7 Curriculum Development

LEARNING OUTCOMES

After reading this chapter, you should be able to

1. Explain the various procedures of curriculum development in the technical-scientific approach and apply the specific steps to create a general curriculum plan
2. Describe the various nontechnical-nonscientific approaches to curriculum development
3. Explain how one might enact a curriculum development process
4. Identify and explain the various participants who should be involved in the curriculum development process or processes

Education and schooling have a troubled relationship, making it necessary for educators, teachers especially, to reflect on just what each concept represents. Hidden within these concepts are knowing and understanding. Also, there is this question: Does school contribute to or hinder students' education? This question has a long history. Ever since compulsory public school began in the 19th century, groups have queried whether schools possessed the capacity to educate.[1] We are not going to answer this question definitively. However, we do believe that the school's function is to educate, not to mold students who just regurgitate information or perform mindless skills.

As Ken Osborne asserts, in a democracy, students must realize that dialogue is central to democratic participation. Students need deep knowledge to debate myriad viewpoints; students must relish interacting with individuals with opposing views; students must attain capacities to process opinion into action.[2] But to be skilled in meaningful dialogue, students must develop critical thinking within acute issues facing them in the 21st century. As Nodding asserts, we still tend to believe that critical thinking can be taught as an intellectual skill apart from particular topics and issues.[3] Or, as Doll posits, many educators believe that a teacher can "give" students the steps of critical thinking, which they can then apply. But as Doll further states, thinking is different from learning. One can learn, be given, the steps involved in thinking, a formula that they can just apply as need arises. But that is just applying a "given," an approach that is accepted by the students, not owned or internalized.[4]

Education in the 21st century exists in a sea of unique complexity. Education and/or training appropriate in the 20th century is/are no longer adequate for the 21st. While education in the last century fostered a rugged individualism and perpetuated the myth that people could succeed on their own, this new century requires a need for skills in collaboration and recognizing and appreciating interdependence at myriad levels of human engagement.[5]

Education, in contrast to schooling, enables students to become individuals with intellectual character. As Ron Ritchhart queries, "Why would we be teaching a curriculum if not for intelligence?"[6] Schooling tends to indoctrinate. Education strives to liberate. Schooling tends to stress efficiency and standardization. Education endeavors to be messy and spontaneous. Schooling attempts to fill students with knowledge. Education tries to make students utilize knowledge in thinking and to become intelligent utilizers of information. Education fosters intellectual character in students.[7] Doll notes that in our striving to make students thinking individuals, we sometimes give students too much regarding thinking processes. We make students receivers of process, passive learners, rather than actors in their own learning, active learners. Doll stresses that learning is not repeating verbatim what is read or heard. Rather, learning results from students actively engaged in rethinking details read or presented and rearranging such data so as to develop insights to which they can claim ownership.[8] Curriculum development needs to be designed such that students have ample opportunities for discovery play. Students need to have presented many ports from which they can initiate voyages to the unknown.[9]

To educate so that students are the main actors in their learning requires educators to engage in serious curriculum development. A curriculum, especially in this technological century, is more than a school board–approved textbook series. As noted by Michael C. McKenna, we are well into a "brave new world of technology."[10] This new world with ever-expanding information technologies has added complexities to what it means to be literate, to manage one's education. He notes that the speed of new technologies demands that those planning curriculum consider the inclusion of new student skills and strategies.[11] In this 21st century, we educators and curriculum developers are also challenged to be active students of education and learning.

We do not suggest that teachers disregard textbooks and other educational materials. However, textbooks and related materials provide only a suggested curriculum. Teachers must still make informed decisions about the purposes of learning certain information, what content to stress, what materials to emphasize, and how to sequence such materials. Further, teachers must decide what instructional strategies to use and what student activities are essential and appropriate for diverse class members. Also, teachers must select various assessment instruments and processes to support their teaching and students' learnings.

Curriculum development is not static. It draws on emerging views of modernism and postmodernism, new understandings of cognitive theories, new understandings of the anatomy and physiology of the brain, and new formulations of instructional design and systems theory. The melding of thought regarding the various world and educational philosophies is also having an impact on curriculum development.

There are various ways to define curriculum development. Also, different curriculum designs take subject matter, students, and society into account to differing degrees. Curriculum development consists of various processes (technical, humanistic, and artistic) that allow schools and schoolpeople to realize certain educational goals. Ideally, everyone affected by a curriculum is involved in its development.

A useful way to reflect on curriculum development is to think of it as a variety of games with myriad rules. Allan Garrett makes a case for the ecology of games metaphor when he states that it "provides an elegant and useful framework for the consideration of the various parties that seek to influence American public education."[12] Garrett notes that Norton E. Long first introduced studying local communities as ecologies of games.[13]

Looking at curriculum development as a series of games engaged in by various educators, teachers, curricularists, administrators, and even, at times, groups from the general public assists us in realizing that people have varied goals for playing the game or games. Employing the game

mentality, there are winners and losers, although we should strive for the curriculum game as a win-win.

In the curriculum-development game, there are players who collaborate for diverse and particular ends. Many teachers may share particular ends—that is, to have students "win" the game of really learning the curriculum developed and implemented—whereas some teachers, especially in districts advocating merit pay for "successful" teaching, might aim at advancing themselves on the pay scale. Administrators might play the game to have their schools attain state and national standards. School board members might strive to get reelected. Legislators might engage in the curriculum game to define themselves as "educational" leaders. We can analyze not only how the "many" play the game, but deduce their rationales for playing and the criteria they use for success. And some players might be participating in related and parallel games. Individuals might use others for their own benefits. Garrett posits that legislators might argue for better schools and curricula solely to win public support for their particular agendas.

Some players are engaged in Race to the Top to gain funding for novel ideas regarding education in general and curriculum in particular. Some play for pride, for praise, or for attainment; but all play for a purpose. They play for success! Currently, *success* has a plethora of meanings: attaining standards, liberating minds, indoctrinating, opening intellectual horizons, scoring high on tests, knowing the mores of particular cultures, and so on. Although many players are multitasking in their games, most center their play on a particular game—in our discussion, on playing curriculum development. And most curriculum players play the game from a technical, nontechnical, or holistic model.

Many social and educational critics believe that society has been moving from modernism (which stresses the technical, precise, and certain) to postmodernism (which stresses the nontechnical, emergent, and uncertain). Modernism has also been labeled constructivism; postmodernism has been described as postconstructivist. While modernism is still dominant in most educators and the public's view, postmodernism emerged in the latter part of the 20th century. Because postmodernism is relatively new, we have more technical than nontechnical curriculum models on which to draw. People who believe in a curriculum design that stresses subject matter usually favor technical approaches to curriculum development. People who focus on the learner often prefer a nontechnical approach. People who consider the curriculum a vehicle for addressing social problems can favor either approach. Certainly, as Doll asserts, adjusting one's thinking and conceptions from modern to postmodern cannot be done in just a few decades. Humans accommodate change to new processes of thinking and meaning-making slowly. Systems breaks such as postmodern approaches frequently are resisted in the early stages. But we believe, along with Doll, that these new ways of viewing and reasoning eventually will meld into our cognitive approaches to evolving realities.[14] We suggest that you the reader try to view what you read about curriculum development as if wearing glasses that allow you to experience both modern and postmodern postures. Read with certainty; reflect with uncertainty and doubt. Reflect with awe about the dynamics of reality. Life does not stand still; individuals live and act in evolving "nows." Learning results in myriad layers of understandings and doubts. The following sections dealing with approaches to curriculum development should be considered as algorithms, not precise formulas for creating curricula. These are procedures that embrace educational visions "built on doubt not certainty."[15]

TECHNICAL-SCIENTIFIC APPROACH (MODERNIST PERSPECTIVE)

The technical-scientific approach to education and curriculum stresses students learning specific subject matter with specific outputs. Curriculum development is a plan for structuring the learning environment and coordinating personnel, materials, and equipment. The approach applies scientific principles and involves detailed monitoring of the components of curriculum design.[16] Curriculum is viewed as a complex unity of parts organized to foster learning.

Educators who use a technical-scientific approach attempt to systematically outline those procedures that facilitate curriculum development. The various models use a means-end paradigm that suggests that the more rigorous the means, the more likely the desired ends will be attained. Followers of this approach indicate that such a systematically designed program can be evaluated. However, others question just how precise the evaluation can be.

The various technical-scientific models exhibit what James Macdonald called a "technological" rationality, as opposed to an "aesthetic rationality."[17] People who favor technical-scientific models prioritize knowledge acquisition and an educational system that is maximally efficient.

Technical-scientific curriculum development began around 1900, when educators sought to apply empirical methods (surveys and analysis of human conduct) to the question of curriculum content. The push for a science of curriculum making accompanied the rise of biology, physics, and chemistry as well as the use of the "machine theory" evolving in business and industry.

The Models of Bobbitt and Charters

Franklin Bobbitt compared creating a curriculum to constructing a railroad: Once the general route is planned, the builder engages in surveying and then the laying of track. Developing a curriculum is like planning a person's route to growth, culture, and that individual's special abilities.[18] Like a railroad engineer, an educator must "take a broad over-view of the entire field [and see] the major factors in perspective and in relation." A general plan for the educational program can then be formulated, followed by "determining content and experiences necessary for the [learner]."[19] Even today, many educators believe that curriculum development must include some means of monitoring and managing learning; that is, students' interactions with specific contents. Such monitoring enables an effective structure of curriculum and instruction.[20]

For Bobbitt, the first task of curriculum development is to "discover the activities which ought to make up the lives of students and along with these, the abilities and personal qualities necessary for proper performance."[21] Bobbitt believed that education in the new 20th century had to strive to develop a type of wisdom that could result only by participating in actual life situations. Such situations would nurture in students' specific judgments and thought.[22] Education's purpose was to prepare students effectively to be competent participants in life, particularly to engage in specific activities that would contribute to society, the economy, and family life. He argued in his writings that prior to the 20th century, creating curricula, creating educational opportunities, was not carefully thought through. To create a meaningful educational experience, we needed a scientific technique to determine curricula requisite for educating students in specific activities necessary for a productive life that contributed to the overall society.[23] All human experiences needed to be considered when contemplating developing curricula. What Bobbitt advocated still has value today. This approach continues in various types of task analysis.[24] It shares features of what some educators call *backward design*.[25]

Bobbitt's contemporary Werrett Charters also believed in activity analysis. However, Charters noted that "changes in the curriculum are always preceded by modifications in our conception of the aim of education."[26] Our aims (ideals) influence the selection of school content and experiences. Charters wanted educators to connect aims with activities that individuals performed. He advocated four steps of curriculum construction: "(1) selecting objectives, (2) dividing them into ideals and activities, (3) analyzing them to the limits of working units, and (4) collecting methods of achievement."[27]

For Charters, philosophy supplied the ideals that were to serve as objectives and standards. He noted that the curriculum could contain both primary and derived subjects. *Primary subjects* were those directly required by a particular occupation. For example, a meteorologist must fill out various types of reports. Therefore, report writing is a primary subject for all students to experience in English classes. Meteorology requires a knowledge of physics and mathematics, which are *derived subjects,* "service subjects which are important not because they are directly

useful in the performance of activities, but because they are derived from material which has practical service value."[28]

Bobbitt and Charters firmly established scientific curriculum making. They saw effective curriculum development as a process that results in a meaningful program. Bobbitt and Charters initiated a concern for the relationships among goals, objectives, and activities. They regarded goal selection as a normative process and the selection of objectives and activities as empirical and scientific. Bobbitt and Charters indicated that curricular activity can be planned and systematically studied and evaluated.

The field of curriculum achieved independent status with the 1932 establishment of the Society for Curriculum Study. In 1938, Teachers College at Columbia University established a department of curriculum and teaching. For the next 20 years, Teachers College dominated the field of curriculum; its influence even surpassed the earlier influence of the University of Chicago.

The Tyler Model: Four Basic Principles

Ralph Tyler's technical-scientific model is one of the best known. In 1949, Tyler published *Basic Principles of Curriculum and Instruction*, in which he outlined an approach to curriculum and instruction.[29] Those involved in curriculum inquiry must try to (1) determine the school's purposes, (2) identify educational experiences related to those purposes, (3) ascertain how the experiences are organized, and (4) evaluate the purposes.

By *purposes,* Tyler meant general objectives. He indicated that curriculum planners should identify these objectives by gathering data from the subject matter, the learners, and the society. After identifying numerous general objectives, the curriculum planners were to refine them by filtering them through the school's philosophy and the psychology of learning. Specific instructional objectives would result.

Tyler discussed how to select educational experiences that allow the attainment of objectives. Learning experiences had to take into account learners' perceptions and previous experience. Also, they were to be selected in light of knowledge about learning and human development. Tyler addressed the organization and sequencing of these experiences. He believed that the sequencing had to be somewhat systematic to produce a maximum cumulative effect. He thought that ideas, concepts, values, and skills should be woven into the curriculum fabric. These key elements could link different subjects and learning experiences. Tyler's last principle deals with evaluating plans and actions. Tyler believed that evaluation was important in determining whether a program was effective.

Although Tyler did not display his model of curriculum development graphically, several other people have. Our diagram of this model appears in Figure 7.1.

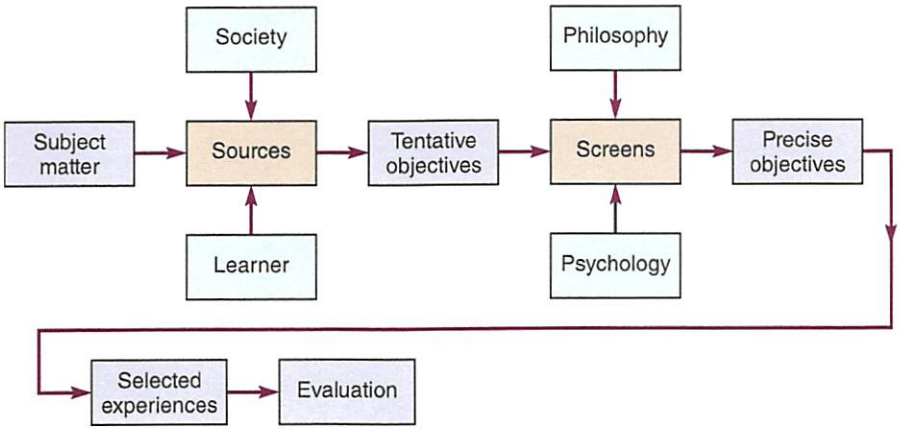

FIGURE 7.1 Tyler's Curriculum Development Model

Some people have criticized Tyler's approach as too linear, too reliant on objectivity, and somewhat based on assumptions about cause and effect; it allows all educational experiences to be justified by the objectives that they address. Nevertheless, Tyler's approach to curriculum development remains popular with school district personnel and still influences universities. Its reasonableness and workability appeal to many people. Tyler's approach works regardless of context or one's philosophical orientation.[30]

The Taba Model: Grassroots Rationale

Hilda Taba was an influential colleague of Tyler's. In *Curriculum Development: Theory and Practice* (1962), she argued that there was a definite order to creating a thoughtful, dynamic curriculum.[31] Unlike Tyler, Taba believed that teachers should participate in developing curricula. She advocated what has been called the *grassroots approach*,[32] a model whose steps resemble Tyler's. Although Tyler did not advocate that his model be used only by people in the central office, educators during the early days of curriculum making thought that the central authorities had the knowledge to create curricula. They subscribed to a top-down (administrative) model. Frequently, administrators gave teachers ideas from curriculum experts and then supervised the teachers to ensure that the ideas were implemented. In contrast, Taba believed that a curriculum should be designed by its users. Teachers should begin by creating specific teaching-learning units for their students and then build to a general design. Taba advocated an inductive approach rather than the more traditional deductive approach of starting with a general design and working toward specifics.

Taba's grassroots model entails seven major steps:

1. *Diagnosis of needs.* The teacher (curriculum designer) identifies the needs of the students for whom the curriculum is being planned (see Curriculum Tips 7.1).
2. *Formulation of objectives.* The teacher specifies objectives.
3. *Selection of content.* The objectives suggest the curriculum's content. The objectives and content should match. The content's validity and significance also are determined.
4. *Organization of content.* The teacher organizes the content into a sequence, taking into consideration learners' maturity, academic achievement, and interests.
5. *Selection of learning experiences.* The teacher selects instructional methods that engage the students with the content.
6. *Organization of learning activities.* The teacher organizes the learning activities into a sequence, often determined by the content. The teacher must bear in mind the particular students who will be taught.
7. *Evaluation and means of evaluation.* The curriculum planner determines which objectives have been accomplished. Students and teachers must consider evaluation procedures.

CURRICULUM TIPS 7.1 Conducting a Needs Analysis

1. Set aside time and designate people who will conduct the needs analysis.
2. Create or obtain data gathering instruments and schedule time to gather data (for example, through surveys, town meetings, questionnaires, tests, and interviews).
3. List the curriculum's aims and goals.
4. Match the aims and goals.
5. Identify gaps between desired and actual results.
6. Decide which gaps require immediate curricular attention.
7. Suggest ways to address the identified gaps.

Source: Adapted from Abbie Brown and Timothy D. Green, *The Essentials of Instructional Design* (Upper Saddle River, NJ: Pearson, 2006), p. 97.

Taba was far ahead of her time. Most of today's curriculum designers still follow steps 1, 2, 5, 6, and 7. They first examine the extant situation, analyzing the learners and their needs (Taba's step 1). They then develop instructional goals and objectives (Taba's step 2). Third, they organize instruction and create learning environments (Taba's steps 5 and 6), selecting learning experiences and organizing learning activities. Finally, they evaluate the learners and the instructional program's overall success (Taba's step 7).

The Backward-Design Model

Another popular model of curriculum development is the "backward design" advocated by Grant Wiggins and Jay McTighe.[33] Essentially, this model is a variation of task analysis. Its roots can be traced back to Bobbitt and Charters. It also draws from the fields of architecture and engineering.

Backward design (we prefer to call it *backward development*) begins with a statement of desired results. Just what do you want to accomplish? What should students know and be able to do? What values and attitudes should they have? What skills should they possess and be able to demonstrate? Essentially, this first stage involves identifying the school program's goals.

Wiggins and McTighe specify three levels of decision making in this first stage. At the first and most general level, an educator considers goals and checks on national, state, and local content standards. At the second level of decision making, curriculum developers (including classroom teachers) select content—valuable information and skills that might lead students to the desired results. What basic understandings and skills do students need in light of stated standards, community expectations, and research results? What generalizations, concepts, and facts must students master in order to achieve? What procedures, methods of analysis, and thinking strategies must students experience to become self-learners?

The final level of decision making in this first general stage involves narrowing the content possibilities. What specific courses will be taught, and what particular content (both declarative and procedural)? Wiggins and McTighe refer to this final level of decision making as identifying enduring understanding that anchors the unit or course. "The term enduring refers to the big ideas, the important understandings, that we want students to 'get inside of' and retain after they've forgotten many of the details."[34]

Stage 2 of the backward-design model involves determining how the curriculum will be evaluated once it is in place. How will we know whether students have met the set standards? What evidence will be collected to assess the curriculum's effectiveness? According to Wiggins and McTighe, the backward-design model gets teachers thinking like assessors before they develop curriculum units and lessons. Wiggins and McTighe suggest various assessment methods that can be considered at this stage, including informal checks, observations of students, dialogue with students, quizzes and tests, and performance tasks and projects.[35]

When educators have clearly identified the curriculum's goals and determined how to assess the extent to which those goals have been reached, they are ready to plan instructional activities. Wiggins and McTighe list several key questions that curriculum developers and teachers must raise at this stage:

> What knowledge and skills do students need to succeed in the course?
>
> What activities enable students to master the requisite knowledge and skills?
>
> What should be taught, and how should it be taught, for students to become knowledgeable and skillful in the identified content realm?
>
> What materials foster student success in the curriculum?
>
> Does the overall design of the course or unit fulfill the principles of curriculum development?

Figure 7.2 shows a variation of Wiggins and McTighe's backward-design model.

Identify expected endpoints → Determine evidence → Plan learning experiences

- Consider possible contents
- Narrow choices to important contents
- Select the final enduring contents

FIGURE 7.2 Backward-Design Model

The Task-Analysis Model

7.1 Backward Design
Backward Design is a way to plan curriculum with the end, or goal, in mind. Watch as this short video "illustrates" this idea. How might a teacher use backward design to plan a unit on a subject like the Civil War or the U.S. Constitution?

https://www.youtube.com/watch?v=3Xzi2cm9WTg

Task-analysis models differ widely. However, they all share a focus on identifying essential content and skills, which are determined by analyzing the tasks necessary for school learning or some real-world task.[36] Basically, there are two types of task analysis: subject-matter analysis and learning analysis.

SUBJECT-MATTER ANALYSIS. *Subject matter,* or *content,* is the starting point in subject-matter analysis. The key question is, What knowledge is most important for students? We usually ask this question of subject-matter experts. Ideally, these experts are the educators responsible for creating and teaching the curriculum. However, we can draw on the expertise of scholars in various disciplines. When the curriculum is intended to prepare people for certain professions, then the question is, What subject matter enables students to perform the tasks of particular jobs within those professions?[37]

Subject matter must be broken into parts. Consider the subject of government. Students must understand the general concepts *government* and *citizen,* but also the narrower concepts of *representative government* and *citizen responsibility*. They must also know certain facts, such as the number of branches of government and the dates when amendments to the U.S. Constitution were passed. Breaking down knowledge of government requires giving that knowledge realm some structure. One way to do this is to use a master design chart.

A master design chart uses information gained from experts in the subject matter. This information covers important facts, concepts, rules, laws, generalizations, theories, and so on. Essentially, the master design chart contains the topics and related information to be learned in a certain course or a total curriculum. One way to design the chart is to create a row for each crucial topic and a column for the degrees of emphasis that topics will receive. One also could indicate the various learning behaviors that students must exhibit regarding each topic: concepts, generalizations, and so on. Figure 7.3 provides a sample master design chart.

Someone reading about a master design chart might think that it is the same as a curriculum map. There are similarities. However, curriculum maps deal with content topics to be covered, but not how they are to be experienced. Also, curriculum maps are generated primarily by teachers scheduled to teach the curriculum.[38]

Once the chart has been completed, it is necessary to identify the relationships among the content topics, concepts, generalizations, and so on. In determining the relationships, we reflect on how to construct the curriculum unit so that the content has a meaningful organization. The content can be organized chronologically, according to the specific content's knowledge structure, in the order in which it might be used, or according to the manner in which psychologists indicate students might best learn it.

LEARNING ANALYSIS. Ideally, learning analysis begins when content is being organized. It encompasses activity analysis and addresses which learning processes are required for students to learn the selected content. What activities might students engage in to learn the content and

Content		KNOW			ANALYZE		APPLY	EVALUATE	
		State Facts	Explain Concepts	Present Generalizations	Deconstruct Concepts	Determine Relationships	Do Fieldwork to Gather Data	Determine Accuracy of Field Data	Judge Validity of Conclusion
Land Forms	Mountains	3	2	2	2	2	0	0	0
	Hills	3	2	2	2	2	1	1	1
	Plateaus	3	2	2	2	1	0	0	0
	Plains	3	2	2	2	1	1	1	1
Water Bodies	Oceans	3	2	2	2	2	1	0	0
	Lakes	3	1	1	0	0	0	0	0
	Rivers	3	2	2	2	1	0	0	0
	Seas	3	1	1	0	0	0	0	0

Numbers show level of emphasis given to content and activities.
3 = Heavy emphasis
2 = Major emphasis
1 = Minor emphasis
0 = Mention but no emphasis
— = No mention

FIGURE 7.3 Master Design Chart (for Geography)

master some problem-solving process? It is helpful to consult experts in instructional design and psychology, especially cognitive psychology and brain research.

Learning analysis addresses the sequence of the learning activities. Is there an optimal time line for learning certain content and skills? What should the learner do to gain competence in the skill or content? At this stage, the learning analyst selects instructional approaches that move students toward the curriculum's goals.

Until recently, curricularists had to rely on the research results of cognitive psychology to accomplish learning analysis. The brain was essentially a "black box," about which we inferred how the brain developed and processed learning. Now, with recent brain research, learning analysis can be more precise. Recent discoveries about brain functioning and networking enable us to determine with greater precision those curricular contents and experiences that foster learning.[39]

In the next stage of learning analysis, the curriculum developer creates a master curriculum plan that synthesizes the information obtained and organized through the selection of subject content and learning approaches. Those who have been involved in the task analysis determine the plan's format.

The curriculum team studies the selected content and determines specific objectives with regard to that content. The objectives deal with the cognitive, affective, and (sometimes) psychomotor domains. The sequence of the objectives is linked to the sequence of the selected content and learning activities. The master plan also can indicate educational materials and evaluation methods. Figure 7.4 illustrates the format for a master plan.

In the actual employ of task analysis, subject-matter analysis and learning analysis are often melded. Frequently, the procedural steps are not clear cut. One hybrid type of task analysis might be called gap analysis.[40] Here the focus is to identify gaps in subject matter or in the learning of subject matter. What content are we neglecting? And if we are not neglecting any significant content, do our students have deficiencies in the learning of such content? The deficiencies are not just limited to learnings. Attention can be directed to thinking processes, work habits, skills, even educational experiences. Mary Moss Brown and Alisa Berger even suggest that we may wish as educators to analyze if students in school have gaps or differences with family beliefs and goals.[41]

OBJECTIVES	CONTENT/SUBJECT MATTER	LEARNING/ACTIVITY/ INSTRUCTIONAL APPROACH	MATERIALS/ EVALUATION METHODS

FIGURE 7.4 Master Plan Format

Somewhat related to task analysis is investigating other educational institutions' approaches to program design and curriculum development. We educators can learn much from talking with colleagues, sharing ideas and ways of addressing similar educational and social challenges. Focus on schools that confront problems similar to yours. What procedural steps are they utilizing? How successful have they been in their actions?[42]

We are sure that other technical-scientific models exist or will be generated. Most likely, their creators will be in the traditional philosophical and technological camps. However, people attached to any design orientation can use these models when developing a curriculum.

NONTECHNICAL-NONSCIENTIFIC APPROACH (POSTMODERNIST, POSTCONSTRUCTIVIST PERSPECTIVE)

The technical-scientific approach to curriculum development suggests that the process of curriculum development is highly objective, universal, and logical. It rests on an assumption that reality can be defined and represented in symbolic form. Knowledge can exist as a matter of fact, unaffected by the process of creating and learning it. The aims of education can be specified and addressed in linear fashion. The technical-scientific approach to curriculum development is modernist; it rests on a belief in rationality, objectivity, and certainty. This certainty applies to its foundational assumptions and its methods. The modernist approach eschews doubt or questioning.[43]

In contrast, nontechnical curriculum developers, also known as postmodern or postconstructivist, stress the subjective, personal, aesthetic, heuristic, spiritual, social, and transactional. Curriculum specialists and generalists in this camp draw their basic assumptions regarding the totality of their actions as being complex and turbulent, as having an "orderly disorder."[44] Doll identifies some orderly disorder examples: "avalanches, economic systems, evolutionary development, human bodily and social systems, and population dynamics."[45] We would include in this list educational systems, which include curriculum development.

Few would argue that we do not live in a complex world. Indeed, scientists in quantum physics report that we on Earth are a minute system within an ever-expanding complex universe. Even individuals well established in the modern camp do not deny the complexities of our time. But, as Doll notes, modernists strive to circumscribe complexities so as to increase probabilities of managing them.[46] Postmodern, nontechnical curricularists celebrate the complexities, recognizing that within the educational organization, there is a "dynamical self-organizing process within which we are embedded, embodied, emboldened."[47] Players in the postmodern theater are in perpetual motions of reorganizing and changing. Doll notes that there is a fluidity to their thinking and actions.[48]

Postmodern educators and curricularists also have an expansiveness to their conjectures and endeavors. Curricular topics and pedagogical strategies represent expanding universes of educational discourses. Content concerns are not narrow and traditional. Rather the educational

universe has expanded to "understanding . . . cultural, historical, political, ecological, aesthetic, theological and autobiographical impacts of the curriculum on the human condition, social structures, and the exosphere."[49]

In this approach to curriculum development, the learner is the central focus, not the learner's output of inert information. Students are always evolving. They are active participants in the learning process, not passive recipients of knowledge. Resulting curricula relate to various contexts. Contents are not value-neutral.[50] Those favoring a nontechnical-nonscientific approach note that not all educational goals can be known. Even when the goals appear to be obtained, there are many layers of knowing still hidden in the reporting of success. Key to this approach is accepting the evolutionary nature of curriculum development. Precise procedures are an illusion.

Nontechnical curriculum developers prioritize learners over subject matter. Tentatively selected subject matter has importance only to the degree that students find it meaningful. It should provide opportunities for reflection and critique and should engage students in the creation of meaning.[51] To nontechnical curriculum developers, learning is holistic; it cannot be broken into discrete parts or steps. Instead of developing curricula prior to students' arrival in school, teachers are students' colearners. Teachers and students engage in an educational conversation about topics of mutual interest and concern. In many nontechnical models, the curriculum evolves from teacher–pupil interaction.

Nontechnical-nonscientific curriculum developers are likely to favor child-centered and, to a lesser extent, problem-centered designs. However, they can still take a somewhat systematic approach.

The Deliberation Model

In the deliberation model of nontechnical curriculum development, educators communicate their views to their colleagues and sometimes to students regarding education's goals and what should be taught. However, curriculum development is nonlinear. A blend of modernism and postmodernism, the deliberation approach draws on systems thinking and on feedback and adjustments but also takes into account that reality is somewhat subjective.

Dillon notes that deliberation essentially proceeds from problem to proposals to solution.[52] This process occurs within a recognized socially constructed context. People are aware of the participants in the process and of their views, ideas, and agendas.

Curriculum development through deliberation occurs within cultural contexts. Currently, this is one of the challenges confronting curriculum creators. How can one generate solid curricula while taking diverse cultures, customs, and values into account?

The deliberation model has six stages, as suggested by Noye: (1) public sharing, (2) highlighting agreement and disagreement, (3) explaining positions, (4) highlighting changes in position, (5) negotiating points of agreement, and (6) adopting a decision.[53]

In the first stage, public sharing, people come together to share ideas related to curriculum development. The participants advocate various agendas, which may be in conflict. They express their views regarding the curriculum's nature and purpose, make suggestions and demands, propose particular contents and pedagogies, and identify information that they consider relevant to creating curricula. People discuss their visions of students' roles, optimal learning environments, and teachers' proper functions. At the conclusion of this stage, to which the group can return at any time, the group should record a summary of its thoughts expressed throughout this stage on the common places of content, student, teacher, and school and the challenges confronting the group. The group is now ready for stage 2, highlighting agreements and disagreements.

In stage 2, the group identifies agreements and disagreements regarding educational goals, curriculum content, and instructional approach. All views should be respectfully considered.

In stage 3, group members explain their positions. Why do I think this is a problem? What data support my view? Is a particular group of students failing? What is the curricular solution? To arrive at a consensus, group members must appreciate one another as professionals and not

consider their colleagues to be adversaries.[54] The group leader must have considerable skill in guiding groups.

Stage 4 of deliberation evolves from the activity of explaining positions. Group members change their opinions in response to presented data and arguments. When people change their minds, they inform other group members.

In stage 5 of the deliberative process, participants work toward agreement regarding curriculum content, instructional approaches, and educational goals. In other words, they negotiate and persuade (or become persuaded). Roger Soder argues that persuasion is a critical function of leadership. It relies on appeals to reason and emotion.[55] In stage 5, the group seeks to identify possible curricular solutions to educational needs.

In stage 6, the group achieves consensus regarding the curriculum's nature and purpose. It specifies curricular topics, pedagogy, educational material, school environment, methods of implementation, and assessment methods. The agreed-on curriculum reflects the group's social, political, and philosophical composition. Of course, some uncertainty remains.

We include the postmodernist, postconstructivist perspectives under the nontechnical-nonscientific approach division. The reader should not interpret the placement of this approach or cluster of approaches to curriculum development as being without form. What distinguishes these curricular creation stances is that doubt and constant questioning accompany one's specific behaviors.[56] Persons in this camp do not deny that there can be certainty, but they note that certainty is fleeting, influenced by the situations within which one finds himself or herself.[57] Or as Wolff-Michael Roth posits, "We live within the streaming, mutual life of the universe."[58] Everything in our world and our universe is in motion, and this motion is unidirectional. We cannot stop time; we cannot reverse time. And we can only comprehend time and events after we have experienced them.[59]

Postmodern curriculum developers do not begin curriculum creation with precise directions or endpoints as destinations; rather, goals denote directions. While this seems novel and new, Alfred Whitehead, as noted in Doll,[60] early in the 20th century encouraged educators to realize this fact. Also, he noted that in following various directions, ideas presented in the classroom should be investigated, questioned, from myriad frames of reference. What is tentatively planned leaves "space" for the novel to appear. What is hidden within the tentative curricular plan are temptations that will encourage "creativity, inquiry, innovation, and social responsibility."[61] Such curricular plans are enticements for improvisational theater. A situation is sketched roughly, but the dialogue occurs only when the "actors," students and teacher, experience the suggested encounter or encounters. On another day, that same situation might elicit an entirely different "play" triggering an entirely divergent richness of multiple inquiries and tentative understandings. These tentative events represent what Bakhtin notes as "once-occurrent" that can "only be participatively experienced and lived through."[62]

One might consider this approach to curriculum development as suggesting opportunities for thrill seeking, allowing students to take leaps of faith, to take actions despite their fears and insecurities. Embedded in this approach to curriculum development is a fostering of a playfulness with educational theater. Students and their teachers are urged to become explorers of various intellectual regions. Learning is not solitary; it is a communal cluster of engagements. Students develop relationships with fellow scholars. They have an environment rich in possibilities for developing insights, challenging tentative conclusions. They have time to savor the joy of discovery, realizing that discovery is fleeting; "scholarly talk" must be continuous.

Certainly, educators who develop postmodern, postconstructivist curricula do write down comments, suggestions, and, we would argue, some intuitive sense of what minimal student learnings will result from experiencing said curriculum. But, all layers, permutations of learnings, will not be possible to list, and need not be. And, as time flows, various learnings will be enhanced, modified, and even diminished and lost. But, the precise steps so prominent in the modernist camp are absent in the postmodernist, postconstructivist camp. Rather, curricularists in this "camp" seem to present dispositions to actions that may result in diverse and emergent learnings.

Slattery's Approach to Curriculum Development

Patrick Slattery in his book *Curriculum Development in the Postmodern Era* really avoids precise steps to follow in creating curricula. But he does present some guiding principles for what he states is "an integrated global and local vision for curriculum development in the postmodern era."[63]

Slattery's first guiding principle states that educators need to accept that education is capable of reconceptualizing that very concept of schooling globally and locally. Further, educators must respect the uniqueness of each individual student and recognize the myriad relationships of the totality of each student's experiences. Essentially, educators must be aware of complexity theory and chaos theory.

His second guiding principle is not a suggestion of a process, but an admonition that followers of postmodern curriculum development must reject all modernist stances regarding curriculum and schooling. Such rejection is necessary in order to nurture "an appropriate postmodern educational experience."[64]

Third, to be in the postmodern camp, one must accept that postmodernism offers "an important emerging approach to understanding curriculum."[65] Furthermore, educators must accept the challenge that the curriculum generates opportunities for students to deal with social and educational plights on a global basis.

Fourth, the curriculum must be studied essentially as "currere" so that educators can arrive at generalizations regarding schooling and its curricula. As Slattery points out, *currere* is a Latin word meaning "to run the racecourse."[66] The word curriculum also has its roots in currere. Currere, as presented by William Pinar, is a procedure by which individuals, educators, can engage in self-study: analyzing their present state, reflecting on their past experiences, and forecasting probable future intellectual stances and actions. It is a procedure by which individuals can better understand themselves so as to become more effective educators. Essentially, the procedure engages an individual in self-analysis and introspection, allowing one to be inner directed in his or her thinking and actions. Slattery stresses that when thinking about currere, we should remember that curriculum development is a process even after it is created. It is not a static phenomenon.

Fifth, curricularists need to realize they need to be not just curriculum developers, but also scholars of curriculum. They must realize that their scholarship requires delving in hermeneutics. In layman's language, hermeneutics refers to the science of interpretation. It is not unique to education. All fields of scholarship have members who study documents interpretatively within their fields and disciplines of study.[67]

Doll's Model of Curriculum Development

William Doll certainly can be grouped with the postmodernist camp. To combat the influence of Tyler's rationale and schema for creating curricula, he suggested "The Four *R*'s" as an alternative of Tyler's guidance. From our curricular stance, which is always in a fluid state, Doll has really not presented an alternative to Tyler's rationale, but rather a cluster of criteria for judging curricula designed to mesh with postmodernism. We purport that these criteria can serve both modern and postmodern approaches to curriculum development. Doll's suggested four *R*'s are "Richness, Recursion, Relations, and Rigor."[68]

Richness is defined as the depth of curricular content and experiences. A curriculum possessing richness presents complex strata of meaning. It offers students opportunities to contemplate varied interpretations to content processed and experiences engaged. Doll notes that a rich curriculum must contain the "'right amount' of indeterminacy, anomaly, inefficiency, chaos, disequilibrium, dissipation, lived experience."[69] Stated another way, richness brings the "flavor" of reality to the curricular experience. As Robert Lake notes, life is not invariable; it is in constant social, political, and environmental flux. Richness in curricula demands of students intellectual investigating, communal discovery. As Lake comments, curricula possessing richness stimulates imagination and requires students to engage in resourceful contemplation and action. No curriculum possessing richness is ever completed. Learning cannot be turned into stone. Richness of

the educational experience stimulates a continuous learning process under the internal control of students.[70]

Recursion is Doll's second *R*. He indicates the concept refers to happening again, which is usually considered with the mathematical process of iteration.[71] However, we refer to, and Doll does indicate agreement with, what Jerome Bruner addressed as the spiral curriculum in his book, *The Process of Education*.[72] Bruner notes that students add richness to their understandings of information and concepts through a process of continuously revisiting or looping back at various thoughts and insights. Each revisit, each re-encounter with the material, allows the learner to add depth and richness to his or her understanding. There is a creative dynamic extant in each iteration with the contents and experiences.

Relations, Doll's third *R*, is essential to a postmodern curriculum in two ways: pedagogical and cultural.[73] Relations deals with the connections, the structural links that shape the curriculum, both its contents and its pedagogical experiences. Relations are actions, not changeless stances. In postmodern thought, the curriculum and its associated actions are always in a state of development, an evolution ongoing. Later, we discuss the structures of disciplines. Modernists present these structures as rigid, with discipline scholars accepting content architecture as agreed upon. But, postmodernists counter that these structures are in dynamic and even chaotic relations of which curricularists should be aware.

Cultural relations, Doll asserts, must be considered when engaged in curricular activities. Educators create educational programs within cultural contexts. Educators must recognize the contextual inherent character of the world theater in which they are creating curricular opportunities. Educators need to realize they must engage others in the conversations requisite for creating meaningful educational programs.[74] Doll urges educators and all peoples "to honor the localness of our perceptions and . . . to realize that our local perspectives integrate into a larger cultural, ecological, cosmic matrix."[75]

Doll's last *R* is *rigor*. Rigor is perhaps the most important of the four *R*'s. Doll here indicates that these four *R*'s are criteria to apply to the process of curriculum development rather than actual steps in creating postmodern curricula. We made this point early in this section. Doll denotes that in the modernist stance, rigor possesses the elements of "scholastic logic, scientific observation, and mathematical precision."[76] The postmodern stance necessitates reconceptualizing the concept of rigor. Instead of rigor being a criterion of precision based on logic, observation, and mathematical precision, it encompasses the features of "interpretation and indeterminacy." It draws on the "uncertainty principle" of chaos theory.[77] Nothing said or discovered can be stated with absolute certainty, not even some discovery stated at the 99th percentile of probability.[78]

Accepting this postmodern posture, applying rigor means that even when we create and develop curricula, we are always mindful that there are alternatives to what content and experiences are planned. And additionally, there are myriad relations and arrangements of the contents and experiences. How one conceives of the "tentative" formatted curricular plan will be influenced by the assumptions one brings to the process of curriculum development. Doll reports that these assumptions are often hidden from us, and only revealed upon reflection.[79]

As Howard Gardner asserts, every period of history has its own foremost statements or principals of explanation.[80] The challenge for educators today is to realize that we exist in an evolving and conflicting historical era: modern and postmodern. The modern has been with us since the Enlightenment, which commenced circa the 1700s. The term postmodern can be dated to have begun, not with certainty, in the late 1970s. A French scholar, Jean-François Lyotard, in his book *The Postmodern Condition: A Report on Knowledge* (1984), asserted that the Western world was entering a new era, the postmodern. However, later in the 1980s, he noted that this new era was less a break with the modern than the modern era proceeding to "re-write itself."[81] Today in the 21st century, we are morphing, not discarding modernism, but rewriting it to function in a time of complexity and chaos. Many educators accept the uncertainty principle of quantum mechanics. Many educators, us included, realize that while "objectives" and specific

Table 7.1 | Overview of Curriculum Development Approaches

Approach	Major Assumptions	View of Curriculum	Major Models
Technical-Scientific	Major steps can be identified and managed.	Curriculum is viewed as knowable components selected and organized.	Bobbitt, Charters, Tyler: Procedure
Modernist Perspective	Certainty principle	Curriculum is viewed as a compendium of parts.	Taba: Grassroots rationale
	Curriculum development has a high degree of objectivity, logic.	Curriculum is viewed as engaging students in distinct and meaningful tasks.	Wiggins, McTighe: Backward design
	Curriculum development involves task analysis and draws on separating key points of curriculum from major endpoint to starting point.		Jonassen, Tessmer, Hannum: Task-analysis approach
	Curriculum can be broken into distinct parts or tasks.		
Nontechnical-nonscientific Postmodernist, Postconstructivist Perspective	Curriculum development is subjective, personal, aesthetic, transactional.	Curriculum is viewed as conversation.	The deliberation model
	Curriculum development stresses the heuristic, spiritual, social.	Curriculum is viewed as evolutionary.	Slattery approach
	Curriculum development accepts "orderly disorder."	Curriculum is viewed as a dynamic and uncertain system.	Doll's four *R*'s approach

learnings can be listed on a curriculum plan, there are layers of learnings, both cognitive and affective, that accompany the "attainments" of the learners. We know that, as Lake denotes, "the planned curriculum never trumps the enacted curriculum when imagination is at work."[82] As denoted by Lake, "A curriculum of imagination is not just designated to the confines of school, but embraces the entire life of the learner."[83] A curriculum that incorporates both modern and postmodern stances triggers lifelong learning.

Table 7.1 provides an overview of the technical, modernist, nontechnical, and postmodern approaches to curriculum development.

ENACTING CURRICULUM DEVELOPMENT

Curriculum development essentially draws on two realms of knowledge: curriculum design and instructional design. Especially at the K–12 level, most educators know more about the former than the latter. As Richard Elmore notes, schools continually modify their curricula, but instructional practice seems to change little.[84]

Researchers at Pennsylvania State University's Applied Research Laboratory defined instructional design as "the systematic development of instructional specifications using learning and instructional theory to ensure the quality of instruction."[85] Programs must give more than cursory attention to how new content will be taught and how classroom and school environments

will be organized. In many cases, those charged with curriculum development must draw on the expertise of instructional design specialists.

Establishing Curriculum Teams

The highest-level curriculum teams are those at the federal or state level. These committee members generate programs, policies, and laws, such as No Child Left Behind and Race to the Top. This chapter primarily addresses curriculum teams at the local level, the level at which the curricular specifics are mapped out and aligned with state or federal mandates and standards.

Most curricular team members are teachers. This makes sense, because teachers implement the curriculum and can draw on their classroom experiences when developing curricula. They are likely to be familiar with effective subject content and instructional strategies. In some school districts, teachers are more involved in adapting textbook series to classroom lesson plans than in creating new curricula writ large. However, creating lesson plans is curriculum development. In such districts, textbooks and related materials are selected by curriculum boards. In Texas, as previously mentioned, various textbook series are selected by the Texas State Board of Education. The schools then select the series they prefer from a list of acceptable materials.

Although the ideal is for teachers to be the key players on curriculum teams, there are teachers who resist involvement. "There is not just time for me to collaborate with fellow teachers. I already have too many demands on me," is a frequent response. We realize that schools often are organized so that teachers exist as if in solitary confinement in their classrooms. However, such "teacher separation" need not be the norm. Indeed, it has been found that schools with effective and innovative curricula have high teacher commitment to both the latest educational thinking and to collaborative engagement with colleagues.[86]

Successful curriculum development requires the involvement of school principals. In previous editions, we noted that the principal should be supportive but not dominate the process.[87] With such advice, the principal, as Fullan notes, was often sidelined in reform efforts, and especially in curricular change efforts. More recent research supports the idea that school principals should be key players in directing change initiatives.[88] Although this research is centered mostly on administrative and policy issues and changing school cultures, we argue that it also applies to curriculum development.

Effective principals, we are finding, foster the creation of teacher communities, which often result in a "critical mass of distributive leadership" essential for continued educational renewal.[89] Effective principals, and we include vice principals as well, are characterized by being *relationship centered*.[90] These principals have faith in powerful professionals who participate in collegial relationships. Thus, there is a symbolic relationship among all players: administrators, teachers, and support staff. All participate in curriculum teams as well as teams focused on other educational matters.[91] Sometimes schools hire outside curriculum experts to be members of the development team. Often, these individuals can provide background information on development procedures, share details about curriculum design, and illuminate the complexities of instruction design.

In general, an elementary teacher teaches most subjects. Therefore, at the elementary level, it is especially important that teachers from various grades be involved in curriculum development. That way the created curricula fit into the overall program. In middle and high schools, there is more emphasis on particular subject areas, so the amount of teacher involvement partly depends on whether a new curriculum is being created for a particular subject or an entirely new program of studies. In general, at least some individuals who will be teaching the new or revised curriculum should be on the development team.

Generating Aims, Goals, and Objectives

Curriculum development begins with a realization of the major challenges involved. People agree that school curricula should enable students to attain knowledge, skills, and attitudes.

However, many people also want curricula to reproduce the culture within which the school exists and to further that society's economic, political, social, and cultural interests.[92]

Some people favor curricula that cultivate a global perspective; others think that local concerns should be prioritized. Our focus influences our response to questions such as these: What does it mean to know at a particular level? Whose knowledge is of value? Whose history? Whose literature? Orr laments that the globalization of knowledge is resulting in a neglect of local knowledge.[93] In most cases, a school's curricular aims and goals come from local citizens, state organizations, national groups, or the federal government. Schools have much greater input with regard to objectives.

Educators' first step in curriculum development should be analysis of needs and tasks. Educators must determine what students must learn for success in school, on the job, and in life. During this phase, curriculum developers gather data that inform their decisions regarding what content is necessary, appropriate sequencing of the content, appropriate instructional strategies, and how the various curricular components should be tailored to students.[94] Analysis of needs and tasks often includes school and classroom observations. Focus groups may also define the rationales for such observations. Those charged with these initial analyses may also talk to principals, teachers, and students.[95]

By analyzing needs and tasks, educators determine what the curriculum should include. Data analysis can reveal gaps in students' learning, thereby indicating needed objectives and content. Educators start to sense what content, student activities, means of implementation, and means of evaluation the curriculum should include.

GENERATING AIMS. Noddings denotes that discussion of aims is essential to education; indeed, essential to the health of democracy.[96] Aims provide answers as to why we adhere to particular beliefs and actions. Aims provide direction and reflect our value judgments. Ralph Tyler summarized the aims of U.S. schooling as (1) developing self-realization, (2) making individuals literate, (3) encouraging social mobility, (4) providing the skills and understanding necessary for productive employment, (5) furnishing tools requisite for making effective choices regarding material and nonmaterial things and services, and (6) furnishing the tools necessary for continued learning.[97] These aims are still relevant today. However, Noddings opines that today in education, we really do not frequently query ourselves as to why we are doing what we are doing. Why are we striving for certain things?[98] Frequently, in this 21st century, educators do not raise the whys at all; rather, politicians and the corporate community provide the whys. And the answers to the whys provided are self-serving: make our children have the best test scores in the international community, to be the most powerful and economically successful country in the world. Must we always be number one? Is education designed to give us bragging rights about the test scores of our students compared to other nations?

Certainly, educators wish to create programs that will address intellectual aims, social-personal aims, physical aims, aesthetic aims, moral aims, and even spiritual aims. But, as Noddings notes, education should possess aims that will enable our student citizens to strive for world peace and prosperity.[99]

In 1918, the National Education Association's Commission on the Reorganization of Secondary Education listed education's general aims as follows: (1) health, (2) command of fundamental processes, (3) worthy home membership, (4) vocational education, (5) civic education, (6) worthy use of leisure, and (7) ethical character.[100] Noddings reports that while many praised the commission's report, some felt that it demanded too much of the schools. Other critics considered it strayed too far from the academic purposes of education, bordering on being anti-intellectual in tone.[101] However, Noddings suggests that the Cardinal Principles are actually most relevant for "aims-talk" in the current century.[102] Education in today's world is not to just educate or "train" students to be cogs in the industrial machine. We wish to create educational programs that enable students to be "fully functioning" individuals in myriad 21st century "universes": social, civic, personal, artistic, vocational-professional, ethical-moral, and spiritual.

Of course, aims will not be totally attained. Indeed, thoughtful educators do not wish attainment or achievement of aims, but rather a journey of progress toward attainment. We wish students to gain the necessary skills and understandings for a meaningful odyssey of learning and actions.

Educators must be sensitive to the times in which they are living. The dynamics of living will confront educators and citizens in general with issues that require adjusting particular educational aims. Issues of race and gender equality still suggest that education address these issues. Issues of global warming should generate various aims for the school. World health is a challenge that requires attention in the schools. Educators should develop educational aims that speak to the social, cultural, and economic relations of the global community. Aims should deal with the general process of education, such as building world-mindedness.

GENERATING GOALS. The next step in curriculum development is creating goals. According to Evelyn Sowell, goals answer the question: "What destination do you have in mind for learners as far as a particular curriculum or subject is concerned?"[103] Goals might include the following: Students think critically, students are diverse people, and students assume responsibility for their own learning.

Goals and standards seem to have melded together in educational dialogue. In 1995, Diane Ravitch posited that a *standard* is a goal as to what should be accomplished and also a measure of progress in attaining that goal. It is both part of curriculum development and also curriculum evaluation. One could also include discussion of goals and standards with consideration of instructional strategies, specifically how a method of instruction might attain, or motivates students to attain, a particular standard or group of standards in a particular curricular area.[104]

We take exception to equating a standard to a goal. A goal does indicate what could or should be learned, but it is much more general than a standard. *Standards,* as Ravitch and others define the term, are more akin to educational objectives that define in quite specific terms what students are to learn and what behavior or behaviors they are to demonstrate. What students are to learn, Ravitch defines as *content standards*. What behaviors students are to master, she defines as *performance standards*. Explicit in these two types of standards are the content teachers are to teach and what behaviors their students are to demonstrate. Also, performance standards regulate what teaching strategies teachers are to use.

To make our point, consider the first goal that the Phi Delta Kappa honor society has listed for students: Learn how to be a good citizen. This is a general endpoint of educational experiences. However, one would not state that learning how to be a good citizen is or has a standard. We must create various educational objectives using a variety of standards in order to determine what content must be learned and what performances must be mastered for us to state with some precision that students have attained the knowledge, skills, and attitudes indicative of being a good citizen. The same can be argued for the remaining goals suggested by Phi Delta Kappa.

By analyzing a school's goals, we can determine the scope of its educational program. Unlike aims, goals are more specific. Curriculum developers can use them as guidelines to achieve particular purposes. Aims become goals when they become more specific and refer to a particular school, school system, or subject area. Phi Delta Kappa has listed these goals for students:

1. Learn how to be a good citizen.
2. Learn how to respect and get along with people who think, dress, and act differently.
3. Learn about, and try to understand, the changes that take place in the world.
4. Develop skills in reading, writing, speaking, and listening.
5. Understand and practice democratic values.
6. Learn how to examine and use information.
7. Develop skills needed to enter a specific field of work.
8. Develop a desire to learn now and in the future.
9. Understand and practice health and safety.
10. Appreciate culture and beauty.[105]

In 1990, President George H. W. Bush and U.S. governors generated a list of six goals for U.S. schools to reach by 2000, and the National Goals Panel was established to determine the nation's progress in meeting these goals.

1. All U.S. children will start school ready to learn.
2. The high school graduation rate will increase to at least 90 percent.
3. U.S. students will leave grades 4, 8, and 12 having demonstrated competency in challenging subject matter (English, mathematics, science, history, and geography).
4. U.S. students will rank first in the world in science and mathematics achievement.
5. Every adult American will be literate and possess the knowledge and skills necessary to compete in a global economy and to exercise citizenship's rights and responsibilities.
6. Every U.S. school will be free of drugs and violence and will offer a disciplined environment conducive to learning.[106]

Like aims, goals should address the current times but also be relevant for the future. Creating educational goals is an ongoing activity. The needs of students, society, and a particular community give rise to initial statements of curriculum goals.

The goals are sometimes rank-ordered in terms of importance, feasibility, or both. However, sometimes goals deemed desirable and feasible by noneducators are as Nodding described "ridiculous," not even remotely possible to be obtained.[107] Take, for instance, the Goals 2000: goal 1, all children will start school ready to learn; goal 2, the high school graduation rate will increase to at least 90 percent; goal 3, U.S. students will leave grades 4, 8, and 12 having demonstrated competency in challenging subject matter (English, mathematics, science, history, and geography); goal 4, U.S. students will rank first in the world in science and mathematics achievement; goal 5, every adult American will be literate, etc.; and goal 6, every U.S. school will be free of drugs and violence. All of these goals were unattainable and still in this century have not been achieved. What explanation would we give to defend goal 4, that all U.S. students will rank first in science and mathematics? What are the grounds for such a goal, other than bragging rights and to nurture feelings of superiority? And are these explanations appropriate with the aim of creating world citizens who can connect with all of humanity? No Child Left Behind demanded that all children by 2014 attain mastery in mathematics. All children? Children with learning disabilities? This "demand" has not been achieved. And it cannot realistically be attained. Yet, schools in the state of Washington have been penalized for failing to meet the goal.[108]

Goals should be defined by educators knowledgeable about schooling, curriculum theory, curriculum development, and curriculum evaluation. Certainly, educators can seek advice from community members, and even students, as to the appropriateness of identified goals. If agreement is reached, then goals are accepted by those who are creating and delivering the curriculum (see Curriculum Tips 7.2).

CURRICULUM TIPS 7.2 Developing Goals at the School District or School Level

When creating curriculum goals, individuals need to know the following:

1. Federal and state mandates regarding education
2. The specific students who are to receive the planned curriculum
3. The expected competencies and understandings expected of the learners
4. Educational environments and situations that will enable the goals to be attained
5. The standards of performance and comprehension that are expected from students who have experienced the newly created curriculum

Source: Adapted from Abbie Brown and Timothy D. Green, *The Essentials of Instructional Design* (Upper Saddle River, NJ: Pearson, 2006), pp. 146–147.

GENERATING OBJECTIVES. Within the context of educational aims and goals, it is necessary to formulate more specific objectives. Whereas aims and goals are long term, objectives are short term. For a particular science program or project, curriculum developers may state a goal such as "improving students' skill in information processing when dealing with science material." This goal may then be approached through a series of objectives.

Guidelines for Formulating Objectives. When creating objectives, educators should consider how well they match the stated goals and aims. For example, an objective stating that students understand certain science concepts does not match a goal that students be able to use particular information-processing approaches to scientific understanding. A standard must relate more specifically to an objective; to fine-tune this objective, educators must identify the content standard—that is, define the procedural knowledge that must be demonstrated and then indicate the performance or skill level or levels that must be attained.

Objectives must also have worth and be nontrivial. For example, the objective "The student knows that the Mississippi River empties into the Gulf of Mexico" is overly narrow. An objective should have value to the student in both the present and the future. In other words, the content and performance standards must have worth for the students. It makes little sense to say that a certain content must be learned to a high level and a certain performance must be demonstrated at a high level if the content really has no value or relevance in the general society. To know what a slide rule is and how it functions and to be able to use it skillfully most likely has little value in the 21st century.

The guideline that objectives have worth and be nontrivial is challenging if you consider that what has worth to one student may, in fact, be worthless to another. That is a major challenge in employing standards in curricular decision-making. As Taubman notes, most discussions of standards seem to have them exist with a false sense of precision and without a consideration of context. Standards are presented as independent of circumstance. We have a dilemma. Standards, to be standards, Taubman informs us, must serve as "'immutable mobiles,' which can move across contexts and cross local, state, and national borders, can move from one community of practice to another, transforming as they go, but not being transformed in the process."[109]

Standards, and particularly national standards, assume that all students, all communities, all teachers, and all school districts are alike and that they face the same challenges, possess the same values, and have students of the same intellectual abilities, the same intellectual interests, the same behavioral dispositions, and the same cultural and ethnic backgrounds. Standards imply that all school districts define the worth of a particular objective with the same metric. This is not reality. However, many voices advocating standards declare that all schools should strive for the same or at least similar interpretations of worth. Standards imply the standardization of curriculum, instruction, educational experiences, and learning. "Same" standards are requisite for us to compare educational successes among our schools.

Another guideline is that objectives should be clearly expressed—easy to understand and agree on. Likewise, the standards within the objective should be clearly expressed and agreed on. Lisa Carter criticized some published state standards as vague. So written, teachers must translate them in their classrooms. Thus, there would be no "standardization" of teaching, curriculum, or learning, and no ways to measure attainment of valuable content and skills.[110]

Although making objectives and the explicit and implicit standards comprehensible may be easily accomplished, getting everyone to agree to the objectives, even goals, and certainly standards is a daunting task. The next guideline for generating objectives is even more problematic. To determine appropriateness, educators must consider students' needs and the content to be covered. Some objectives might be inappropriate because they demand behavior that students are incapable of attaining or because they do not consider students' interests. Some objectives might be better suited to students in a particular subject who have unique aspirations than to students with other motivations.

However, as Taubman discusses, although teachers may realize that students arrive with various abilities, capabilities, interests, cultural and ethnic backgrounds, different life experiences, and myriad dreams about their presents and futures, teachers are commanded not to apply different standards to each student, lest we lose what "standard" means.[111] The curricula cannot vary in objective or standard and cannot digress in intent; all variables must be kept constant in emphasis and support. The curriculum must be standardized.

This is not the reality of schooling and not the reality of the community, of the regions, or of the state, the nation, or the world community. Yet, standards still hold center stage in educational and, specifically, curricular and instructional conversations. We certainly are not advocating eliminating standards. We need standards, but not for generating standard, one-size-fits-all curriculum. We should not concede to other authorities, often outside of education, the task of determining the standards for our objectives, our curricula, our instruction, or our educational materials. Certainly, selecting educational objectives and selecting standards for content and procedures are not the sole domain of educators. However, it seems that today, much activity within the standards theater has left out educators. National political boards determine standards for children in New Hampshire and in Arizona. They set the bars for success for students in Washington State and Georgia. They inform educators how far to jump, suggesting that their salaries will be calibrated as to whether they fall at or over the bar. Who are these people, these power groups, active in determining educational objectives and standards? We have mentioned national groups, some governmental and some professional. No Child Left Behind was generated at the national level. The Race to the Top contest is a national effort. The Gates Foundation, giving millions to various schools, is influencing objectives and standards. Certainly, state boards of education are key players.

A fourth guideline for formulating objectives is that they should be grouped logically so as to make sense when units of instruction and evaluations are being determined. Even standards should be grouped logically, which may mean that the standards implicit in objectives must be personalized to the diversities of particular students. Objectives frequently lack coherence. For example, objectives at different levels of specificity are grouped together, as when understanding how to process information is grouped with knowing how to write complete sentences. The standard implicit in understanding how to engage procedural knowledge has greater complexity than the standard implicit in knowing how to write a complete sentence.

The fifth guideline is that objectives require periodic revision. Students change, society changes, knowledge changes, instructional strategies change, and competencies required for functioning in particular aspects of society change. This guideline suggests that, contrary to popular thinking, standards must change. If standards are targets, as some suggest, we must realize that they are moving targets, propelled by time.[112] Educators must occasionally analyze their objectives and reconsider particular standards to determine if they still possess value.

The sixth guideline is that useful objectives enable students to proceed to the next part of a unit plan or lesson plan. Useful standards address those contents and skills requisite to continuing the educational journey. Useful objectives and enabling standards assist students in participating in the world outside of school.

The last factor to consider is an objective's legality. Regarding legality, there is—there must be—a standardization of the standard so that there is compliance with federal and state mandates. Some mandates require that all students be taught certain material, such as state history or basic mathematics. Here, we have little difficulty in accepting standards. However, we must still make a case that with standards, we are talking minimal levels of content knowledge and skills attainment. Of course, some mandates prohibit certain content. Still other mandates address the needs of particular student populations, such as those in special education.[113]

Types of Objectives. Educational objectives range from objectives for specific curriculum areas (often subjects or courses) at particular grade levels to specific outcomes of classroom instruction. Abbie Brown and Timothy Green note that an instructional objective should clearly

indicate some observable or quantifiable student behavior. In other words, these instructional objectives must be explicit about standards.[114] Outcome-based education is popular in most states. Washington State established a commission to develop a list of learning outcomes essential for all students. Such outcomes are *standards*.

Behavioral Objectives. Most educators (and the general public) believe that educational objectives should be couched in terms of observable or measurable achievement. That is, the objective is behavioral. Students can demonstrate that they have acquired particular skills or knowledge—that is, attained standards.

Mager contends that an educational objective must describe (1) the *behavior* that indicates a learner has achieved the objective, (2) the *condition* or situation imposed on the learner when he or she demonstrates achievement, and (3) the minimum standard *proficiency* level acceptable.[115] A behavioral objective in science that satisfies Mager's criteria might read as follows:

> After studying the unit on energy, the student must complete a 100-question, 1-hour, multiple-choice test on the subject. The student must answer 75 questions correctly.

A behavioral objective for mathematics might read:

> Given a multiplication worksheet, the pupil will be able to multiply 10 sets of 3-digit numbers at the rate of one problem per minute, with 80 percent accuracy.

Some educators subscribe to behavioral objectives but do not believe that these objectives must address the condition or situation in which the behavior is performed or its proficiency. Also, unlike Mager, they consider it essential that behavioral objectives state what the student will do (e.g., write a paragraph, compare data) in terms of subject content. Such objectives might state, "The student will write a paragraph in English composition dealing with late 20th century literature," or "The student in an economics class will compare a chart's data on gross national product for two different years."

It is not always necessary to include level of achievement and conditions of performance. However, it is necessary to include level of achievement (how well, how much, or how accurate) when dealing with minimum requirements—that is, standards—for some aspect of a course. Conditions of performance are necessary when it is important to know where and how the knowledge was demonstrated or the skill was performed. What was the nature of the environment? Did the conditions of performance resemble real-life conditions? The following objective includes both essential and optional parts: "The student in a geography field-study exercise will arrange field notes so that they meet the guidelines in the manual on geography field study." "In a geography field-study exercise" refers to the condition; "will arrange" refers to the required student action, and "in a way that meets the suggested guidelines" refers to the level, or standard, of achievement.[116]

Nonbehavioral General Objectives. Advocates of nonbehavioral objectives use words such as *appreciate, know,* and *understand*. They believe stating objectives too specifically restricts learning to measurable achievements. Objectives that address higher-order learning (e.g., analytical thinking, appreciation of literature) are likely to be neglected. Postmodern educators reject behavioral objectives as too narrow and rigid. Some believe educators have no right to stipulate what students must know, how they must behave, or what skills they must possess.[117] Learning is not about performance level, but about inquiry.

When making curricular decisions, especially when generating objectives, educators ideally consider all domains of learning: cognitive, affective, and psychomotor. Depending on which domain they address, objectives focus on different skills, competencies, and understandings. Within each domain, objectives are listed in an order that reflects increasing complexity.

Cognitive Objectives. In 1956, Benjamin Bloom introduced us to the Taxonomy of Educational Objectives, Cognitive Domain. In his taxonomy, he divided cognitive learning into (1) knowledge, (2) comprehension, (3) application, (4) analysis, (5) synthesis, and (6) evaluation.[118] For many years, teachers used this classification as a guide for creating cognitive

objectives. In 2001, a revision of Bloom's taxonomy was published. The revision created a grid for generating objectives that addressed the knowledge and cognitive process dimensions. The knowledge dimension subsumed factual knowledge, conceptual knowledge, procedural knowledge, and metacognitive knowledge. The cognitive process dimension addressed remember, understand, apply, analyze, evaluate, and create.[119] Attending to these two dimensions, knowledge and process, allows educators to formulate objectives that consider not only the type of content to be taught, but also the cognitive strategies intended.

Factual knowledge objectives address knowledge of specifics, such as facts and terminology. These objectives identify those basic elements that students must grasp to indicate they know a discipline or content area.

Conceptual knowledge objectives indicate that students comprehend how basic bits and clusters of facts relate to each other and to the discipline writ large. Stress is on knowledge of classifications and categories; principles and generalizations; and theories, models, and organizational structures.

Procedural knowledge objectives address those processes and methods that enable students to "work" with factual and conceptual knowledge. These objectives also include the knowledge of criteria in order to determine what procedures are most productive in processing information.

Metacognitive knowledge objectives address what has been a neglected aspect of school learning: knowledge of cognition in general, knowledge of how the brain functions in general, and knowledge of an individual's own specific cognition. Awareness of strategic knowledge and how to utilize heuristics and algorithms to engage students in the learning process receive attention with these objectives. Metacognitive knowledge objectives direct students to focus on the development of their intelligence.

The Cognitive Processes. Although the knowledge dimension focuses on the content to be learned, the noun of the objective, we must provide the verb of the objective, the action. What is the student to do; what actions are to be demonstrated?

There are six cognitive processes that the four types of knowledge objectives can incorporate: remember, understand, apply, analyze, evaluate, and create. The cognitive processes advance in complexity and intellectual value. The first process, remember, is the least complex. Remember is essentially recognizing and recalling information. It is the knowing of something, whereas the next cognitive process, understanding, refers to making sense of what is recalled and can be utilized in other cognitive processes. In the revision of the taxonomy, understanding subsumes the cognitive activities of interpreting, exemplifying, classifying, summarizing, inferring, comparing, and explaining.[120] Students require more than understanding: They must utilize that which they understand. Students must activate their procedural knowledge and apply it to both familiar and unfamiliar tasks and situations.

The fourth cognitive process dimension is analyze. At this juncture, students must break a whole into parts and distinguish elements, relationships, and organizational principles. Students must uncover the structures inherent in subject matter. They must deconstruct and reconstruct what they remember and understand.

The fifth cognitive process of cognitive objectives is most crucial to the intelligent use of knowledge, the evaluative cognitive process. Here students and teacher must judge conclusions based on criteria and standards. Here emphasis is on making judgments, engaging in critiques, and utilizing internal evidence or logical consistency and external evidence or consistency with data produced elsewhere.

The sixth, and last, cognitive process dimension is generating methods of creating. At this stage, the synthesis stage in Bloom's first taxonomy, students generate hypotheses, design future strategies for learning, and construct products or environments that indicate students' creative competence regarding content.[121]

The Multipurpose Objective. Certainly, we can have cognitive objectives of various degrees of complexity. We could simply have an objective that focused on remembering, the

cognitive process of factual knowledge. Such an objective might read: "The student will name the highest mountain range in Asia." However, most teachers would like cognitive objectives to address high knowledge dimensions and engage students in more sophisticated cognitive processes. For instance, a teacher might create the following objective for a unit on global warming: "Students will utilize weather data to make forecasts about likely future weather consequences on various geographic areas." This objective addresses three knowledge dimensions: factual, conceptual, and procedural knowledge. The objective requires students to learn specific geography and meteorology facts. Students also must know reliable sources of information. Students must comprehend conceptual knowledge such as weather patterns, trend analyses, and knowledge of various weather models and structures. They must also possess knowledge of specific forecasting procedures and even algorithms related to weather analysis.

This particular objective also requires that students engage in various cognitive processes, the "verb" of the objective. Certainly, for students to utilize weather data to generate forecasts about the consequences of global warming, they must remember and apprehend a quantity of data to interpret map data and global imaging. They must implement a procedure of analysis. To do this, students must engage in analysis of gathered data and determine what data contribute to a position on global warming. Students must judge, or critique, their forecast or conclusion. Upon attainment of this objective, students might be asked to produce their own forecast.

It is evident from this example that what at first appeared as a straightforward objective really possessed many dimensions of knowledge and cognitive processes. The revised taxonomy is a most useful tool in reflecting upon and creating cognitive objectives.

Affective Objectives. David Krathwohl and others have broken affective objectives into five levels of achievement. Each level depends on attainment of the previous level. For example, to express a value preference, a student must be able to receive information and respond to situations.[122]

1. *Receiving* objectives refer to the learner's sensitivity to stimuli. This sensitivity includes (1) awareness, (2) willingness to receive, and (3) selected attention. Example: "From studying various Eastern cultures, the student develops an awareness of aesthetic factors in Eastern dress, furnishings, and architecture."
2. *Responding* objectives refer to the learner's active attention to stimuli such as (1) acquiescence, (2) willing responses, and (3) feelings of satisfaction. Example: "The student displays an interest in the topic of conversation by actively participating in a research project."
3. *Valuing* objectives refer to the learner's beliefs and attitudes of worth, which manifest as (1) acceptance, (2) preference, and (3) commitment. Example: "The student takes a stance regarding the advantages or disadvantages of nuclear power."
4. *Organization* objectives refer to internalization of values and beliefs, which involves (1) conceptualization of values and (2) organization of a value system. Example: "The student forms judgments about his or her responsibilities for conserving natural resources."
5. *Characterization.* This is the highest level of internalization. Objectives at this level relate to behavior that reflects (1) a generalized set of values and (2) philosophy of life. Example: "The student regulates his or her personal and civic life in accordance with ethical principles."

Considering affective objectives requires a realization that we are pushing boundaries of the knowledge dimension, the cognitive process dimension, and the emotional dimension. Here we have a messy fusion. If, as Anderson and Krathwohl suggest, the dimension of metacognitive knowledge includes knowledge about our own cognition, we must then realize that it relates to students' affect and to students' emotional awareness and intellectual awareness. The affective domain dominates metacognitive self-knowledge.

Flavell articulated many years ago that self-knowledge is a crucial component of metacognition.[123] Reflecting on self-knowledge, students record their strengths and weakness as

they relate to their educational adventures. Students, possessing self-awareness of the depth and breadth of their own learning, have valuable information to guide future learning.[124]

Self-knowledge also relates to individuals' apprehension of their temperament. Research has shown that temperament is biologically based, with an additional impact by genes, environment, and experience. Individuals have no "voice" regarding their genes, but they do have voice regarding their environment and, certainly, their experience. Realizing this, students have more control over self-regulation of intensity and duration of interest and emotion in response to particular situations.[125] Teachers must schedule time for students to engage in metacognitive thought and build self-knowledge. Attention to affective objectives addresses more than the brain; it nurtures the emotional self, the knowledgeable self, and the intellectual self.

Psychomotor Objectives. The psychomotor domain has received much less emphasis than the cognitive and affective domains. Anita Harrow divided objectives into six levels. As with cognitive and affective levels, psychomotor levels require attainment of previous levels. For example, to meet perceptual objectives, a child must have mastered fundamental movements.[126]

1. *Reflex movements.* Objectives at this level include (1) segmental reflexes (involving one spinal segment) and (2) intersegmental reflexes (involving more than one spinal segment). Example: "After engaging in this activity, the student will respond automatically to a physical stimulus."
2. *Fundamental movements.* Objectives at this level address behaviors related to (1) walking, (2) running, (3) jumping, (4) pushing, (5) pulling, and (6) manipulating. Example: "The student will jump over a 2-foot hurdle."
3. *Perceptual abilities.* Objectives at this level address (1) kinesthetic, (2) visual, (3) auditory, (4) tactile, and (5) coordination abilities. Example: "The student will categorize building blocks by shape."
4. *Physical abilities.* Objectives at this level relate to (1) endurance, (2) strength, (3) flexibility, (4) agility, (5) reaction time, and (6) dexterity. Example: "By the end of the year, the student will be able to do at least five more pushups."
5. *Skilled movements.* Objectives at this level are concerned with (1) games, (2) sports, (3) dances, and (4) the arts. Example: "The student can perform a series of somersaults."
6. *Nondiscursive communication.* Objectives at this level relate to expressive movement through (1) posture, (2) gestures, (3) facial expressions, and (4) creative movements. Example: "The student will create a movement sequence and perform it to music."

Although these taxonomies are useful in developing and grouping objectives and curricular emphases, there is overlap among the taxonomies and within the taxonomic levels. This is true because in reality, knowledge, skills, emotions, and attitudes (and even ethics, morals, and spiritual dimensions) make up the complexity of human learning and action.

An overview of the aims, goals, and objectives can be seen in Table 7.2.

Selecting Curriculum Content

Curricularists must determine what knowledge students need in order to succeed. This is the same question that Spencer raised; "What knowledge is of most worth?" However, today, the question must be rephrased to, what knowledge is of most worth in the global and digital world?[127] A related question is, to what degree should students "master" the determined, selected knowledge? This query brings the issue of standards. Those who believe that the knowledge selected for the curriculum should have standards and that the curriculum should be standardized are ignoring two obvious truths; useful knowledge is both culturally and historically specific,[128] and the skill level for using selected knowledge varies with individuals' interests and needs.

As societies change, what is useful and essential to know changes as well. As Yong Zhao posits, the knowledge considered valuable and necessary in one society may be of little value or totally valueless in another.[129] Information essential in an agricultural society has little value

Table 7.2 | Overview of Aims, Goals, and Objectives

Educational Statement	Features	Source	Samples	Curriculum Implications
Aims	General statements provide direction or intent to educational action.	From national commissions, task forces, and panels	*Cardinal Principles of Secondary Education; The Purpose of Education in American Democracy; A Nation at Risk*	Identifies the curriculum's overall direction
Goals	Statements of purpose given, which are more specific than aims	From professional associations, government agencies, state departments of education, and school districts	ASCD, Measuring and Maintaining the Goals of Education; PDK, Phase III of the Educational Planning Model; National Goals for Education	Identifies specific content areas of the curriculum
Objectives	Specific statements indicate either general or specific outcomes; behavioral objectives indicate the specific behavior the student is to demonstrate to indicate learning. Nonbehavioral objectives use more general words to denote the learning desired, such as to *know* or *understand*.	From school districts, schools, and individual writers	Bloom's, Krathwohl's, and Harrow's Taxonomies of Educational Objectives; Posner, Gronlund, Mager	Behavioral objectives tend to make curriculum more sequenced, precise, and compartmentalized. Nonbehavioral objectives allow for a more open-ended curriculum and integration of subject matter.

in an urban global society. And certainly, knowledge of agriculture to a city dweller requires a different mindset and skill set than for someone in agribusiness.

What is so challenging to curricularists in determining and selecting curricular content, both declarative and procedural, is that schools are responsible for creating programs of study not just for a local community, not just for a state or national society, but for a global, world society, or specifically, world *societies*. And all these societies are in flux. Educators are selecting content for anticipated, imagined, emerging, expanding, and contracting societies. Adding to the challenges of content selection is that we have to select content from two worlds: real and virtual. As Yong Zhao notes, educators and other professionals must apprehend that the virtual world is different from the physical world. He states that the virtual world is fundamentally different, thus requiring different knowledge and skills. Curricularists and communities might ask why we have to consider the virtual world. We must, because many of our current students live in both.

Zhao describes a 3-D virtual world called Second Life, created and run by Linden Lab, a software company in San Francisco. Although existing for only a few years, it currently involves many players worldwide who are very active as "residents" in a virtual world. In this cyber world, the residents engage in activities similar to the physical world: building houses, constructing buildings, purchasing cars, buying food, and engaging in business activities in which they actually make real, physical world money.

Second Life is more than a game played just for enjoyment. It can serve as a vehicle for formal education. If a student is interested in art, he or she can travel to virtual representations of particular art museums. If travel is an interest, the student can, via his or her online persona, travel to many European cities.[130]

Several years ago, Christine Sleeter noted that schools tend to stress content that benefited the dominant culture and excluded content central to groups that have been historically

marginalized, such as Blacks, Hispanics, and Native Americans. The knowledge and learning styles of the dominant culture were deemed most important.[131] Although this view still has relevance, curricularists must recognize that in our global world view, there are many dominant cultures that are constantly interacting. Numerous learning styles and knowledge realms are being morphed as technology has made distance irrelevant in many cases. In the global and digital world, U.S. schools must select content that serves students well as both U.S. and world citizens.

Not only must educators select content that serves all students well, but content selected must be "alive." Back in the 1920s, Alfred North Whitehead wrote an essay entitled "The Aims of Education." In this essay, he chastised educators for selecting content and presenting it in ways that made it "dead," "inert," "lifeless," and "barren." Curriculum content was essentially "dead knowledge," disconnected from reality. Content did not relate to the demands of daily life; it ignored students' interests; it was divorced from the field of scholarship from which it was drawn.[132] Whitehead even said that his education at Oxford only acquainted him with "dead," "inert" knowledge. A challenge for us in this century is to keep knowledge alive. When it is only useful for passing a test, it is lifeless. As Brown and Berger suggest, when selecting curriculum content, what and how students learn should be our primary considerations. They state that typically students' desires and learning strategies are secondary to what adults claim is important to learn and know, whether they be educators, politicians, or the general community.[133]

CONCEPTIONS OF CONTENT. Groups charged with curriculum planning must select content and experiences that enable students to learn the most—whatever curriculum design or development model they implement. But as noted previously, we seem to put adult interests in primary position and students' needs and wants in secondary conditions. While we know that a curriculum must supply information that relates to students' concerns, we "bow down" to federal, state, and local adult demands. No Child Left Behind was created by adults who really knew little about education, either curriculum or instruction. We know that contents should be organized so that students find the information useful and meaningful. We know that when selecting contents, we must reflect upon and apply what we know as to how well the content addresses students' cognitive, social, and psychological dimensions. Yet, we have drill and practice sessions on "inert," "dead" knowledge that will get students through a particular test hurdle.

Content (subject matter) is a compendium of facts, concepts, generalizations, principles, and theories. It also incorporates methods, strategies, for processing information. Curriculum content provides, or should provide, students with opportunities for discovering knowledge and relating it to the real world. As Lake denotes, the content selected should be "boundless and multidimensional, yet holistic and personal."[134] He suggests—encourages—educators to allow their imaginations and their students' imaginations to be the only limits to the scopes of contents.[135] All contents are selected from the various knowledge domains. And in this century, the domains are expanding, morphing in this "brave new world of technology."[136] (See Figure 7.5.)

ORGANIZATION OF CONTENT. Different knowledge domains have unique types of concepts in specialized relationships. For instance, mathematics has the concepts of number, integer, and matrix. Physics has the concepts of matter and energy. Within any knowledge domain, concepts are organized into specialized networks. Different types of tests and processes are tailored to different knowledge domains.

Program planners can organize content in philosophical/logical, psychological, political, or practical terms. Curriculum makers who use logical orientation organize content according to

KNOWLEDGE	→ Content	→ Knowledge
(information formally organized)	(knowledge selected for educational purposes)	(school content at levels sufficient for use)

FIGURE 7.5 World Knowledge to School Knowledge

certain rules and concepts. In economics, for example, the concepts of supply and demand are major organizers, without which the ideas of capital, labor, and marketplace cannot be understood. Arranging economics content in this manner makes sense, but it really does not denote the way an individual might actually learn economics.

Curricularists who use a psychological organization focus on how students learn or process information. Behaviorists think that content should be selected and organized so that correct responses are reinforced. Cognitivists think that content should prompt students to analyze, hypothesize, investigate, identify patterns, critique, and draw conclusions.[137] Most educators believe that content should be organized so that students move from the concrete to the abstract. This is a key principle of sequencing content.

Political organization is increasingly popular. According to those who favor this approach, content should be sequenced so that adequate emphasis is given to topics and people important to various pressure groups. Often politically driven content selection results from political or legal action.[138] For example, history curricula must now include the views and deeds of Blacks, Native Americans, Hispanics, and women. The goal is to include "concepts, paradigms, themes, and explanations that challenge mainstream academic knowledge and that expand the historical and literary canon."[139]

The last content organizer is practicality, which deals with "do-ability" and cost-effectiveness, such as the expense of structuring or delivering the content in a particular way. Practicality includes questions such as: Which organization (or organizations) of curriculum content optimizes learning? Can one find textbooks and other educational materials that support this content organization? And in this digital age, what computer programs can be integrated to complement the curriculum content? What e-books are available dealing with selected curriculum content? How can online learning be utilized? Can our school develop distance learning with other schools and even colleges? Perhaps when considering practicality, we need to ponder what the costs are of not including some content or teaching strategies, of not using e-books or computer programs, or of not accessing distance learning. These are important queries. Will teachers, students, parents, and the general public really accept a particular curriculum organization or approach? Will all the players, students included, accept the fact that technology is now indispensable to engaging students actively with the curriculum content?[140]

CRITERIA FOR SELECTING CONTENT. Regardless of their curriculum design preferences or their philosophical orientations, curriculum planners must apply criteria in choosing curriculum content. Although the criteria are common to most curricular orientations, educators in the various philosophical camps might place greater emphasis on particular criteria.

Self-Sufficiency. Israel Scheffler argues that the prime guiding principle for content selection is helping the learners to attain maximum self-sufficiency in the most economical manner. He elaborates three types of economy: economy of teaching effort and educational resources, economy of students' efforts, and economy of subject matter's extent of generalizability.[141] This criterion—helping learners to attain maximum self-sufficiency—is also supported by many humanists, radicals, reconceptualists, postmodernists, and postconstructivists as a means by which learners can actualize their potential and crystallize their identities. The criterion of self-sufficiency must be considered in ample depth. It does not mean just learning knowledge and skills that allow one to function independently in society. It means furnishing content and educational experiences that enable learners to connect their intellectual, emotional, and spiritual selves. It means content and experiences that nurture connections of intellectual and emotional selves to the selves of others. Content chosen for self-sufficiency should be experienced by learners as boundless and multidimensional. Subject matter should engage pupils such that contents have multiple meanings, the scope of which is limited only by the learners' imaginations.[142] The content should address self-sufficiency so that individual learners commence transforming themselves into more complete and complex social beings, moving toward being in a state of communion with others.[143]

Significance. Content to be learned is significant only to the degree to which it contributes to the basic ideas, concepts, principles, generalizations, and so on, of the overall aims of the curriculum. Content should also consider the development of particular learning abilities, skills, processes, and attitude formation. In this 21st century, there is a need for students shifting their scholarship from content emphasis to mastering strategies and skills in processing knowledge. Larissa Pahomov asserts that in the expanding digital age, information—content—is easily obtained. One can pull up vast amounts of data from computer programs such as Wikipedia, Google, and YouTube. Students need to be skilled in analyzing information so gained to judge its utility, its applicability, and most importantly, its accuracy. Is the information accessed opinion, or statement of fact? Is it accurate but advocating a particular viewpoint, economic or political? Perhaps a most important skill of self-sufficiency is not a skill at all, but a disposition. Students in this century must develop dispositions so they can live productively in situations that are uncertain. They must realize that all study and learning have the companion of "doubt." Self-sufficiency does not imply mastery, but "an enduring process of becoming."[144]

Validity. *Validity* is the authenticity of the content selected. In this time of information explosion and the rapid technological means of delivering information such as Facebook, YouTube, and Wikipedia, knowledge selected for school content can quickly become obsolete and even incorrect. It seems that anyone can post information and not identify its source. It appears that an assumption or conclusion can travel digitally around the world several times before anyone even bothers to check its accuracy. As new knowledge is discovered, content assumed valid may become misleading or even false. Validity must be verified at the initial selection of curriculum content, but it must also be checked at regular intervals through the duration of the curricular program to determine if content originally valid continues to be so.

Validity seems to be a rather straightforward criterion. Something is either accurate or inaccurate; something either happened or it did not. Nevertheless, the ideological stance and attendant metaphors that any individual brings to a situation vastly influence what he or she perceives as valid. Metaphors influence how we think about different situations and different phenomena. For instance, labeling a society patriarchal or oppressive is valid only if one uses a metaphor of gender hierarchy or a dynamic of competing physical forces. Because of the use of metaphors, some can state that certain information in school content is valid or truthful, whereas others can consider the same information invalid. Revisionists, radical school critics, reconstructionists, and postmodernists state that much of the curriculum offered to students is invalid.[145]

Interest. Another criterion is *interest*. To those who favor the learner-centered design, this is a key criterion. These persons note that knowledge exists in the learner when it is meaningful to his or her life. When it fails to be meaningful, it dehumanizes education. The interest criterion has been with us since the times of the child-centered school in the 1920s. Advocates of this movement urged that the child should be the source of the curriculum; in other words, the children's interest should determine the curriculum.

Those currently advocating a learner-centered curriculum point out that the content of the curriculum must be selected with students' interests in mind; however, the school experience should create and broaden interests as well as address them. A key question is, are students' current interests of long-lasting educational value for both the students and society? Dealing with this question is difficult because it assumes educators possess some degree of perception regarding future society and students' places in that future.

The criterion of students' interests should be weighted and adjusted to allow for students' maturity, their prior experiences, the educational and social value of their interests, and how they are expected to interact within society. Attending to this criterion of interest means that, in selecting content or arranging for content to be experienced or constructed, the educator must be sure that the content does engage the individual. The content must contribute to the welfare of the student.

Utility. *Utility* concerns the usefulness of the content. Again, how a person defines usefulness is influenced by his or her philosophical view and favored curriculum design. Usefulness to those favoring the subject-centered design is often judged in terms of how the content learned enables students to use that knowledge in job situations and other adult activities. Usefulness to those in the learner-centered camp is related to how the content enables the individual to gain an accurate perception of his or her self-identity and to attain meaning in his or her life. Is the content useful for the learner developing his or her human potential? Proponents of the problem-centered mode think of content as having utility if it has direct application to ongoing life and to social and political issues.

A challenge in dealing with the criterion of utility is that educational decision-makers must consider two kinds of utility: current utility and future utility. There are certain contents and processes that students must learn for immediate application to be successful in their current lives. Some of these contents and processes have utility for all students, regardless of the students' desires or life ambitions. However, some contents have immediate utility only for students who have very specialized needs, desires, or ambitions. Thus, utility must be considered with the student audience in mind. In addition to content that has current utility or immediate application, there are contents that have current utility for preparing students to deal with the future, not the immediate present. These contents have utility in getting students to think in particular ways that will be useful in the future. These contents have utility in getting students to be futurists themselves, to engage in futures planning, to forecast events, and to assess future consequences of current and emerging trends.

In the global and digital world, educators must rethink the criterion of utility. Some content might have limited utility and perhaps even be useless, in particular students' immediate environment. However, those charged with selecting content must recognize that in today's shrinking world, what might be of little value in the immediate community may have great worth in a distant community. Some might argue this point by asserting that their students are unlikely to travel to distant places. However, a student might indeed be able to market his or her knowledge or skills in a distant place without actually leaving his or her home office. We do not need to travel to India to work there.[146]

Zhao presents an interesting idea: "Nothing is too strange to be useful." Phrased differently, nothing is too strange to have utility. No content, no knowledge, if presented on a world scale, lacks utility to some audience, however small. Companies like Amazon and Netflix function with this concept. They focus on what may appeal to only a small number of individuals, but they announce to the world community that they have this "narrow-focus" material. Because they announce this fact worldwide, they always have enough people interested in the material, this bit of knowledge. Small numbers of people interested in strange and unusual materials generate major sales. Millions of small orders spell success for companies using this business model. If educators "toy" with the idea of putting specific curricula online—that might have only limited local interest but, globally, might entice profitable numbers—they might be motivated to create such a curriculum. Zhao indicates that with Second Life, Michigan State University's Confucius Center has created for Second Life a virtual Chinese Island designed so players can learn Mandarin Chinese. The Chinese Island allows players to visit a Chinese museum, markets, and even restaurants. Zhao notes that other universities are exploring courses to be offered in this cyber universe.[147] School districts, especially those offering the international baccalaureate degree, might create curricula that have utility for students from around the world as well as from their home district. There is no knowledge, no content, that does not have utility to someone.

Learnability. Could anyone select content without considering this obvious criterion? Some critics of the schools say yes. Certain contents are selected that are out of the range of experiences of particular students and are thus difficult, if not impossible, to learn. Furthermore, selected contents are sometimes arranged and presented in ways that make their learning difficult

for some students. Critics often say that content selected reflects a middle-class bias and that it is organized to favor those who have convergent (and right-answer) learning styles. The learnability criterion relates to the optimal placement and appropriate organization and sequencing of content. Furthermore, it addresses the issue of appropriateness for the intended student audience.

Feasibility. *Feasibility,* the last criterion, forces curriculum planners to consider content in light of the time allowed, the resources available, the expertise of current staff, the nature of the political climate, the existing legislation, and the amount of public monies available. Although educators may think that they have an entire world of content from which to choose, they do have limitations on their actions. Even the number of days in the school calendar, for example, limits what can be taught. So do the size of the classroom and the personnel of the school. Content selection must be considered within the context of the existing reality, which usually boils down to economics and politics.

Selecting Curriculum Experiences

Curriculum developers must consider not only content, but also how students experience that content. They must consider instructional strategies and educational activities. Possible instructional strategies include inquiry strategies, lecture, discussion, and demonstration. Educational activities include viewing films or videos, conducting experiments, interacting with computer programs, taking field trips, and listening to speakers.

Curricularists select and sequence pedagogical approaches and manipulate experiences and materials in the hope not only of imparting knowledge, but also of enhancing students' values and attitudes, abilities to think critically and creatively, and desire to learn individually and collaboratively. Curriculum experiences should nurture the enhancement of intellectual activities in both hemispheres of the brain. The focus in the 20th century tended to be on left-brain-directed thinking skills. Such skills stressed the "sequential, literal, functional, textual, and analytic."[148] The 21st century requires more right-hemisphere thinking skills. These skills are simultaneous, metaphorical, aesthetic, contextual, and synthetic.[149]

Curriculum experiences that stimulate student excitement in adapting to and managing complexity, celebrating uncertainty, and rewarding intellectual risk taking will serve students of this century well. Also, educational experiences that foster in students a playfulness in their learning and a joyfulness in interacting with ideas, materials, technology, and people of various cultural, ethnic, and knowledge views will be valuable. Francesco Michaelides Weiss reflects on play, its meaning, and the messages it holds for educators. We suggest that we celebrate play, its varied powers, and bring more play into educational experiences. Weiss shares her worries that children today are deprived of sufficient play time. In many schools, recess has been eliminated; physical education is absent from many curricula. She argues that "the more time children have to play in their own ways, the better able they are to work out relationships and human problems that arise when interacting independently with their peers."[150] Classrooms should be "playgrounds" where ideas and situations can be "gamed." With experiences that encourage play, learners connect more completely with fellow students.[151] Playful curricular experiences facilitate children developing "creativity, inventiveness, and engagement with others and their ideas."[152] Weiss points out that corporations such as American Express and Starbucks have their employees engage in playful activities at leadership forums. Amazon has created playful environments in which people work and interact.

Curriculum experiences of this century should go from didactic teacher presentation to teacher–student, student–student, and student–outside expert interactions. And these interactions need not be just interactions with local community members. Remember, technology has eliminated distance. Students might collaborate on a project with a student or knowledge expert in another country. Field studies can roam the world seeking answers to particular questions. Interaction strategies alter the educational metric from answers and certainty to questions and uncertainty. Puzzlement is rewarded in new 21st century pedagogies. This does not mean that

educators ignore strategies that stimulate the left-brain hemisphere. Rather, it means that we are attempting to maximize the total brain—both hemispheres, the serious logical and the playful inventive.[153] With such balancing, educational experiences mirror ways in which knowledge and skills are actually applied in out-of-school situations. With such balancing, students attain a greater understanding of themselves as individual students and persons as well as members of groups, both local and worldwide.

Of course, various pedagogies and educational activities must be feasible in terms of time, staff expertise, facilities available within and outside of the school, and community expectations. However, as pointed out previously, technology has and continues to introduce the world community to students. We no longer need a yellow school bus for field trips to a farm or museum. Students can visit art museums in London by being "residents" in the metaverse of Second Life.[154]

We realize that many who read the preceding paragraphs may take exception to the points advanced. Certainly, with the stress on meeting standards, to suggest that schoolwork should be reclassified as school play will raise eyebrows. What is the standard for playfulness? How is it measured? How would one measure whether a standard was attained in a school project conducted with various players engaged in Second Life? Where are teachers going to get all the time for such actions? And what about teacher expertise?

However, teachers are professionals, and most community members think that the school their child attends is really quite good. The sorry state of public schools applies only to schools in other communities. In the Seattle area, four high schools in one school district were ranked in the top 25 nationally. However, we recognize that all schools are not equal regarding curriculum, teachers, funding, and student preparedness for academic study. Even so, we should strive for "best" practice in selecting curriculum experiences. Educators striving for best practice and attempting to attain high standards must realize that in reality, content and experiences are inseparable. Students reading a book or playing Second Life are combining content (what they are reading) with experience (the act of reading or the actual processing of what is learned in the cyber game).

7.2 Creating 21st Century Curriculum Experiences
According to many employers, schools need to focus beyond the three *R*'s and emphasize certain global skills such as creativity, critical thinking, and collaboration. Watch this animated video about two children working together to create something extraordinary. What kind of curriculum experiences can educators create to cultivate such 21st century skills in their students?

https://www.youtube.com/watch?v=zTbuFN8_D_s

Selecting Educational Environments

Just as we cannot separate content from experiences in the actual delivery of a curriculum, we cannot divorce the experiencing of content, the learning of content, and the attainment of knowledge from the space or spaces within which experience occurs. At least, this has been the case until recently. Neither, until recently, could we divorce the experiencing of the curriculum from the realm of time. The space and time in which individuals place themselves or are placed affects their inner experiences, their learnings, their knowledge, and their understandings. As William Ayers notes, "The learning environment is a complex, living reflection of a teacher's values."[155] We add that the learning or educational environment is more than a reflection of a teacher's values. An educational environment is a representation of values from communities of persons, seen and unseen.

Most educators give scant attention to the spaces within which curricular content and instructional strategies occur. But we argue that in today's fast-paced century, we need to think of space somewhat like an architect of education. Educational spaces are, as just noted, essential aspects with which students will engage their learnings. As David M. Callejo Pérez, Donna Adair Breault, and William L. White denote, viewing spaces as a crucial dimension of curriculum will enrich our ruminating about the purposes of developed curriculum, its potential to trigger associated learnings, and the innate significance of such learnings. We must realize that dynamic spaces can impact the physical, psychological, ethical, and even moral conditions that are embraced by our various communities.[156]

Most schools still are designed to be functional and efficient. But our designs reveal that which we consider important. Dewey in 1934 denoted that structures that lacked character—that

is, "packing box architecture"—were due to a lack of character or certain values of the architects who designed them.[157] In the Northwest, most housing developments reveal the dominance of the car and a disconnect with people. Most new houses have a two- or three-car garage and just a front door. People live over their garages. There are no front porches. People live in the back of their "houses" disconnected from their neighbors. There is no sense of community. The reasons driving the architects and builders are primarily economic. This thinking seems to extend to the schools built for these subdivisions.[158]

An educational environment should represent a milieu in which teachers and students engage in mutual communication about content and jointly participate with educational materials and technological programs to attain meaningful educational experiences.[159] Pérez, Breault, and White, drawing on a lecture by Foucault to architects, state that the curriculum should exist in a "heterotopia." Utopias are not realities. They present ideas, shadows on walls. In contrast, heterotopias meld the ideal with the real. They serve multiple purposes and varied functions. They frequently present conflicts, tensions, and incompatible ideas and actions for students to process. Such environments introduce contradictions to students, nurture doubt and uncertainty, and motivate inquiry.[160]

Children who experience a creative environment within a heterotopia are much more likely to be stimulated, to realize their potential, and to be much more aware of their learning processes and their command of understanding. Students in such an environment are most likely to be excited about learning and, more importantly, to be more daring in executing learning strategies and more audacious in considering information from myriad angles.

Educational environments often are ignored by curricularists and teachers. One tends to just accept the classroom to which one is assigned. Certainly, one has to function in the given classroom space, but teachers have an obligation to question the educational, the curricular, and the instructional attributes of the classroom space. What is obvious about the classroom space? Will it allow for teacher–student and student–student interactions? What are the hidden curriculum messages? What are the obvious messages? Will the environment make students feel comfortable and appreciated? Will I as the teacher feel at home in this environment?[161] Educators must consider a classroom as a biosphere—as an ecosystem. Is the space and what grows within it healthful regarding nurturing curiosities, intellectual risk-taking, dispositions to explore and experiment, and concern and empathy for fellow students? Will it foster intellectual character and technological competencies?[162]

Certainly, educational environments should be planned so that purposeful student activity is stimulated. However, today's environments must also allow for nonpurposeful student activities—just playing around with information to see what happens when one mixes ideas and actions. Computer games can foster such nonpurposeful actions. Having playfulness as part of the hidden curriculum can arouse in students a wish to engage in serendipitous learnings and to take pleasure in the excitement of uncertainty. The hidden curriculum should also shout out that all students' learnings and results of learning are valued and encouraged. Another hidden curriculum message is that students have responsibilities for selecting contents they wish to learn. This hidden message might be nothing more than scheduling time for students to suggest ideas for lessons.

Only purposeful learnings exist. What we classify as nonpurposeful are activities or contents that we do not find of use to us. However, these contents and activities have utility, even if not articulated, to someone. As Ayers posits, and we tend to agree, individuals learn what they deem important without much outside intervention. After all, babies learn to speak a language without direct instruction. They learn to walk, to play ball, and to dress themselves. They develop a number sense prior to experiencing a structured school curriculum. Young individuals learn these things on their own because we structure, or create, environments in which they can practice actions and learnings. We try to make the environment appealing in order to tempt the individual to try some learning and some action. We offer encouragement at any sign of success. We make the environment safe. Individuals, starting with babies, can read the hidden curriculum

messages that cheer "try this, hold on to that, take this step, throw the ball." An effective educational environment encourages learning, cheers human effort, celebrates social interaction, and encourages forming a learning community.[163]

As mentioned previously, the educational environment is an ecosystem, or biosphere. Further consideration is whether the ecosystem is completely natural; if so, we are called to manage the flora and fauna in ways that keep them vibrant. Our first reaction to educational environments is that they are human-made. However, the curriculum in today's school does not just take place in human constructions.

According to Ursula M. Franklin, education is not just happening in natural and human biospheres, it is happening in numerous bitspheres.[164] Bitspheres exist within the *space,* the inner environments of the various technologies that we are placing in our schools' educational environments and the technologies we utilize in our out-of-school lives. Our technologies are enabling us to expand *school space,* or educational environments, to limits known and unknown. Franklin asserts that our house—in our case, our schoolhouse—is being expanded and remodeled. And with the remodel, more and more of human life is being lived in the bitspheres. Building within bitspheres is altering how people interact with others and with nature.[165]

Much of the transformation of our lives by our increasing use of technologies is occurring without our awareness. Students, we know, spend a particular amount of time in the educational spaces in schools. We, as educators, have some control over what occurs within the space and time zones. However, increasing numbers of students are engaged with technologies in bitsphere worlds over which we have little or no control. In these bitspheres, there are no time or space constraints. Students can text a message on their iPhone, no matter the hour of the day. There is no day or no night, just "now." And messages can be texts or tweets sent to people whom we have never met in a place where we have never visited. The new technologies are contributing, Franklin asserts, to the destruction or a major alteration of time, space, human community, and the relationship of actual community. Facebook has altered how many interact with others. Students with thousands of "friends" are not going to interact to standard educational school environments. They may be less willing to engage in face-to-face interactions, preferring instead to dialogue in cyberspace.

And students given a science assignment may feel more comfortable going on their own time frame to visit various libraries on the Internet. They may read the great books on their e-readers. They may document their research reports with electronic articles and reports. They even may be able to interview, in cyberspace, various authorities from around the world. And this drifting to unpatterned structures from patterned social and community structures is occurring while many are arguing that we need smaller and more personalized schools.

John Goodlad suggested attention to this dynamic shift several years ago when he argued that schools must develop an ecocentric ethic.[166] An *ecocentric ethic* defines a school's particular culture—the relationships among all the people within the school and outside the school. In an ecocentric school, students interact with institutions and social practices. However, Goodlad could not have known, as we did not, that technologies would allow students to expand their interactions from the various biospheres to the bitspheres, that students would be interacting in cyberspace with individuals not really known and never met, or that students would, in some cases, be engaging with avatars.

Franklin offers a caution. With our technologies, students can quickly access massive amounts of information from anywhere in the world. However, she notes, delivering and experiencing curriculum is not just to supply information. Education, writ large, enables students to attain knowledge and understanding. The educational environment, the specifically human sphere, should be considered and developed so that students acquire knowledge and understanding at deep conceptual levels. But in acquiring knowledge and understanding are two levels of learning: explicit and implicit learning. We can perhaps gain explicit learning with ever-increasing engagement with the bitsphere, but implicit learning is diminished or even stifled with such bitsphere emersion.[167]

Students engage in explicit learning in gaining knowledge of historical events, learning the construction of correct sentences, and learning algorithms to solve problems. Such learning is essential in knowledge acquisition. However, for students to be complete, they must address the affective and psychomotor domains as well as the cognitive. Implicit learning results from individuals interacting together and engaging in social dynamics, whether in school or in the community. Educators must design educational environments that foster in students connections not only with other humans but with all the earth, living and nonliving. Educators must consciously create social situations so that students implicitly develop empathy, tolerance, patience, trust, humility, self-confidence, love, reverence, wonder, and awe. Further learnings should foster respect, concern, inquisitiveness, joy, responsibility, and spirituality. Franklin states that often educators assume that such implicit learnings accompany explicit learnings. Such double learnings cannot be taken for granted. She also asserts that some explicit learnings may become less useful in rapidly evolving futures, whereas the implicit learnings may become truly central to our future welfare.[168]

Decisions about the educational environment may be even more crucial and complex than decisions about selecting content and instructional strategies. We can select a particular science concept and an instructional strategy, but if we are not careful in designing the educational environment, the science concept experienced may actually "blow up" in the teacher's and students' faces. As Ron Ritchhart articulates, "when the implicit message contradicts the explicit message, the implicit message is likely to win out."[169] Emotion usually trumps reason. When considering educational environments, we must look at the implicit messages hidden within the educational arrangement of space as well as the explicit locations of furniture and educational materials. What educators think important is placed in a power position so that students will notice it more or have more opportunities to employ it in their learning. If students do not pick up on our placements, we often explicitly point them to correct encounters.

Attention to selecting educational environments, while certainly not a major focus of educators when contemplating curricular design and development, has not been totally ignored. In 1987, Brian Castaldi suggested that curriculum planners must consider educational environments in which curricula are experienced. He suggested four criteria that educators should employ when designing educational environments: adequacy, suitability, efficiency, and economy.[170] *Adequacy* refers to the planned spaces, the actual classroom space. Are classrooms large enough, well lit, and sufficiently temperature controlled? Today, the adequacy criterion must also be engaged when thinking of cyberspace. Can the cyberspace allow for a few or many participants? Is the visual space of the real classroom large enough to engage all students? With regard to virtual books, there is no need to raise the question about the condition of educational materials. Materials on e-readers never wear out, but of course, they can become irrelevant.

Suitability relates to planned activities. This criterion may be even more crucial to consider in that the virtual worlds opened by technologies can present an ocean of materials and activities that may or may not be appropriate for students. In dealing with suitability, teachers must consider both the chronological and developmental ages of their students. Educators must think about the cultural backgrounds of their students. Concepts such as cultural views of personal space must be incorporated into decision making.

Efficiency refers to operational and instructional effectiveness. Does the environment maximize learning while minimizing the efforts required of teachers and students? With technology becoming a central part of the educational environment, the efficiency criterion has taken on new meaning. Students assigned a research activity can engage in conducting virtual experiments or interviewing experts in another country without leaving the classroom. Students can skim through documents provided by the Internet in a matter of minutes instead of hours. Students can instantly develop personal connections with multiple learning communities.[171]

Efficiency addresses more than the operational and instructional effectiveness in the explicit realm. This criterion also must guide the effectiveness of the educational environment in stimulating implicit and emotional learnings and dispositions. What is placed in the educational

environment must engage, challenge, mystify, excite, and encourage students to book their educational travels. And the environment must allow for such travels, such mind trips, such emotional adventures. It should foster students raising questions that have answers to be known but, perhaps more importantly, questions that are unanswerable such as "What is my mind?" "How do emotions work?" "Who am I?" "What is space?" "Are there parallel universes?" "From whence did time come?" "What was here before the big bang?"[172]

The final criterion, *economy,* refers to cost-effectiveness. As Castaldi first presented it, economy dealt with the specific cost of teaching some part of the curriculum in the environment provided. Just how much money is required for the purchase of textbooks and materials? How much do we need to supply computers to some or all students? How much do we need for salaries for teachers competent in the particular curriculum in this particular educational environment? What do computer programs cost? What expenses are necessary to connect to the Internet?

As Castaldi developed this criterion, it appears that the economy criterion was influenced by "Time is money." However, economy is not simply related to the cost of doing something or of teaching some subject. Today, we believe that the economy criterion must also consider the cost of not teaching something, or not designing an educational environment that encourages interactions with real persons as well as individuals visited through technologies. Contemplating this criterion, educators must realize that what is done quickly and at the lowest monetary cost today may in future realities be the most ineffective and costly of programs. This concept of what it costs not to do something now in terms of future consequences adds complexity to this final criterion. Although we cannot be certain about future costs of nonaction—not teaching some subject, or not allowing students to access certain technologies—we at least must be vigilant in constantly revisiting our educational environments as well as our curricula and instructional methods performed in these environments to make sure that everything educational is still adequate, suitable, efficient, and economical.

The Final Synthesis

The stages of curriculum development should result in a document that addresses content, educational experiences, and educational environments in keeping with the school's aims, goals, and objectives. Whether educators are creating master curriculum designs, curriculum guides for particular courses of study, or lesson plans for a particular day, they essentially engage in all the stages discussed in this chapter.

PARTICIPANTS IN CURRICULUM DEVELOPMENT

Developing a curriculum involves many people from both the school and the community. It also involves planning at the classroom, school, district, state, and national levels. Sometimes curriculum planners are at odds with one another. This is especially likely when different political interest groups are competing for resources and influence. Macdonald long ago advocated that all parties affected by the curriculum should be involved in deciding its nature and purpose. The key players should be scholar-experts, professional educators (consultants, administrators, supervisors, and so on), teachers, and students. Parents and community members (including businesspeople and politicians) should play lesser roles.[173]

Teachers

Teachers occupy the central position in curriculum decision making. But as Mary Moss Brown and Alisa Berger contend, the roles of teachers in this new century are changing, confronting teachers with expanded challenges. No longer are they just responsible for developing lesson plans and serving on curriculum committees. With the digital age exploding contents, computer programs, and virtual worlds, teachers are going to have to interact with content experts from the

field. Many learning modules will have content that many teachers will not have the expertise to teach or evaluate. Specialists from the field will have to collaborate in the planning of lessons and the evaluation of learning. Schools will need to reorganize not only spaces, but schedules that will facilitate such collaboration. Internships of students, especially at the secondary school level, will require a meld of educators and field experts to manage and assess.[174]

In the 21st century school, Brown and Berger assert that in some cases, teachers will be responsible for creating courses they will not teach and teach courses they did not plan. Much of this depends on the specific contents of the curriculum. In other situations, teachers will collectively develop curricula. And in some cases, teachers will collaborate with technology coordinators in preparing computer presentations. And with distance learning, many teachers will have their classes taught by teachers and field experts not even in the community.[175]

If teachers and experts from the community are going to have a successful curriculum association, they will require an adjustment or adjustments to their teaching schedules. As Decker F. Walker and Jonas F. Soltis contend, teachers cannot teach a full schedule of class daily and have time for curriculum development and working with experts in various subjects and fields from the community. Even the economic and industrial segments of the community may have to make their own schedule adjustments to accommodate such joint planning of curricular experiences.[176]

But, we assert, teachers will have to continue to be involved in every phase of curriculum development. And as Michael Fullan and his colleagues remarked, teachers should continue to function not only as codesigners of expert curricular and instructional systems, but also as coresearchers into the effectiveness of implemented curricula.[177] Again, to participate as coresearchers will require adjustment of teacher schedules.

Students

Students should have a voice in curriculum development. It is surprising that until recently, teachers, although they think in terms of what students will learn, have largely ignored them as individuals who could collaborate in creating or modifying curricula. Jeroen Bron and Wiel Veugelers have presented a cogent argument for involving students in curriculum design and curriculum development. They point out that educators in the first decade-plus of this new century have come to see the power of student voice and have become advocates of involving students as active participants in curriculum development.[178]

Bron and Veugelers present five rationales for allowing students' voices to be heard in matters of curriculum design and development. The first argument is the normative argument. Students need to be considered as being active citizens, not just "citizens-in-waiting." As such, they have the right to participate in decision making that impacts their education. Children do have rights as citizens—citizens of the country, their community, and their schools. Their voices cannot be ignored.[179] Lake points out that the learner is not constructed for the curriculum; rather, the curriculum is created and implemented for the learner. Often students' investigations both inside and outside of school inform our youth as to what a meaningful curricular experience might be.[180]

Bron and Veugelers's second argument is the developmental argument. They indicate that today's youth are developmentally ready to participate in providing suggested curricular input. Often, their activities outside school provide more opportunities to assume responsibility and autonomy in their lives than the school community does. With regard to technology, many students, even at the elementary level, are more expert than their teachers.

The third argument for involving students in curriculum development is the political argument. The point has been made that students are citizens who need to have their voices heard. But students speak with myriad voices. Our students, especially in this century, are heterogeneous to the extremes. This diversity of our student body means that a "one-size-fits-all" curriculum will misfire. As Bron and Veugelers posit, "there can be general aims . . . on the national level, but these need to be elaborated into more detailed objectives in such a way that takes into account the cultural context and the local, temporal, and individual differences."[181]

The educational argument is the fourth argument. Being involved in curriculum design and development provides students with opportunities to engage in collaborative decision making and inquiry. In some ways, this educational argument supports allowing students' curricular decisions to be a real intern-learning event—students allowed to engage in reflective imagination,[182] students having opportunities to nurture democratic skills, to actually learn the deliberative process.[183]

The relevance argument is the last, but by no means the least powerful justification. Relevance deals with the questions, "What is this content, this experience good for?" "Why do I need to learn this?" "Can I actually utilize what I have learned or experienced in my life outside of school?" Students participating in creating or guiding some of their curricula allows them in their decision making to realize the relevance of what they develop in the company of educators and even community members. And they will learn that relevance is not a static attribute. Certainly, there are curriculum contents that are relevant today and have been relevant in past centuries. But there are contents that may not be relevant in 10 years, or skills or strategies that are relevant in curricula that will be less relevant and perhaps even irrelevant.

Students involved in creating their curriculum can be further motivated not only to learn explicit content, but to learn implicitly that their opinions and choices matter and have educational value. Students so involved feel empowered and are encouraged to assume responsibility for matters that concern them. They also learn that engagement in curriculum design and development is ongoing. It is a process that continually must deal with the question, what knowledge is of most worth? As Lake submits, "the sphere of life is never static; it constantly is changing and being changed by the environment of social, political, and natural movement, through forces of self-preservation. . . . Education needs to continually renew itself through continual creative reflection and action, and a curricula . . . is always in the making."[184] When involved in curriculum development, students at all ages will learn what Lake has stated: Life is not static; education cannot be static. We all have voice; we all have agency.

Principals

For curriculum planning to succeed in a school or school system, the principal(s) must be involved.[185] Fullan asserts that where schools have been successful in creating quality education, the principals were leaders of instruction. We interpret instruction as synonymous with curriculum. When principals had accepted an instructional leadership role, they spent less time on administrative, financial, and logistical tasks.[186] Principals did not become the instructional leaders, but they worked closely with those individuals who were. In the last few years, a new educational position, called the school administration manager (SAM), has been developed. This person assumes many of the principal's administrative functions, allowing the principal to focus more time on instruction and, we would assert, curriculum. The Wallace Foundation has created an initiative designed to enable school systems to reconceptualize a principal's responsibilities so as to make his or her actions improve instruction and curriculum in their schools. As of 2015, 600 schools in 17 states were employing the SAM concept.

With the SAM, a principal can indeed be an instructional leader. Instead of dealing with minor administrative and management issues, the principal can increase her or his time observing classrooms, engaging teachers in discussions about instruction and curriculum, actually participating in teacher team meetings, discussing issues with students, and even engaging with students who are discussing curricular issues. SAM even allows principals some time to actually tutor students.[187]

Yet, for principals to take advantage of the SAM program, they need to possess specialized knowledge regarding curriculum and instruction. Just having the time to visit classrooms and to be a member of a teacher team-planning session will not result in improved curricula or instructional strategies. Many principals need to realize that they sorely lack curricular and instructional expertise. Most principals, when they give attention to curricular activities, do so from a largely managerial perspective.[188] Even today, most college programs for principals devote little time

to curriculum. Some colleges of education have even eliminated the area of curriculum studies. Most administration programs stress personnel matters, education law, financial planning, organizational models, and change strategies to the detriment of curriculum and instruction.[189]

Certainly, no new curriculum will be introduced or created for schools or school systems without the moral and psychological support of principals. Principals effective in leading any type of innovation—in our case, curricular innovation—must possess the skills requisite for maintaining the relationship between teachers and the larger community, whether local, state, or national.[190]

Effective principals realize that schools must function as learning communities with close ties to the outside neighborhood. Ideally, they believe that curriculum committees should involve community members along with students in decision making. This is no small task, especially at this time of myriad voices expressing divergent demands on the school. Fullan notes that "the principal is the gatekeeper of change."[191] We would submit that the 21st century principal is the gatekeeper of numerous gates of multiple diverse changes occurring at exponential rates.

Curriculum Specialists

Curriculum specialists play a major role in curriculum development and implementation. Those who are called curriculum coordinators or directors usually are curriculum generalists. They have a broad knowledge of curriculum and expertise in creating and implementing curricula. They usually do not have a major in specific content. Other generalists in a school district are known as directors of elementary or secondary education. Usually, these people have expertise in administration as well as curriculum, but their focus is on either elementary or secondary education.

People with specific content specialties are often called supervisors, chairs, or heads of a particular subject area (e.g., "supervisor of science"). They have some background in curriculum, but they possess a major in a content discipline and often are more concerned with supervising instruction.[192]

Curriculum specialists are responsible for ensuring that programs are conceptualized, designed, and implemented. This requires considerable understanding of curriculum and skill in managing people. Curriculum specialists must know how to design and develop curriculum and how to supervise and evaluate instruction.

School districts, especially small ones, sometimes ask outsiders to assist in curriculum development. These outside facilitators may be subject-matter experts who assist in selecting and organizing content, experts in instructional design who provide guidance on choosing pedagogical approaches or integrating media systems into the curriculum, or experts in needs analysis.[193]

Assistant (Associate) Superintendents

In many school districts, the assistant, or associate, superintendent is most responsible for curriculum development. This person reports directly to the superintendent. In large school districts, curriculum directors report to the assistant, or associate, superintendent. Ideally, this person (1) chairs or advises the general curriculum advisory committee; (2) informs the superintendent of major trends in the field of curriculum and how these trends are affecting the school system; (3) works with elementary and secondary directors regarding curricular activity; (4) is in charge of the budget for curricular activity; (5) provides input into the statement of philosophy, aims, and goals; (6) guides evaluation relevant to aims and goals; and (7) manages long- and short-term activities designed to strengthen programs.[194] The assistant (associate) superintendent also helps formulate policies concerning curriculum innovation.

Superintendents

The superintendent is the school system's chief administrator. The superintendent responds to matters before the school board, initiates curriculum activity, starts programs for in-service

training of teachers, informs all district personnel of changes occurring in other schools, and processes demands from outside the system for change or maintenance of educational offerings.

Good superintendents inspire change and enable curricula to respond to changing demands. They are directly responsible to the school board for the district's total educational action. They must establish the means for curricular action, interpret all aspects of the school's program to the board, and set up communication networks to inform and involve the public with regard to curriculum process.

Boards of Education

Boards of education are the schools' legal agents. They are composed of laypeople, usually elected as representatives of the general public. Board members are responsible for the schools' overall management. They must ensure that the curriculum advances the school system's goals. School boards have the final say as to whether a new program is funded or implemented districtwide. They enact district policies that facilitate the development and implementation of new curricula.

School boards and central administrative staffs seem to be losing some control over school districts. In some cases, legislated definitions of basic education have removed some control. In other cases, special-interest groups have gone to court to alter board policies that they found unacceptable. In some communities, angry community members have recalled board members. In many school districts, the school board plays only a secondary role in determining curriculum and policy; federal, state, and local professionals create new curricula.

Lay Citizens

The relationship between communities and schools reveals much confusion and seeming contradictions regarding what roles laypersons should play in determining goals, programs, instructional strategies, and standards of pupil success. Just how involved should laypersons be in curriculum development? How included do community members wish to be? In most school districts, lay citizens' role is minimal.

Many reasons exist for the lack of engagement. Perhaps the major reason is that noneducators realize they possess little knowledge about course content, course designs, or models of curriculum development. Another is that they believe that educators should be the ones engaged; it is the educators' job, after all. In some communities, there are diverse social classes and differences in real and assumed power to influence the schools. Fullan, citing Bryk and Schneider, notes that often poor parents are frequently unconfident in their relationship with schools.[195]

Presently, with the emphasis on standards, more community members are striving to have their voices heard. However, because of increasing diversity throughout the nation, the ideas of trying to influence education standards are becoming increasingly complex. Many parents are recent immigrants, bringing with them radically different views of what education should be. Some immigrants come from countries in which people did not advance beyond primary school.

How to involve lay citizens with these backgrounds in contributing to the education of their children is increasingly challenging. Increasing diversity regarding ethnicity and levels of affluence offer new problems. Many children come from single homes. Many are living in poverty. The gap between the haves and the have-nots is increasing, and has an impact on when and how lay citizens furnish input into the school systems.

In general, parental involvement in school affairs drops off considerably as students enter middle and high school. Communities that are poor often do not even have any involvement at the elementary school level. Educators must recognize that parents and other community members can be resources for creating dynamic curricula. Principals and teachers must realize that they must, in many cases, initiate the contacts with the various communities.

But not all innovative collaboration in curricular matters need be started by educators. In the 1990s, Eric Schwarz conceived of using community members as "citizen teachers" to

supplement and expand the regular school curriculum. He started his movement in Boston with the belief that low-income children in "poor" schools could learn as well as middle- and upper-class children in highly performing schools. What low-income children needed was additional time to learn and to interact with "citizen teachers" who could introduce these children to areas of expertise not taught either because of time or expense. Today, his program of "Citizen Schools" annually reaches over 6,000 students nationally. His program provides evidence that low-income students can learn at advanced levels.[196]

Schwarz, in his book, *The Opportunity Equation*, reports on other examples of citizen power. The National Academies Foundation (NAF) addressing high school students engages corporate employees from 2,500 companies as volunteers to share their expertise. This program currently engages more than 60,000 students in 39 states. Students often partake of internships at the company, working on real projects. Employees act as tutors and mentors, as well as teachers.[197]

The program City Year has young mentors who go into elementary and high school classrooms in 24 cities across the country. Experience Corps has realized and utilized a rich "citizen teacher" base: senior citizens who have retired from various professions. Many of these people are thrilled to volunteer part time in the schools. Some even are willing and eager to have second careers sharing their knowledge and skills. These "citizen teachers" are not replacing educators in the schools; they are becoming partners with educators in curriculum development and curriculum delivery.[198]

The Federal Government

For much of the 20th century, the federal government left curricular matters to the states and local districts. However, beginning in the 1960s, the federal government became a powerful force in determining educational materials and their uses. Federal dollars established and maintained regional laboratories and centers, first centering on science and mathematics and later focusing on programs for disadvantaged and minority groups.

Fullan delineates that government should and can push for accountability, should and can provide incentives, and should and can foster capacity building. He notes that if only the first two are addressed, any change in education will not last.[199] It appears that with the passage of No Child Left Behind in 2002, only the push for accountability was stressed. Perhaps the incentives push was there if we consider the threats made that if schools failed to get their students at 100 percent proficiency in two years' time, they would be classified for all to see as "in need of improvement." If the schools were still not attaining success after five years, they were cautioned they would be classified as in need of "restructuring," with the possibilities of being taken over by the state, turned over to private management, or redesigned as a charter school.[200] However, No Child Left Behind came with no money either for making educational changes or for capacity building and maintenance of the curricular innovation.

Presently, it seems that the federal government, in its passage of Race to the Top, included accountability, incentives, and capacity building in encouraging school districts to apply for federal dollars for educational innovations. Time will tell if schools can race to the top. Also at issue is that various schools and school districts have varying levels of personnel and resources to create educational proposals.

State Agencies

States have increased their role in educational policy making, to some extent at the expense of local school districts. Many state boards of education have made formal recommendations and issued guidelines regarding what the curriculum should contain and how it should be organized. Growing state involvement is partly based on the position that managing education is a state function, a position supported by the decrease in federal funding of education.[201]

States affect the curriculum in many ways. State legislatures frequently publish guidelines on what will be taught. They also mandate courses such as driver education and drug education.

Associations and other special-interest groups often lobby state legislatures to mandate that curricula include particular content or address the needs of particular students. Nationwide, state agencies have initiated minimum-competency and gate-keeping tests aimed at upgrading academic content and standards.

State boards of education continue to play roles in determining competency and certification requirements for teachers, supervisors, and administrators. In some states, people who wish to become supervisors or administrators must take specific courses on curriculum to obtain certification. State legislators' more active role in financing education indirectly affects both old and new programs. Finally, some governors have assumed the role of educational innovators within the context of the national reform movement in education.

Regional Organizations

Regional educational laboratories funded by the federal government influence school curricula by providing guidance in the production of educational materials and by furnishing consultants who serve on planning teams. Research and development (R&D) centers, both federally and privately funded, investigate curricular problems; the research results can be of value to curriculum planners. R&D centers also aid curriculum specialists by documenting the effectiveness of particular programs or approaches.

Intermediate school districts (also called *educational service districts* and *educational service agencies*) are offices or agencies that occupy a position between state departments of education and local school districts. About 40 states have some form of intermediate school district. The average intermediate district is made of 20 to 30 school districts within an area of about 50 square miles.[202]

In recent years, intermediate districts have provided school districts with resource personnel in such general areas of education as curriculum, instruction, and evaluation; in specialized areas, such as education of students who are disabled, gifted and talented, or bilingual; and in more specific areas, such as prekindergarten education, vocational education, data processing, and computer education.

Other Participants

For much of the 20th century, educational publishers gave the United States an unofficial national curriculum. For most of that century, the textbooks used largely determined the school curriculum. Students spent most of their classroom time, and nearly all of their homework time, engaged with instructional materials.

While we still have educational publishers, the textbook is in a state of transition. We do not believe it will disappear completely, but it will not be the primary source of the curriculum content. Already, the textbook, even this one, is being made available electronically, in e-book format. In this 21st century, students have access to vast amounts of information via the Internet. School systems can create their own online learning programs for use throughout the school system. Some school systems can even access online courses created in other school districts. Google and Wikipedia certainly can enrich curricular offerings.

Educational publishers are also involved in producing computer learning modules to enhance curricular offerings. It is not unthinkable that businesses such as Microsoft will expand its gaming activities to educational programs. No classroom in this century will have students unable to access electronically any and all recorded knowledge and information. And, as Brown and Berger assert, "Learning to make sense of online texts and resources is a critical skill for students' academic success as well as their ability to be literate citizens,"[203] global citizens in this dynamic and complex century.

Testing organizations, such as the Educational Testing Service and Psychological Corporation, have also contributed to a national curriculum. By standardizing the content tested, these organizations have affected what content the curriculum covers and how much emphasis is given to particular topics.

Many state departments of education have become involved in testing, thereby influencing the specifics of curricula and the time spent on the specifics. Washington State has created the Washington Assessment of Student Learning Test, which assesses reading and mathematics achievement in grades 3, 7, and 10. Since 2008, high school students in Washington State must pass language and mathematics exams in order to graduate. A comparable science-exam requirement was developed but not yet implemented as of 2015.

Professional organizations such as the ASCD, the National Council of Teachers of English, the National Council for the Social Studies, the National Association of Teachers of Mathematics, and the American Educational Research Association have directly and indirectly influenced the curriculum. Their members bring goals set forth at state and national conferences to their home school districts. Increasingly, such professional organizations are formalizing networks of schools (and school districts) to communicate curricular concerns, mount curriculum studies, and publish reports that set curricular guidelines and standards.

Although the previously mentioned professional organizations are large and well established, the American Association for Teaching and Curriculum (AATC) is small and rather recently organized. Its focus, as its name implies, centers on the areas of teaching and curriculum. As indicated before, the field of curriculum seems to be increasingly neglected, with areas of curriculum studies being eliminated in colleges of education. The AATC has as its primary goal to ensure that the field of curriculum studies as well as the field of instruction continue to be addressed by educational schools and practitioners.

Many other people and groups outside of the schools also influence the curriculum. Colleges and universities directly and indirectly influence curriculum development. Many educational consultants to the schools come from the colleges. Business and private industry are building closer connections to schools by providing special personnel, donating equipment and materials, and funding programs of special interest. Minority groups often organize to affect the curriculum. Individual educators and lay critics attempt, mostly through their writings, to give direction to curriculum development.

Various foundations also have influenced curriculum formulation, largely by supplying funds. The Ford, Rockefeller, Carnegie, Kettering, and Gates foundations have modified the curriculum through pilot and experimental programs. International in scope, the Gates Foundation is unique in the amount of money that it allocates to educational matters.

Conclusion

Prior to engaging in curriculum development, educators must determine whether they are responsible for educating students or schooling students. As mentioned at the beginning of this chapter, education and schooling have had a troubled relationship. Although the general public most often fails to distinguish between the two, educators must ascertain to what camp they have allegiance. Certainly, we can develop a curriculum for educating students, and we can create a curriculum for schooling students. Both postures result in programs that get results. Both even utilize the same or similar processes in generating curricula. We do not characterize one position as right and the other as wrong. Reflection is required just to determine for what purposes curricula are being developed.

Educators' choice of purpose is influenced by their philosophical orientation, their perceptions of the social and political forces impacting the school, their access to educational and technical support for the program being contemplated, and, certainly, their conception of the student as learner. Regardless of whether we are in the "educating students" or "schooling students" camp, it is useful to apprehend curriculum development as a variety of games with myriad rules. These games can be enacted within a technical-scientific or nontechnical-nonscientific arena. All game plans seek to develop educational content, experiences, and environments that meet the schools' objectives, goals, and aims. Today, much debate revolves around how standards relate to objectives, goals, and aims. Educators' responses are influenced by whether they view themselves as educating students or schooling them. Also, educators are affected by how the local, state, and national communities look at these two camps.

Discussion Questions

1. Which approach to curriculum development, modern or postmodern, do you consider as having the most promise for creating curricula appropriate for the 21st century? Explain your position drawing from your reading of this chapter and from other educational sources.
2. What do you consider the most challenging decisions that an educator must make in the process of curriculum development?
3. How would you argue the case for more involvement of teachers and students in curriculum development? Or how would you argue against such teacher and student involvement?
4. How would you do a self-critique of your reactions to the material on educational environments? Share your critique with fellow readers.

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