley*. You would also need to explain the rules of tennis and describe how to keep score.

Building on this analysis, you would next consider an appropriate sequence of learning steps, perhaps ordered in terms of difficulty or complexity. You would present basic elements like staying behind the ball and the backswing before considering more advanced elements like an appropriate follow-through and recovery. As you taught, you would check for any special problems the student might experience and correct them when they appear. You would also need to be aware of individual differences among players and adapt your teaching to those differences. For instance, some players do well with a traditional, closed stance when hitting the ball while others do better with a more open stance. In addition, you would probably make a point of letting the student know when progress was evident and providing reassurance during challenging times. And, of course, you would be sure to emphasize the most enjoyable aspects of the game and give the student frequent opportunities to experience these.

This example illustrates the complex process that takes place in effective standards-based or competency-based teaching and learning. To organize learning units and plan appropriate classroom activities, teachers must analyze and dissect the learning goals and standards. In other words, they must determine the various components of each goal or standard that students must learn and then organize or arrange these components in a meaningful sequence of learning steps. Teachers must then make adaptations for individual learning differences to ensure that all students understand, practice, and master each component as they progress toward mastering the final goal or standard. As part of this process, teachers also must develop procedures to formatively assess

learning progress, identify learning problems, take specific actions to remedy those problems, and then use this information to determine the effectiveness of their instructional methods.

APPLICATIONS WITH MASTERY LEARNING

This same clarification process is essential in mastery learning. Teachers begin by identifying the final learning goals and standards they want students to achieve and then analyze the specific steps students need to master in order to reach that goal. Many teachers do this naturally as a part of their instructional planning. That is, they start with a mental picture of a competent learner at the end of teaching and learning process. They then divide into smaller segments or steps the concepts and skills students must learn over the academic term or year to reach that overall goal. Each of these steps is then considered a “learning unit.”

The delineation of learning units is somewhat arbitrary. Ideally, learning units should be determined by natural breaks in the subject material or by content elements that make a meaningful whole. For this reason, each unit might not cover exactly the same amount of content or exactly the same number of concepts or skills. Textbook publishers usually divide the content of a particular subject in accordance with these natural breaks. Hence, chapters in textbooks often represent appropriate learning units. Online program developers do the same.

Another critical element to consider in determining learning units is instructional time. A learning unit should contain the knowledge, concepts, and skills that can be presented in *about a week or two of classroom time*. Learning units at the elementary level are generally shorter and cover fewer concepts than learning units at the high school or college level. An early elementary school unit, for example, typically lasts about a week and may cover only two or three important concepts or skills. A unit in a high school course, on the other hand, may last two weeks or slightly longer and cover eight or ten important concepts.

Teachers need to give careful thought to determining the length of their learning units. If units are too short, then learning can become fragmented, and generalizations or higher-level skills are difficult to build. If learning units are too long, however, then students who fall behind at the beginning because of particular learning problems may have great difficulty catching up. Thus, not only the content but also the pace of instruction and the level of the students involved must be considered in determining the appropriate length of learning units.

Although identifying learning units can be challenging, it's important to realize that all teachers already do this as part of their instructional planning. Many teachers use their textbooks or curriculum frameworks as guides in making these decisions. Most also consider instructional time. Successfully implementing mastery learning doesn't require altering decisions that have already been made. Rather, it means simply

ensuring those decisions are made with careful thought and a clear focus on the final learning goal.

CONTENT VERSUS PROCESS

Once teachers have clearly delineated the sequence of learning units, the next task is to identify and analyze the learning goals and standards to be addressed in each unit. This requires teachers to specify the new knowledge, concepts, and skills in each unit that students will be expected to learn.

Most teachers begin this task by developing detailed outlines of the new content they plan to present. A mathematics teacher, for example, might define equilateral, isosceles, and right triangles, and then list the similarities and differences between them. A social studies teacher might describe the political, economic, and social factors that led to the American Civil War. In many cases, states, provinces, and school districts take on this task by developing content outlines that describe the ideas and concepts students should learn at a particular grade level or in particular courses. These outlines are then presented as lists of “content standards.”

Detailed content outlines are useful planning tools. But alone, they are insufficient simply because they say little about what students *are expected to do* with that content. For instance, should students simply know and be able to recall these mathematical definitions and historical factors, or should they be able to explain them in their own words? Should they be able to recognize appropriate examples, offer their own examples, or transfer and apply these definitions and factors in new contexts? These questions about what students are expected to do with the new content have profound implications for both how the unit will be taught and how student learning will be assessed. These thinking, reasoning, analytic, transfer, and problem-solving skills are often described as “process standards.”

Although many modern curriculum frameworks draw distinctions between “content standards” and “process standards,” both Ralph Tyler (1949) and Benjamin Bloom (1963) objected to the idea. Tyler and Bloom granted that such descriptions address two different questions. Specifically, “content standards” address the question, *What should students learn?* while “process standards” address the question, *What should students do with what they learn?* But Tyler and Bloom believed that separating these in a curriculum was unproductive and nonsensical.

In their many writings on the topic, both Tyler and Bloom recognized differences in the cognitive complexity of learning goals and standards, especially between simply knowing something and developing deeper understanding or more thoughtful reasoning. In developing the *Taxonomy of Educational Objectives: Cognitive Domain*, for example, Bloom and his colleagues (1956) emphasized the difference between simply knowing or remembering and the higher-level thinking

skills associated with comprehension, application, and transfer. Bloom was quick to add, however, that thinking, problem solving, analysis, and synthesis cannot be done in the absence of content. You must have something to think about!

Howard Gardner (2015) emphasized this same issue in a widely circulated interview:

As I express it in a book called *Five Minds for the Future* (Gardner, 2006), being creative means thinking outside of the box. But you can't think outside of the box unless you have a box! And that box contains the disciplined knowledge that you have acquired, often over a significant period of time. (p. 2)

In his review of efforts to revise and modernize social studies curricula, Kevin Krahenbuhl (2019) stressed this same point:

Content knowledge is not the enemy of critical thinking; it is a necessary partner. To think critically and offer wise insights requires sufficient knowledge as a prerequisite. . . . Over the past few decades, considerable work in cognitive psychology on the development of expertise has concluded that intellectual skills are mainly domain-specific (Ericsson et al., 2018; Tricot & Sweller, 2014). Furthermore, the level of skill is largely determined by one's relevant knowledge. An emphasis on critical thinking rather than content prevents students from building a broad base of knowledge through which they can exhibit such skills as engaging meaningfully in civic conversation. (pp. 23–24)

Therefore, in analyzing the learning goals and standards for a unit, teachers must consider *both* the content students are expected to learn and the specific skills they should develop in relation to that content. That is, they must be clear about what students will be expected *to do* with what they have learned. These skills indicate the ways we want students to think, act, or feel about the content, about themselves, and about others. It also communicates how we want students to relate and use the new content. Successfully analyzing learning goals and standards requires the *concurrent* specification of content *and* process.