6 Curriculum Design

LEARNING OUTCOMES

After reading this chapter, you should be able to

1. Discuss the complexities behind curriculum design
2. Describe the components of curriculum design
3. Explain the curriculum design dimension considerations
4. Discuss various curriculum designs in both the modern and postmodern frameworks

Anyone charged with developing and delivering curriculum has a conception or conceptions of curriculum and its components. This statement of "fact" seems simple enough. But a person's conception(s) of curriculum and its/their components is/are not static constructs. As Wolff-Michael Roth asserts, life is dynamic, mobile. It is in constant motion; it is unfinalized. Therefore, our creations, our schema, our perceptions must be fluid. What we believe appropriate at a specific time period has to be reconsidered as we process new data and interpret new phenomena.[1] We cannot freeze a specific time interval. Intervals have flow, have duration.

COMPLEXITIES OF CURRICULUM DESIGN

Thinking of curriculum design is challenging, for we are attempting to select and organize curricular components in ways that will address the brain, the most mysterious organ of the human body, so that learning, however we define it, will occur. In curriculum design, we put ourselves under the illusion that we can stop time, stifle the interactions of humans to obtain learning outcomes, and delude ourselves into believing that specific results can be obtained and described with precision. Think of engaging in curriculum design as a drawing, a map, a blueprint, a draft. The complexity of the blueprint rests upon what one wishes to construct. For an architect, the task is rather easy, for the product that will result from humans following the blueprint will be something static: a building, a bridge, a house. But for the educator, the draft is a design that is a composition or "layout" that hopefully results in impacting the brain in ways that enable learning at multiple levels. Learning, and more importantly, understanding are never completely attained. Each day, we commence and enrich our educational journeys.

To be sure, there is much activity investigating this marvelous organ. Before this century is out, we may have uncovered the secrets of the brain. As Michio Kaku notes, brain research seems to reveal a biological structure that seems thrown together rather chaotically. Some brain researchers think that those who are trying to map the brain are engaging in foolishness.[2]

It is not surprising that there is a variety of opinions regarding how to design curriculum. Likewise, there is a plethora of viewpoints as to the educational purposes of various curricular schemes. The challenge of the curriculum designer and developer is to deal with what we know, and what we think we know. We have to be creative in our behaviors to address partial truths, and various myths that people believe about education and educators and the general public's embrace of curriculum's proper aims.[3] David Orr's four myths are still relevant.

The first myth is that education—the right curriculum and curriculum design—can eliminate ignorance. The second myth is that education and well-designed curricula can supply all the knowledge needed to manage society and the earth. The third myth is that educational curricula are increasing human goodness: well-designed curricula instill wisdom. The fourth myth is that education's primary purpose is to enable students to be upwardly mobile and economically successful.[4] This myth is evident in much discussion about standards.

In response to Orr's discussion of myths, some people might argue that education can *reduce* ignorance, *help* people manage society and the earth, *increase* wisdom, and *foster* upward mobility. Implicit in these myths is a key question: What is education for? Can we actually agree upon its purpose? You would think that after all the discussion on reforming education, creating curricula to make us competitive in the world, solving our and the world's social, economic, and health problems, we would be close to an answer.

In 2002, Ron Ritchhart informed us that we educate, create, and teach curricula to create intelligence.[5] But does intelligence guarantee eliminating ignorance? Does it foster human goodness? Is teaching for intelligence making students smarter? And what does *smart* mean? Ritchhart noted, and these authors concur, that schools, even with all the discussions about reforms and revised curricula, still teach to fill students with knowledge and skills rather than making them competent thinkers. One reason is that it is easier to measure attainment of knowledge and skills and much more challenging to assess heightened intelligence.[6]

Eric Schwarz laments that what schools were teaching in 2014 did not address what today's students need to be taught: scientific thinking and creativity. He argues that we in the 21st century need to shift from a nation of consumers to a nation of makers.[7] While we would not dispute that we need to stress scientific thinking and creativity, we would disagree that the prime reason for such emphasis is to make students more employable. Those who design curricula are educators, not trainers. Also, with the fast pace of change in this century, many of the occupations for students will have not yet been created.

Kieran Egan asks, why are educational considerations so challenging and contentious?[8] Can we make them less so? Egan notes that the difficulty lies in the fact that "our minds are both a part of the world while also being our means of viewing the world." Ideas and concepts focus what we see and do not see. We assume the validity of these "idea-lenses" and accept that we "observe reality directly."[9] Egan postulates that most individuals think about education and its purposes drawing upon three main ideas, consciously considered or not. One reason for people, and educators in particular, to reflect on curriculum design in general and on selecting or employing a curriculum design is to become cognizant of the base ideas of socialization, Plato's academic idea, and Rousseau's developmental idea. These three ideas orchestrate "all players" in selecting curricular design and bringing it into reality through curriculum development. Attending to these three ideas makes a case for knowing something about curriculum foundations in the philosophical, historical, social, and psychological realms.

These three big ideas do not work in synergistic fashion. Rather, they tend to interact at cross-purposes, seeming to create different "educational realities."[10] Most accept that education serves to socialize students to be functioning members of society, or good citizens. However, to *socialize* means to foster conformity. Socialization stressed too much leads to indoctrination. To

varying degrees, we all educate/indoctrinate our students so they have allegiance to complex sets of beliefs and particular patterns of behavior, the validity of which will never be challenged.[11]

When thinking of socialization, are we too tied to a current static situation or to an anticipated and future created social situation? Do we create or select a design that addresses current needs and behaviors, or design templates that allow for imagined possible and quickly forming futures?

The second big idea, Plato's academic idea, centrally deals with what knowledge is of most worth. The curriculum design we select influences how we select and organize knowledge and content in curriculum development. The major challenge is this: Out of all "collected" and stored knowledge, what should be selected to foster students becoming literate and thinking individuals? Some suggest a banquet of knowledge so that all stakeholders are pleased and represented.

Egan notes that there is no knowledge stored in literacy in libraries and computer databases. What is stored are symbols that trigger awareness of knowledge. Therefore, in contemplating curriculum design, we need careful reflection of how our selected design and related educational materials facilitate symbol processes in knowledge developed. Currently, some schools are "playing" with the symbols they are putting in schools via textbooks. Mastering codes is not synonymous with knowledge.[12]

The third base idea, Rousseau's development idea, brings into consideration the basic maturing of the individual, specifically the growth of mind. Egan notes that Plato correctly asserted that academic knowledge was important to education, but to complete a total read on knowledge, Plato needed to recognize the various stages at which individuals—young, mature, and senior—are at optimal stages for learning or experiencing diverse realms of knowledge. Also central to consideration is the variety of ways in which individuals process knowledge to gain literacy.[13] Thus it is essential, when considering curriculum design, to include learner development in the curriculum algorithm.

These three base ideas have been woven into our educational fabric and have influenced our perceptions as to the nature and purpose of education. They certainly have shaped the basic curriculum designs to be discussed later. These three base ideas all have contributions to give, and all have significant flaws that must be recognized. However, the strengths of each idea can offset the flaws of each idea. Thus, we can aim for socialization, but we must avoid stressing indoctrination. We also undercut indoctrination by emphasizing the uniqueness of each individual and his or her right to unique knowledge. And while we incorporate the base idea of academics, we put in place stops to intellectual elitism by celebrating the innate equality of all individuals. We accentuate "being your own person, developing your individuality," while also emphasizing the need to participate in a society of equals.[14]

Connecting Conceptions

The previous discussion reveals that how we contemplate education, curriculum, and curriculum design is influenced by myriad realms of knowing and feeling. Individuals draw from their experiences, their lived histories, their values, their belief systems, their social interactions, and their imaginations. How do we choose from among diverse views? How do we process the three base questions? How do we deal with the central question of what is the purpose of education, and thus the curriculum? There is no simple answer. Educational thinkers of all stripes and educational doers must ponder multiplicity.[15]

Wolff-Michael Roth critiques many modern and postmodern curriculum theorists and practitioners who are pondering multiplicity as failing to grasp what a "curriculum that is living" really contains. He notes that curricularists who define themselves as constructivists tend to contemplate a curriculum, especially a living curriculum, employing inert categories. The objectives, the contents, the instruction, and the evaluation of the curriculum are perceived as static. The curricular components can be considered, recorded, arranged, taught, and evaluated

as if written on tablets. The curriculum is a play already written. It only needs to be either read or acted, nothing more. But, in Roth's thinking, the play is not to be just read or viewed; it must be "participatively experienced and lived through."[16]

Roth's perspective is postconstructivist. It adds to the complex multiplicity of the realms and "postures" that need to be considered in curriculum design.

COMPONENTS OF DESIGN

To design a curriculum, we must consider how its parts interrelate. Thinking about a curriculum plan's "shape," or "gestalt," and the arrangement of its parts addresses the essence of curriculum design. A curriculum's parts should promote the whole.

In designing a curriculum, we should consider philosophical and learning theories to determine if our design decisions are in consonance with our basic beliefs concerning people, what and how they should learn, and how they should use their acquired knowledge. In designing curriculum, we should give serious attention to the three base ideas discussed by Egan.[17]

In addition to Egan's three base ideas, curriculum design consideration also must be guided by essential questions that are political, economic, social, and cultural. Some educators might also recommend posing questions addressing the spiritual realm. Answers, however partial, to these questions will actually influence the various steps and actions taken in curriculum design. Rick Ayers and William Ayers list some essential questions that both teachers and students need to revisit in designing and implementing curricula: "Who are you in the world?" "How did you (and I) get here?" "What can we know?" "What do we have the right to imagine and expect?" "Where are we going?" "Who makes the decisions?" "Who's left out?" "Who decides?" "Who benefits?" "Who suffers?" "What are the alternatives?"[18]

While curriculum design is concerned with the nature and arrangement of four basic parts (objectives, content, learning experiences, and evaluation), the combination of these parts is never neutral. Whoever the players are, they are influenced by their dispositions, their philosophies, their political orientations, even their cultures and class. We educators, as all other human beings, are multifaceted individuals. And as Ayers and Ayers posit, in our "dynamic, propulsive, forward-changing, expanding, and perspectival world, neutrality and objectivity are always up for grabs."[19] Education exists within this chaos. Curriculum design is enacted within this tumult.

Despite the complexities of this new century, we educators are all charged with making curricular decisions starting with curriculum design. Teachers in the classroom engage in curriculum design and implementation when making lesson plans and instructional units. And all need to address the following questions: What should be done? What subject matter should be included? What instructional strategies, resources, and activities should be employed? What methods and instruments should be used to appraise the results of curriculum? These basic questions need to be raised within the universe of the other questions mentioned above, which is no simple task.

Some people argue that objectives suggest an undesirable willingness to control individuals and unwarranted certainty regarding outcomes. However, all curriculum makers must reflect on the curriculum's content.

Much current talk centers on engaging students in the construction, deconstruction, and reconstruction of knowledge. This refers to the components of method and organization. The component of evaluation also is widely discussed. Even if we argue that final measurement is impossible, we engage in some sort of assessment.[20]

Sources of Curriculum Design

Curriculum designers must clarify their philosophical, social, and political views of society and the individual learner—views commonly called *curriculum's sources*. Educational action (in this case, curricular design) begins with recognizing one's beliefs and values, which influence

what one considers worth knowing and teaching. If we neglect philosophical, social, and political questions, we design curriculum with limited or confused rationales.

Ronald Doll describes four foundations of curriculum design: science, society, eternal truths, and divine will.[21] These sources partially overlap with curriculum sources identified by Dewey and Bode and popularized by Tyler: knowledge, society, and the learner.[22]

SCIENCE AS A SOURCE. Some curriculum workers rely on the scientific method when designing curriculum. Their design contains only observable and quantifiable elements. Problem solving is prioritized. The design emphasizes learning how to learn.

Much discussion of thinking processes is based on cognitive psychology. Advocated problem-solving procedures reflect our understanding of science and organization of knowledge. Some educators think the curriculum should prioritize the teaching of thinking strategies. With knowledge increasing so rapidly, the only constant seems to be the procedures by which we process knowledge.

SOCIETY AS A SOURCE. Curriculum designers who stress society as a curriculum source believe that school is an agent of society and should draw its curriculum ideas from analysis of the social situation. Individuals with this orientation believe heavily in the socialization function of schooling.

Schools must realize that they are part of and are designed to serve to some extent the interests of their local communities and larger society. But, as indicated earlier, school members must be mindful of the other two base ideas: academics and development. Further, curriculum designers must consider current and future society at the local, national, and global levels.

In considering society as a source, educators must realize that schools function not only with social communities, but with political ones as well. Political pressure on schools continues at the local, state, and national levels. No Child Left Behind is still on the books and is being revised. Race to the Top, offering federal incentive money, aims at stimulating innovative programs in local schools. These federal governmental programs aim at all three ideas identified by Egan.[23]

But the political realm of society is contentious. We have political drama with conservative, liberal, and radical players.[24] And no one considers that schools and their curricula are measuring up; students, so it appears and assessments seem to confirm, are not succeeding in their learning. In general, conservatives believe that the basics are being ignored and that schools are failing to instill traditional U.S. virtues and values. Here we see demands that schools socialize in particular ways that could touch on indoctrination. We also see the academic big idea being narrowly interpreted: a curriculum focusing on significant Western and American history, basic mathematics, specific Americans who have contributed to the United States, and basic language skills. In May 2010, the Texas State Board of Education voted to have a revised K–12 social studies curriculum that would contribute to the education of Texas students for a 10-year period. Those in favor of this decision believed that the revised social studies curriculum would put balance back in that curriculum. Opponents feared that the decision would result in social studies content losing its validity and actually leading to indoctrination.[25] In 2014, a school board in Colorado passed a motion favoring a textbook and curricula in high school American history that would celebrate the accomplishments of Americans, praise the United States' glorious past, and discourage criticism of American actions and policies. The high school students revolted, striking to protest the decision. Their actions made national news. The school board reversed its decision.

Adding to the political drama are critiques of schools and their curricula voiced by liberal and radical players. Liberals have criticized schools for failing to make students effective professionals or workers. Students in the United States must be more competitive in the world. Education should give students the means for upward mobility and success.[26] Here we see a reference to the fourth myth of education offered by Orr.[27]

Radical education players are dissatisfied with schools and school curricula because they center on the privileged members of our population and dismiss or deny the interests and cultural knowledge of underrepresented groups, such as indigenous people, people of color, women, and homosexuals. They often critique the curriculum from a Marxist or feminist perspective. They tend to think in terms of oppressors and oppressed, empowered and victimized, privileged and disadvantaged. Radical educators want U.S. schools to provide the educational and social opportunities necessary for all students to succeed.

It does seem that all three groups—conservative, liberal, and radical—value the individual. They call for balancing our uniqueness as individuals with our responsibilities as community members. Here we see the big idea of socialization attempting to avoid the danger of indoctrination.

Effective curriculum designers realize the need for collaboration among diverse individuals and groups. People from disparate backgrounds and cultures are demanding a voice regarding how education is organized and experienced. Society currently is a powerful influence on curriculum design. As Arthur Ellis notes, no curriculum or curriculum design can be considered or created apart from the people who make up our evolving society.[28]

MORAL DOCTRINE AS A SOURCE. Some curriculum designers look to the past for guidance regarding appropriate content. These persons emphasize what they view as lasting truths advanced by the great thinkers of the past. Their designs stress content and rank some subjects as more important than others.

Some people believe that curriculum design should be guided by the Bible or other religious texts. Although this view was common in the schools of colonial America, it has had little influence in public schools for more than a century, primarily because of the mandated separation of church and state. However, many private and parochial schools still subscribe to this now, including a growing number of Islamic schools. In this century, public schools are increasingly considering the relationship between knowledge and people's spirituality. Many people are criticizing Western society's emphases on science, rationality, and material wealth.

Dwayne Huebner argued that education can address spirituality without bringing in religion. For him, to have spirit is to be in touch with life's forces, or energies.[29] Being in touch with spirit allows us to see the essences of reality and to generate new ways of viewing knowledge, new relationships among people, and new ways of perceiving our existence. According to James Moffett, spirituality fosters mindfulness, attentiveness, awareness of the outside world, and self-awareness.[30] Spiritual individuals develop empathy and insight. Curriculum designers who draw on spirituality reach a fuller understanding than those who rely only on science. Spiritual individuals develop empathy and compassion. They consider and promote the welfare of others. They welcome differing viewpoints.[31] Spiritual curriculum designers ask questions about the nature of the world, the purpose of life, and what it means to be human and knowledgeable.

We would argue that even if we eschew the moral or spiritual as a source of curriculum, we essentially cannot avoid some influence of this source. Indeed, if we strive to educate and encourage the emergence of a fully autonomous individual who can connect with fellow humans in the world community, we must create educational experiences that foster not just the intellectual and emotional selves, but also the spiritual and empathic selves. This is not having religion as a source, as Heuber notes. In 2014, persons working with Doctors Without Borders who volunteered to fight the Ebola outbreak certainly have mastered intellectual realms, but more importantly, the spirit of humanity in action. They exhibited a moral responsibility to help their fellow humans. Some might state these individuals were living the humanistic ideal.[32]

KNOWLEDGE AS A SOURCE. Knowledge, according to some, is the primary source of curriculum. This view dates back to Plato, who communicated that when the most prized and useful knowledge is coded in writing, it can then be taught to students. Teaching such valued knowledge stimulates and develops the minds of learners. The result of such learning enables students

to apprehend the world closer to the real reality.[33] This view celebrates Plato's academic idea. Herbert Spencer placed knowledge within the framework of curriculum when he asked, "What knowledge is of most worth?"

Those who place knowledge at the center of curriculum design realize that knowledge may be a discipline, having a particular structure and a particular method or methods by which scholars extend its boundaries. Undisciplined knowledge does not have unique content; instead, its content is shaped according to an investigation's focus. For example, physics as a discipline has a unique conceptual structure and entails a unique process. In contrast, environmental education is undisciplined in that its content is drawn from various disciplines and adapted to a special focus.

Nel Noddings indicates that the majority of school curricula worldwide draw from knowledge organized as traditional disciplines.[34] We would suggest that many of the new curricula such as computer science and engineering are undisciplined knowledge. Their content certainly is drawn from disciplined knowledge such as physics and mathematics, but these curricular organizations, as previously noted, are not unique. As Noddings asserts, these sources of the curricular and organizations are not likely to change greatly. Universities are established upon a discipline foundation. She notes that even if elementary and secondary schools attempted to be too innovative in organizing curricular contents, the universities and colleges would scuttle the efforts.[35] But secondary schools and the public do not seem too willing to seek a totally new source for designing curricula. Schools with Advanced Placement and the International Baccalaureate programs reinforce the allegiance of knowledge as a source.[36] But, it does seem likely in this new century that we will see new and novel melds of knowledge structures. It does appear that the best chances for other sources of curricular design to gain significance will be in increased formalized prekindergarten, kindergarten, and elementary schools. Waldorf schools have curricula designed with the learner and society as sources.

The challenge to those who accept knowledge as the primary source of curricular design is that knowledge is exploding exponentially. But the time for engaging students with curriculum is not increasing. Most schools still require 180-school-day sessions. Spencer's question is now even more daunting. Not only must we rethink "What knowledge is of most worth?" but we must also posit the following inquiries: For whom is this knowledge of value? Is there any knowledge that must be possessed by the majority? What intellectual skills must be taught to enable common and uncommon knowledge to be utilized for individual and social good?

THE LEARNER AS A SOURCE. Some believe that the curriculum should derive from our knowledge of students: how they learn, form attitudes, generate interests, and develop values. For progressive curricularists, humanistic educators, and many curricularists engaged in postmodern dialogue, the learner should be the primary source of curriculum design. Here we have the third big idea: Rousseau's theory of development.

Such curricularists tend to draw heavily on psychological foundations, especially how minds create meaning. Much cognitive research has provided curriculum designers with ways to develop educational activities that facilitate perceiving, thinking, and learning. Since the final years of the 20th century, microbiological research on the brain has had much significance for educators. We are learning that the educational environment can influence the anatomy of a child's brain. Quantity and quality of experiences physically affect brain development.[37] Much of this new knowledge about the brain has resulted from neuroimaging technologies that have been perfected since the early 1980s. It is now possible to map areas where the brain is active during various cognitive functions by measuring specific changes in cerebral blood supply.[38]

Instead of surmising what a person's brain is doing when he or she is engaged in specific types of thinking, as was done in most—if not all—cognitive research for the first seven decades of the last century, we now can view the human brain when it thinks.[39] We can photograph such brain activity; we can observe brain networks changing before our eyes and observe brain networks altering themselves to learning information and skills. In essence, we are gaining the ability to map more precisely the parts of the human brain involved in learning language, developing

perceptions, and even reading and learning arithmetic.[40] As Michael Posner and Mary Rothbart note, new brain research findings will allow the general public and educators unparalleled access to new levels of understanding human brain development. This design source has the greatest possibility of being the most powerful new fount of data for reconceptualizing curriculum design.[41]

We are actually "seeing" individuals construct and change brain neural pathways rather than simply acquiring knowledge, and they do so in unique ways with specific conclusions. They may use the same words to answer a question, but research indicates that their deep comprehension of the material is quite distinct.[42] Although technology is giving us a clearer vision of what is occurring in the anatomy of particular sections of the brain, we still have questions to answer and new avenues of inquiry to pursue. Indeed, neuroimaging of the brain still has not settled questions regarding whether the brain comes to school already preprogrammed (selectionism), or whether the brain attends school in a most malleable state ready to develop new skills and learnings (constructivism).[43]

Since 2005, new "science-fiction" devices have been invented to further explore the brain. The aim is to enable neuroscientists to unlock the mind. One such machine is the transcranial electromagnetic scanner (TES), another is the near-infrared spectroscopy (NIRS), and a third is the magnetoencephalography (MEG).[44] The TES employs a large electrical pulse that causes a surge of magnetic energy. The scanner is positioned next to the brain, causing the magnetic surge to penetrate the skull, thus generating an electrical pulse within the brain. This action results in lessening an activity of selected areas in the brain.[45] The MEGs are employed to record the magnetic fields produced by the altering electric fields in the brain.[46] While these devices are primarily used in the health sciences, educators may eventually map the brain and unlock its mysteries so as to create curricula that actually meld with the brain's natural physics.

Even with all the new advances in brain research, educators must realize that this source of curriculum design overlaps with approaches that focus on knowledge or science in that the science-based approach emphasizes strategies for processing knowledge, and the knowledge-based approach emphasizes how individuals process information. We counsel readers to realize the value of melding these primary sources of curriculum design.

Conceptual Framework: Horizontal and Vertical Organization

Curriculum design, the organization of curriculum's components, exists along two basic organizational dimensions: horizontal and vertical.

Horizontal organization blends curriculum elements—for example, by combining history, anthropology, and sociology content to create a contemporary studies course or by combining math and science content. *Vertical* organization refers to the sequencing of curriculum elements. Placing "the family" in first-grade social studies and "the community" in second-grade social studies is an example of vertical organization. Frequently, curricula are organized so that the same topics are addressed in different grades, but in increasing detail and at increasingly higher levels of difficulty. For instance, the mathematical concept of *set* is introduced in first grade and revisited each succeeding year in the elementary curriculum. (See Curriculum Tips 6.1 for ways to create a broad curriculum design.)

Although design decisions are essential, in most school districts overall, curricular designs receive little attention. The primary reason for this is that in most schools the district curriculum or textbook committee selects "the curriculum." In Texas, the State Board of Education determines the textbook or textbook series that may be considered for school district adoption. Even district curriculum/textbook committees do not give in-depth consideration to curriculum design. Most attention at district or state levels seems to go to design dimensions of scope, sequence, continuity, integration, articulation, and balance, which are discussed in the next section.

However, curricularists at the state and district levels and teachers at the classroom level should do more than just recommend content that reflects their philosophical and political views, which are frequently not carefully formulated. When considering how to design a curriculum beyond that suggested by the sequence of textbook chapters, we must contemplate carefully the

CURRICULUM TIPS 6.1 Points to Consider When Contemplating Curriculum Design

Curriculum design reflects the curriculum's architecture. Here are some useful points to consider in building an effective curriculum design:

1. Reflect on your philosophical, educational, and curriculum assumptions with regard to the goals of the school (or school district).
2. Consider your students' needs and aspirations.
3. Consider the various design components and their organization.
4. Sketch out the various design components to be implemented.
5. Cross-check your selected design components (objectives, content, learning experiences, and evaluation approaches) against the school's mission.
6. Share your curriculum design with a colleague.

socioeconomic, political, and cultural factors that influence our choices about horizontal and vertical organization.[47] Curricular designs should reflect diverse voices, meanings, and points of view.[48]

DESIGN DIMENSION CONSIDERATIONS

Curriculum design addresses relationships among curriculum's components. It should achieve scope, sequence, continuity, integration, articulation, and balance.

Scope

Curriculum designers must consider a curriculum's breadth and depth of content—that is, its *scope*. In *Basic Principles of Curriculum Instruction*, Ralph Tyler referred to scope as consisting of all the content, topics, learning experiences, and organizing threads comprising the educational plan.[49] John Goodlad and Zhixin Su reiterated this definition, pointing out that it refers to the curriculum's horizontal organization.[50] Scope includes all the types of educational experiences created to engage students in learning. It includes both cognitive and affective learning (and, some might add, spiritual learning).[51] Sometimes a curriculum's scope is limited to a simple listing of key topics and activities.

A curriculum's full scope can extend over a year or more. A curriculum whose scope covers only months or weeks is usually organized in units. Units are divided into lesson plans, which usually organize the information and activities into periods of hours or minutes.[52]

When teachers and other educators are deciding on curriculum content and its degree of detail, they are considering the curriculum's scope. In many ways, the current knowledge explosion has made dealing with scope almost overwhelming. Also, student diversity places increasing demands on teachers regarding which content and activities to include. Some teachers respond to content overload by ignoring certain content areas or excluding new content topics. Others attempt to interrelate certain topics to create curriculum themes.

When considering scope, we must consider learning's cognitive, affective, and psychomotor domains. (We might add the moral or spiritual domain.) We must determine what will be covered and in what detail within each domain. We must decide also which domain should be the most emphasized. Traditionally, the cognitive domain, drawing on the realm of knowledge, has been most emphasized. At the secondary level of schooling, we frequently draw on disciplines of knowledge and their main concepts to determine the curriculum's scope. However, the affective domain (dealing with values and attitudes) and the psychomotor domain (dealing with motor skills and coordination) are receiving growing attention.

Sequence

When considering sequence, curricularists seek a curriculum that fosters cumulative and continuous learning. Specifically, curricularists must decide how content and experiences can build on what came before.[53]

There is a long-standing controversy over whether the sequence of content and experiences should be based on the logic of the subject matter or the way individuals process knowledge. Those arguing for sequence based on psychological principles draw on research on human growth, development, and learning—essentially the third big idea: Rousseau's developmental theory. Piaget's research provided a framework for sequencing content and experiences (or activities) and for relating expectations to students' cognitive levels.[54] Most school districts consider students' stages of thinking in formulating curriculum objectives, content, and experiences by grade levels. The curriculum is thus sequenced according to Piaget's theory of cognitive development.

Curriculum designers are also influenced by current research on brain development. With increasing work in neuroscience, specifically developmental neurobiology, scientists are gaining understanding leading to ways to create educational agendas to enable educators to create educational environments that contain experiences that will greatly affect the individual's brain. Ideally, curricular experiences should maximize brain development.[55]

Neuroscientists know that in the first year of life, cells that have only sparsely populated the upper layers of the cortex migrate to these layers. This migration allows for increased mental activity. An infant's brain has more synaptic connections, or links between neurons, than an adult's brain. From ages 2 to 12, these connections strengthen. They were thought to decrease in number at puberty, but recent research seems to indicate that the opportunity for creating new brain circuits continues into adulthood. During this period, the brain appears to be creating and maintaining only the hardiest dendrites (the parts of the nerve cell that accept messages) to be incorporated into the adult brain.[56] With current brain research, educators must give careful thought to the contents and experiences sequenced in the educational program.

Curricularists faced with sequencing content have drawn on some fairly well-accepted learning principles. In 1957, B. Othanel Smith, William Stanley, and Harlan Shores introduced four such principles: simple-to-complex learning, prerequisite learning, whole-to-part learning, and chronological learning. These principles still have worth.

1. *Simple-to-complex learning* indicates that content is optimally organized in a sequence proceeding from simple subordinate components to complex components, highlighting interrelationships among components. Optimal learning results when individuals are presented with easy (often concrete) content and then with more difficult (often abstract) content.
2. *Prerequisite learning* is similar to part-to-whole learning. It works on the assumption that bits of information must be grasped before other bits can be comprehended.
3. *Whole-to-part learning* receives support from cognitive psychologists. They have urged that the curriculum be arranged so that the content or experience is first presented in an overview that provides students with a general idea of the information or situation.
4. *Chronological learning* refers to content whose sequence reflects the times of real-world occurrences.[57] History, political science, and world events frequently are organized chronologically.

In 1976, Gerald Posner and Kenneth Strike furnished the field of curriculum with four other types of sequencing: concept related, inquiry related, learning related, and utilization related.[58] The *concept-related* method draws heavily on the structure of knowledge. It focuses on concepts' interrelationships rather than on knowledge of the concrete. In the *inquiry-related* sequence, topics are sequenced to reflect the steps of scholarly investigation.

Instructional designers have incorporated the inquiry-related sequence into what they call *case-based reasoning,* which was developed to maximize computers' capabilities. The computer

6.1 Brain Development of Young Children
According to this video on the neuroscience of brain development, young children are not merely sponges when it comes to learning; they are active learners. What kind of environment, experiences, or curriculum do you think educators should create to maximize children's cognitive development?

https://www.youtube.com/watch?v=EFbnU_09ZEM

applies previous learning to new situations. Similarly, people advance their knowledge by processing and organizing new experiences for later use. According to the inquiry-related model, if people fail to use acquired information, they must recognize a failure in reasoning or a deficiency in knowledge. In essence, this is how scholars advance inquiries. In the *learner-related* sequence, individuals learn through experiencing content and activities. *Utilization-related* learning focuses on how people who use knowledge or engage in a particular activity in the world actually proceed through the activity.

Continuity

Continuity is vertical repetition of curriculum components. For example, if reading skills are an important objective, then, in Tyler's words, "it is necessary to see that there is recurring and continuing opportunity for these skills to be practiced and developed. This means that over time the same kinds of skills will be brought into continuing operation."[59]

Ideas and skills that educators believe students should develop over time reappear over the length of the curriculum. This continuity ensures that students revisit crucial concepts and skills. For instance, becoming a skilled reader requires numerous encounters over time with various types of reading materials. Similarly, we do not learn how to conduct experiments unless we engage in such activities at various points in the curriculum; each subsequent experiment provides the opportunity to become more sophisticated in the processes. We learn to think deeply by having myriad experiences in which thinking and questioning are enriched.

It appears that the design dimension of continuity is being supported by recent brain research to supplement research in cognitive psychology. Brain research suggests that the amount of brain employed in performing a process may explain somewhat how well an individual performs particular tasks. The research has been done with both animals and humans.[60] Tyler, as pointed out earlier, stated that if reading skills are important, then they must be experienced repeatedly to be further developed. Studies by Elbert et al., as reported in Posner and Rothbart, of long practice playing the violin seem to nurture an increase in brain tissue related to such playing.[61] This research appears to support Herbert Simon's argument that we all can become masters of something if we devote sufficient time and effort, an example of a constructivist approach to learning.

Continuity is most evident in Jerome Bruner's notion of the *spiral curriculum*. Bruner noted that the curriculum should be organized according to the interrelationships among the basic ideas and structures of each major discipline. For students to grasp these ideas and structures, "they should be developed and redeveloped in a spiral fashion," in increasing depth and breadth as pupils advance through the school program.[62]

Integration

Integration refers to linking all types of knowledge and experiences contained within the curriculum plan. Essentially, it links all the curriculum's pieces so that students comprehend knowledge as unified rather than atomized.[63] Integration emphasizes horizontal relationships among topics and themes from all knowledge domains.

Curriculum theorists and practitioners tend to disproportionately emphasize integration, advocating an interdisciplinary curriculum, which is essentially a curriculum that would not be characterized as standard curriculum content. In some ways, curriculum integration is not simply a design dimension, but also a way of thinking about schools' purposes, curriculum's sources, and the nature and uses of knowledge.[64]

Advocates of curriculum integration do not advocate a multidisciplinary curriculum. In their view, such a curriculum still artificially compartmentalizes knowledge.[65] These advocates argue for organizing the curriculum around world themes derived from real-life concerns; lines between the subject content of different disciplines should be erased. Noddings submits that a

possible integration would involve great social problems. A new integration organizer, some argue, would stress attitudes, values, and social skills.[66]

Postmodernism, constructionism, and poststructuralism nurture continued discussion of curriculum integration, as does continued brain research. These movements advance the idea that knowledge cannot be separated from its reality, people cannot disconnect themselves from their inquiries, and the curriculum cannot exist as separate bits.

Articulation

Articulation refers to the vertical and horizontal interrelatedness of various aspects of the curriculum, that is, to the ways in which curriculum components occurring later in a program's sequence relate to those occurring earlier. For instance, a teacher might design an algebra course so that it relates algebra concepts to key concepts presented in a geometry course. *Vertical articulation* usually refers to the sequencing of content from one grade level to another. Such articulation ensures that students receive necessary preparation for coursework. *Horizontal articulation* (sometimes called *correlation*) refers to the association among simultaneous elements, as when curriculum designers develop relationships between eighth-grade social studies and eighth-grade English.

When they engage in horizontal articulation, curriculum makers seek to blend contents in one part of the educational program with contents similar in logic or subject matter. For example, curricularists might link mathematical and scientific thinking. Much of the current emphasis on integrating the curriculum is an effort at horizontal articulation.

Articulation is difficult to achieve, and few school districts have developed procedures by which the interrelationships among subjects are clearly defined. Also, within school districts, it is sometimes difficult to achieve articulation from one school to another. Similarly, there is a need for greater articulation among school districts. Often, students new to a school district are retaught material they learned in their former school at a lower grade level, or they miss a particular concept or topic because it was addressed in a lower grade at their new school.

Balance

When designing a curriculum, educators strive to give appropriate weight to each aspect of the design. In a balanced curriculum, students can acquire and use knowledge in ways that advance their personal, social, and intellectual goals. Keeping the curriculum balanced requires continuous fine-tuning as well as balance in our philosophy and psychology of learning (see Curriculum Tips 6.2).

CURRICULUM TIPS 6.2 Guidelines for Curriculum Design

The following statements identify some steps one can take in designing a curriculum. These statements, drawn from observations of school practice, are applicable to whatever design is selected.

1. Create a curriculum design committee composed of teachers, parents, community members, administrators, and if appropriate, students.
2. Create a schedule for meetings to make curriculum-design decisions.
3. Gather data about educational issues and suggested solutions.
4. Process data on available curriculum designs, and compare designs with regard to advantages and disadvantages such as cost, scheduling, class size, student population characteristics, students' academic strengths, adequacy of learning environments, and match with existing curricula. Also, assess whether the community is likely to accept the design.
5. Schedule time for reflection on the design.
6. Schedule time for revision of the design.
7. Explain the design to educational colleagues, community members, and if appropriate, students.

REPRESENTATIVE CURRICULUM DESIGNS

Curriculum components can be organized in numerous ways. However, despite all the discussion about postmodern views of knowledge and creating curricula for social awareness and emancipation, most curriculum designs are modifications or interpretations of three basic designs: (1) subject-centered designs, (2) learner-centered designs, and (3) problem-centered designs. Each of these designs attend in different degrees of emphasis to the three central ideas noted by Egan: "socialization, Plato's academic idea, and Rousseau's developmental idea."[67] Each category is composed of several examples. Subject-centered designs include subject designs, discipline designs, broad field designs, correlation designs, and process designs. Learner-centered designs are those identified as child-centered designs, experience-centered designs, romantic/radical designs, and humanistic designs. Problem-centered designs consider life situations, core designs, or social problem/reconstructionist designs.

Subject-Centered Designs

Subject-centered designs are by far the most popular and widely used. Knowledge and content are well accepted as integral parts of the curriculum. This design draws heavily on Plato's academic idea. Schools have a strong history of academic rationalism; also, the materials available for school use reflect content organization.

Among designs, subject-centered designs have the most classifications. Concepts central to a culture are more highly elaborated than peripheral ones. In our culture, content is central to schooling; therefore, we have many concepts to interpret our diverse organizations.

SUBJECT DESIGN. The subject design is both the oldest and the best-known school design to both teachers and laypeople. Teachers and laypersons usually are educated or trained in schools employing it. The subject design corresponds to textbook treatment and teachers' training as subject specialists. It is also emphasized because of the continued stress on school standards and accountability.

An early spokesperson for the subject curriculum was Henry Morrison, who was New Hampshire's superintendent of public instruction before he joined the University of Chicago. Morrison argued that the subject matter curriculum contributed most to literacy, which should be the focus of the elementary curriculum. He also believed that such a design allowed secondary students to develop interests and competencies in particular subject areas. However, he believed that a variety of courses should be offered to meet students' diverse needs.[68]

William Harris, superintendent of the St. Louis schools in the 1870s, also fostered subject-based curriculum design. Under his guidance, St. Louis schools established a subject-oriented curriculum. One educator notes that most Americans would recognize this curriculum design (which he classifies as the conservative liberal arts design) as the type they experienced in school. In the mid-1930s, Robert Hutchins indicated which subjects made up a curriculum design: (1) language and its uses (reading, writing, grammar, literature), (2) mathematics, (3) sciences, (4) history, and (5) foreign languages.[69]

In subject-matter design, the curriculum is organized according to how essential knowledge has developed in various subject areas. With the explosion of knowledge and the resulting specializations in various knowledge fields, subject divisions have increased in number and sophistication. For instance, history is now divided into cultural, economic, and geographic history. English can be divided into literature, writing, speech, reading, linguistics, and grammar.

Such subject design rests on the assumption that subjects are best outlined in textbooks and e-books, and even in developed computer information programs. In most schools, the curriculum selected is in reality a textbook or e-book series. However, packaged computer curriculum programs are making inroads. You may be employing an e-book version of this curriculum textbook.

For these reasons, some educators say that teachers do not need to know much about curriculum design or curriculum development. However, we would counter that just because many

"curricula" selected in schools are primarily influenced by textbooks, e-books, and computer programs, educators at all levels must know about curriculum design in order to make informed selections regarding organizing content, no matter how packaged. Teachers still have to assume an active role in direct instruction, recitation, and large-group discussion. Teachers have to determine avenues by which discussion proceeds from simple to complex ideas. In-depth knowledge of curriculum design and curriculum is required if teachers are to encourage and guide students in intellectual exploration.[70]

Advocates of this design defend the emphasis on verbal activities, arguing that knowledge and ideas are best communicated and stored in verbal form. They also note that the subject design introduces students to essential knowledge of society. This essential knowledge of society addresses the big idea of socialization. Also, this design is easy to deliver because complementary textbooks and support materials are commercially available.

Critics, however, contend that the subject design prevents program individualization and deemphasizes the learner. Some argue that this design disempowers students by not allowing them to choose the content most meaningful to them.[71] Curricular content is presented without consideration of context. Other critics contend that stressing subject matter fails to foster social, psychological, and physical development and, to some extent, promotes a scholarly elite. Another drawback of the subject design is that learning tends to be compartmentalized and mnemonic skills tend to be stressed. The subject design stresses content and neglects students' needs, interests, and experiences. Also, in delivering such a curriculum, teachers tend to foster student passivity.

Dewey was concerned about divorcing knowledge from the learner's experiences and essentially transmitting secondhand knowledge and others' ideas.[72] For Dewey, the curriculum should emphasize both subject matter and the learner.

DISCIPLINE DESIGN. The discipline design, which appeared after World War II, evolved from the separate-subject design. This new design gained popularity during the 1950s and reached its zenith during the mid-1960s. As is the case with the separate-subject design, the discipline design is based on content's inherent organization. However, whereas the subject design does not make clear the foundational basis on which it is organized or established, the discipline design's orientation does specify its focus on the academic disciplines.

Arthur King and John Brownell, proponents of the discipline design, long ago indicated that a *discipline* is specific knowledge that has the following essential characteristics: a community of persons, an expression of human imagination, a domain, a tradition, a mode of inquiry, a conceptual structure, a specialized language, a heritage of literature, a network of communications, a valuative and affective stance, and an instructive community.[73] This stress on disciplined knowledge emphasizes science, mathematics, English, history, and certain other disciplines. Advocates view the school as a microcosm of the world of intellect, reflected by such disciplines. The methods by which scholars study the content of their fields suggest the ways in which students learn that content. In other words, students approach history as a historian would, and students investigate biological topics by following procedures used by biologists.

Proponents of the discipline design stress understanding the conceptual structures and processes of the disciplines. This is perhaps the essential difference between the discipline design and the subject-matter design. With the discipline design, students experience the disciplines so that they can comprehend and conceptualize; with the subject-matter design, students are considered to have learned if they simply acquire information. Sometimes it is difficult to determine whether a classroom has a subject-matter or discipline design. The key distinguishing characteristic seems to be whether students actually use some of the discipline's methods to process information. Stated differently, the subject matter design emphasizes "filling" students with knowledge, whereas the discipline design aims to foster student thinkers who can utilize information to generate knowledge and understandings. Discipline design fosters teachers teaching for intelligence.[74]

Bruner notes, "Getting to know something is an adventure in how to account for a great many things that you encounter in as simple and elegant a way as possible."[75] This "getting to know" relies on students engaging with a discipline's content and methods. So engaged, students analyze the components of the disciplined content and draw conclusions (albeit incomplete ones). Bruner's comment that "getting to know something is an adventure" needs our reflection. Indeed, in the discipline design, students are offered opportunities to take a "voyage to the unknown."[76] They have or should have opportunities to, as Doll states, engage with information and ideas, and process them in ways that encourage play, precision/definiteness, and generate generalizations/abstraction.[77] Doll submits that this process is not a precise sequence, but rather a spirited integration of stages of process. But, in being so engaged, educators are addressing what Whitehead noted: "the human being . . . craves to explore, to discover, to know—to investigate curious thoughts, to shape questions, to seek for answers."[78]

The discipline design encourages students to see each discipline's basic logic or structure—the key relationships, concepts, and principles, what Joseph Schwab called the "substantive structure."[79] Considering structure or meaning allows a deep understanding of the content and a knowledge of how it can be applied. Harry Broudy called such knowledge (e.g., problem-solving procedures) "applicative knowledge."[80]

Students who become fluent in a discipline's modes of inquiry master the content area and are able to continue their learning independently in the field. Such students do not need the teacher to continually present information. Supporters of this design want students to function as little scholars in the school curriculum's respective fields. When learning mathematics, students are neophyte mathematicians. When studying history, they use the methods of historiography.

The emphasis on disciplines and structure led to Bruner's classic book *Process of Education*. The very title suggests that learning should emphasize process or procedural knowledge. Bruner states that a subject's curriculum "should be determined by ... the underlying principles that give structure to that subject."[81] Organizing the curriculum according to the discipline's structure elucidates relationships, indicates how elementary knowledge relates to advanced knowledge, allows individuals to reconstruct meaning within the content area, and furnishes the means for advancing through the content area.

Bruner believed that "any subject can be taught in some effectively honest form to any child at any stage of development."[82] He argued that students can comprehend any subject's fundamental principles at almost any age. Bruner's view has been criticized as romantic. Developmentalists disagree with his thesis that "intellectual activity anywhere is the same."[83] They point out that the thinking processes of young children differ in kind and degree from those of adolescents and adults. Young boys and girls also differ in how they process information.

Many individuals both within and outside the educational community believe that the discipline design is appropriate for all students, college bound or not. The discipline design gives students opportunities to learn knowledge essential for effective living. An academic course of study meets all students' needs. Our society requires literate individuals with the skills necessary to function in an information age. The curriculum should educate students, not train them for a job (as vocational education does).

Many have criticized the discipline design for assuming that students must adapt to the curriculum rather than the other way around. Some also argue that the view that curriculum knowledge should mirror disciplined knowledge sustains the biases and assumptions of those who wish to maintain the status quo.[84] The discipline design is also criticized for its underlying assumption that all students have a common or a similar learning style. Perhaps this design's greatest shortcoming is that it causes schools to ignore the vast amount of information that cannot be classified as disciplined knowledge. Such knowledge—dealing with aesthetics, humanism, personal–social living, and vocational education—is difficult to categorize as a discipline.

BROAD-FIELDS DESIGN. The broad-fields design (often called the *interdisciplinary design*) is another variation of the subject-centered design. It appeared as an effort to correct what many

educators considered the fragmentation and compartmentalization caused by the subject design. Broad-fields designers strove to give students a sweeping understanding of all content areas.[85] They attempted to integrate content that fit together logically. Geography, economics, political science, anthropology, sociology, and history were fused into social studies. Linguistics, grammar, literature, composition, and spelling were collapsed into language arts. Biology, chemistry, and physics were integrated into general science.

The idea for the broad-fields design was both bold and simple. Essentially, educators could simply meld two or more related subjects, already well known in the schools, into a single broader field of study. However, this design was a change from traditional subject patterns. Although it first appeared at the college level in the 1910s, it became most popular at the elementary and secondary levels. This continues to be the case. Today the broad-fields design is seen at the college level only in introductory courses, but it is widespread within the K–12 curriculum.

Harry Broudy and colleagues offered a unique broad-fields design during the Sputnik era. They suggested that the entire curriculum be organized into these categories: (1) symbolics of information (English, foreign languages, and mathematics); (2) basic sciences (general science, biology, physics, and chemistry); (3) developmental studies (evolution of the cosmos, of social institutions, and of human culture); (4) exemplars (modes of aesthetic experience, including art, music, drama, and literature); and (5) "molar problems," which address typical social problems.[86] This last category entails an annual variety of courses, depending on current social problems.

The broad-fields design still brings together well-accepted content fields. Some curricularists prefer that broad fields consist of related conceptual clusters rather than subjects or disciplines combined in interdisciplinary organization. These clusters can be connected by themes. Some educators are calling for the organization of curriculum as integrated thematic units. Others are using the term *holistic curriculum.*[87]

The broad-fields design can be interpreted as saying that the separate subject is dead. Rather, we should have a design that draws on emergent clusters of problems and questions that engages students in constructing and reconstructing information.[88]

Much of broad-fields design focuses on *curriculum webs,* connections among related themes or concepts. Many years ago, Taba discussed the concept of webs when urging teachers to create cognitive maps in constructing curriculum.[89] The broad-fields design may be the most active in the future, allowing for hybrid forms of content and knowledge in the curriculum and for student participation in constructing knowledge.

Like other designs, this design has its problems. One is breadth at the expense of depth. A year of social studies teaches students a greater range of social science concepts than a year of history. But is the resulting knowledge of social sciences superficial? Certainly, a year of history builds more historical knowledge than a year of social studies. Is it necessary to have great depth at the elementary level? Is it not the purpose of the curriculum to acquaint students with the complete field of social science?

The issue of depth is even more central when we expand the broad-fields design to an integrated curriculum design. Just how much depth will students get following or constructing webs of related concepts? How much depth can one attain in science by following the theme of dinosaurs or machines? In whole language, will students attain a sufficiently deep appreciation of reading, writing, and listening? The philosophies of schools and educators influence their responses.

6.2 Humans in the Natural World—An Integrated Curriculum
More schools, like the Putney School in Vermont, are taking on an interdisciplinary, or integrated, approach to their curriculum. Watch this video describing a ninth-grade course called "Humans in the Natural World," which combines English, science, and history. What do you think are some of the benefits of this approach compared with the traditional, subject-centered curriculum? Are there any downsides?

https://www.youtube.com/watch?v=XpnRx243Wy8

CORRELATION DESIGN. Correlation designers do not wish to create a broad-fields design but realize there are times when separate subjects require linkage to avoid fragmentation of curricular content. Midway between separate subjects and total content integration, the correlation design attempts to identify ways in which subjects can be related, yet maintain their separate identities.

Perhaps the most frequently correlated subjects are English literature and history at the secondary level and language arts and social studies at the elementary level.

While studying a historical period, students read novels related to the same period in their English class. Science and mathematics courses are also frequently correlated. Students in a chemistry course may have a unit in math that deals with the mathematics required to conduct an experiment. However, the content areas remain distinct, and the teachers of these courses retain their subject-matter specialties.

In the 1950s and 1960s, many found the notion of correlation design attractive. Harold and Elsie Alberty discussed correlated curriculum at the secondary level. They presented a correlation design with an "overarching theme." This thematic organizer retained subjects' basic content, but it was selected and organized with reference to broad themes, problems, or units.[90] It required that classes be scheduled within a block of time. Teachers of the various content areas to be correlated could then work together and have students work on assignments drawing from the correlated content areas. Subjects can be combined in innovative ways. For example, it is possible to relate literature and art that depict similar content. Science can be taught through literature. Courses in computer science might be correlated with courses in art, music, or economics.

Currently, few teachers use correlation design, possibly because it requires that they plan their lessons cooperatively. This is somewhat difficult to accomplish because teachers have self-contained classes at the elementary level and often do not have time for such collaboration. At the secondary level, teachers are organized into separate departments that tend to encourage isolation. Teachers must also meet time schedules dictated by specific classes and so may have little time to work with other teachers on team teaching. Also, most class schedules do not allow a block of time sufficient for students to meaningfully study correlated subjects. Modular scheduling and flexible scheduling, which allow for this, have not been widely accepted.

PROCESS DESIGNS. As previously discussed, attention is often given to the procedures and processes by which individuals obtain knowledge. Students studying biology learn methods for dealing with biological knowledge, students in history classes learn the ways of historiography, and students investigating anthropology learn ethnographic procedures appropriate for studying culture and society. Although advocates of the disciplines design urge students to learn process, other educators are suggesting curricular designs that stress the learning of general procedures applicable to all disciplines. Curricula for teaching critical thinking exemplify this procedural design.

Educators have always suggested that students be taught to think. Curricular designs must address how learners learn and the application of process to subject matter. "The good thinker, possessing attributes enabling him or her to create and use meaning . . . possesses a spirit of inquiry, a desire to pose questions central to the world. The good thinker ponders the world, actual and desired, querying things valued and desired."[91] Process designs focus on the student as meaning maker.

Process designs focus on teaching for intelligence and on the development of intellectual character. Ron Ritchhart borrowed this term from Tishman[92] to cluster particular dispositions requisite for effective and productive thinking. Intellectual character goes beyond a listing of abilities and the speed of enactment of those abilities, or the retrieval of detailed information. In Ritchhart's thinking, *intellectual character* "recognizes the role of attitude and affect in everyday cognition and the importance of developed patterns of behavior."[93] Intellectual character encompasses sets of dispositions that actually shape and activate intellectual behavior.

Process designs emphasize those procedures that enable students to analyze reality and create frameworks by which to arrange derived knowledge. Often the organizational frameworks differ from the way the world appears to the casual observer.[94] There is much dialogue about involving students in their learning and empowering them to be the central players in the classroom. However, there is much debate regarding the nature of the process to be stressed. Some postmodernists criticize process designs that privilege the scientific method and imply the existence of a fully objective reality. Students must realize that methods of inquiry result in a world that, to some extent, they construct.[95]

In process designs that reflect a modern orientation, students learn the process of knowledge acquisition in order to reach some degree of consensus. However, people such as Jean-François Lyotard argue that we engage in process not to reach consensus, but to search for instabilities.[96] In the modern orientation, intellectual and physical processes exist in an irreversible linear arrow. Time and action always move forward. One cannot repeat the past. One cannot undo what has been accomplished.

However, in the postmodern orientation, process exists in a duration of time, and this duration of time upon completion still is embedded in the present, which is also a duration. Individuals—students and teachers—exist in a series of durations, a constant flow of "nows." These nows are shaped by past durations recognized and future durations anticipated.[97] We all are in a process or processes of becoming. "Human consciousness can never be static. Interpretation should, according to post-modern thought, emphasize possibility and becoming."[98] Postmodern process design stresses statements and ideas that are open to challenge; designs are organized so that students can continually revise their understandings.[99]

Bruner and others call this continual revision *hermeneutic composition*. The challenge of a process curriculum is to analyze the validity of our conclusions and to determine the "rightness" of our interpretation of a text or content realm by reference not to observed reality, but to other interpretations by scholars.[100] We believe that we could engage in hermeneutic analysis and determine the rightness of conclusions based on the observation of actual phenomena.

A postmodern process-design curriculum has students do more than simply analyze their conclusions. It encourages them to unravel the processes by which they investigate and reach conclusions. Students are to study their information-processing methods in order to gain insights into how knowledge is generated.[101] Postmodern process design emphasizes the role of language in constructing as well as representing reality. Process designs may be the most dynamic in the future. It is quite likely that they will increasingly meld with designs identified as learner centered.

Learner-Centered Designs

All curricularists wish to create curricula valuable to students. In response to educational planners who valued subject matter, educators in the early 1900s asserted that students were the program's focus. Progressives advocated what have come to be called *learner-centered designs*. These designs appear more frequently at the elementary and preschool levels than at the secondary school level. In preschools, kindergartens, and elementary schools, teachers tend to stress the whole child. Teachers create opportunities for children to develop personal interests. Play is an important vehicle of learning. Students, under the guidance of teachers, are free to get absorbed in an activity, as William Doll denotes, to actually craft their own experience. In the learner-centered designs, a theme emerges that students are the designers, the makers of what they are experiencing. Teachers cannot create experiences; teachers can provide opportunities for potential experiences, but the actual experiences only occur and develop when teachers enable and allow students to, as Doll notes, "plunge into subject matter, to see, feel, experience its aesthetic qualities—to explore the spirit of the subject."[102]

At the secondary level, the emphasis is more on subject matter designs, largely because of the influence of textbooks and the colleges and universities at which the discipline is a major organizer for the curriculum. Learner-centered designs essentially stress two of the three big ideas regarding thinking about education: socialization and Rousseau's developmental ideas. Your authors assert that secondary and higher education might benefit if more attention were given to learner-centered designs. There are some instances where this is happening.

CHILD-CENTERED DESIGN. Advocates of child- or student-centered design believe that students must be active in their learning environments and that learning should not be separated from students' lives, as is often the case with subject-centered designs. Instead, the design should

be based on students' lives, needs, and interests. Attending to students' needs and interests requires careful observation of students and faith that they can articulate those needs and interests. Also, young students' interests must have educational value.[103]

People with this view consider knowledge as an outgrowth of personal experience. People use knowledge to advance their goals and construct it from their interactions with their world. Learners actively construct their own understandings. Learning is not the passive reception of information from an authority. Students must have classroom opportunities to explore, firsthand, physical, social, emotional, and logical knowledge. This view has a long history. John Locke noted that individuals construct bodies of knowledge from a foundation of simple ideas derived from their experiences. Immanuel Kant postulated that aspects of our knowledge result from our cognitive actions; we construct our universe to have certain properties.[104] The shift in emphasis from subject matter to children's needs and interests was part of Rousseau's educational philosophy, as expressed in his 1762 book *Emile*. Rousseau believed that children should be taught within the context of their natural environment, not in an artificial one like a classroom.[105] Teaching must suit a child's developmental level.

Proponents of child-centered design draw on the thinking of some other pedagogical giants. Heinrich Pestalozzi and Friedrich Froebel argued that children attain self-realization through social participation; they voiced the principle of learning by doing. Their social approach to education furnished a foundation for much of Francis Parker's work.

Child-centered design, often attributed to Dewey, was actually conceived by Parker, who laid its foundations. Parker had studied pedagogy in Germany, and he knew the work of Pestalozzi and Froebel. Like Rousseau, Parker believed that effective education did not require strict discipline. Rather, the instructional approach should be somewhat free, drawing on the child's innate tendency to become engaged in interesting things. Teachers who involved children in conversations would find that they could effectively participate in their own learning. Parker put his views of teaching into practice in developing science and geography curricula. He urged geography teachers to have children experience the content as a geographer out in the field would, by making observations, recording them in sketchbooks, and analyzing them. Parker was superintendent of schools in Quincy, Massachusetts, and his approach to curriculum was called the Quincy system.[106]

Dewey's early thinking entailed similar notions. In 1896, he put some of his ideas into action in his laboratory school at the University of Chicago. The curriculum was organized around human impulses—the impulses to socialize, construct, inquire, question, experiment, and express or create artistically.[107]

The emphasis on the child displaced the emphasis on subject matter. Also, when subject matter was presented, it no longer was separated into narrow divisions but was integrated around units of experience or social problems. The idea that solving a problem required methods and materials from several subject fields was inherent in the child-centered, experience-centered curriculum.

Child-centered curriculum design flourished in the 1920s and 1930s, primarily though the work of the progressives such as Ellsworth Collings (who introduced the child-centered curriculum into the public schools of McDonald County, Missouri) and William Kilpatrick (who created the *project method,* which engaged children in their learning at the Lincoln School in New York City).[108] Although the project method was extensively discussed in the literature, it gained only limited acceptance. However, at some schools, the project method is being rediscovered and even researched. As of this writing, the University of Washington's College of Education had a government grant to analyze the introduction of what is basically Kilpatrick's project method. High school students studying the social sciences are responsible for designing in groups various projects that put the students in the designer's seat. The students are determining their own expectations for their projects.

The University of Washington's School of Architecture has used the project method for many decades. College students, either alone or in teams, plan architectural projects in which the professor counsels and guides rather than presents his expectations.

Today some schools employ child-centered designs. However, as John Goodlad and Zhixin Su point out, such designs often contradict a view of curriculum as primarily content driven.[109] Some curricularists have attempted to have more educators accept child-centered design by way of negotiated curriculum, which involves student–teacher negotiations regarding which content addresses what interests. Teachers and students participate in planning the unit, its purposes, the content focuses, the activities, and even the materials to be used.[110]

Having students negotiate the curriculum empowers them. It gives them opportunities to construct their own curricula and learning.[111]

EXPERIENCE-CENTERED DESIGN. Experience-centered curriculum designs closely resemble child-centered designs in that children's concerns are the basis for organizing children's school world. However, they differ from child-centered designs in that children's needs and interests cannot be anticipated; therefore, a curriculum framework cannot be planned for all children.

The notion that a curriculum cannot be preplanned, that everything must be done "on the spot" as a teacher reacts to each child, makes experienced-centered design almost impossible to implement. It also ignores the vast amount of information available about children's growth and development—cognitive, affective, emotional, and social.

Those favoring a child- or experience-centered curriculum heavily emphasize the learners' interests, creativity, and self-direction. The teacher's task is to create a stimulating learning environment in which students can explore, come into direct contact with knowledge, and observe others' learning and actions. Learning is a social activity. Students essentially design their own learning; they construct and revise their knowledge through direct participation and active observation.[112]

In an experience-centered curriculum, the emphasis of the design is not on teaching or on learning, but on the activity. As Doll posits, Dewey viewed learning as natural to human activity. One did not need to formally teach learning. Put children in a place that interests them, and they commence learning. They become nascent inquirers, investigators. They organize their environment; they reflect. "Production, knowledge, learning are but by-products of the active process of inquiry." Learning comes naturally.[113]

At the beginning of the 1900s, Dewey noted that children's spontaneous power—their demand for self-expression—cannot be suppressed. For Dewey, interest was purposeful. In *Experience and Education*, he noted that education should commence with the experience learners already possessed when they entered school. Experience was essentially the starting point for all further learning.[114] Dewey further noted that children exist in a personal world of experiences. Their interests are personal concerns rather than bodies of knowledge and their attendant facts, concepts, generalizations, and theories.

Even so, Dewey never advocated making children's interests the curriculum or placing children in the role of curriculum makers. He commented, "The easy thing is to seize upon something in the nature of the child, or upon something in the developed consciousness of the adult, and insist upon that as the key to the whole problem."[115]

Dewey wanted educators to analyze children's experiences and to see how these experiences shaped children's knowledge. One searched for starting points, places where the child's natural interests could be linked to formalized knowledge. Dewey wanted educators to think of the child's experience as fluid and dynamic. Thus, the curriculum would continually change to address students' needs.[116] Dewey contended that the subjects studied in the curriculum are formalized learnings derived from children's experiences. The content is systematically organized as a result of careful reflection.

Those who subscribe to experience-centered curriculum design have faith in each student's uniqueness and ability. They believe that an open and free school environment stimulates all students to excel. Students in optimal school environments are self-motivated; the educator's role is to provide opportunities, not to mandate certain actions. Thomas Armstrong speaks of creating a genial classroom environment, one that exudes a festive atmosphere and capitalizes

on students' natural disposition to learn. Such an environment celebrates students' freedom to choose. It does not demand that they think and study in particular ways in order to succeed. This does not mean that students are left to drift in their academic efforts. The teacher who has designed an experience-centered curriculum has designed potential experiences for students to consider. Students are empowered to shape their own learning within the context furnished by the teacher.[117]

ROMANTIC (RADICAL) DESIGN. More recently, reformers who advocate radical school modification have stressed learner-centered design. These individuals essentially adhere to Rousseau's posture on the value of attending to the nature of individuals and Pestalozzi's thinking that individuals can find their true selves by looking to their own nature. Although their thinking appears progressive, they draw primarily on the views of more recent philosophers: Jurgen Habermas, a German philosopher, and Paulo Freire, a radical Brazilian educator.

Individuals in the radical camp believe that schools have organized themselves, their curriculum, and their students in stratifications that are not benign. The ways schools are, the curricular designs selected or stressed, and the content selected and organized result from people's careful planning and intent. The intent is to continue the dominant social segments of the nation so that advantages these segments enjoy will continue without challenge from those people deemed subordinate.[118] School curricular designs, school curricula, and the administration of schools' programs are planned and manipulated to reflect and address the desires of those in power. Educators in the radical camp work to alter this dividing of students into haves and have-nots.

Radicals consider that presently schools are using their curricula to control students and indoctrinate rather than educate and emancipate. Students in "have" societies are manipulated to believe that what they have and will learn is good and just, whereas students in the "have-not" societies are shaped to gladly accept their subordinate positions. Curricula are organized to foster in students a belief in and desire for a common culture that does not actually exist and to promote intolerance of difference.[119]

Freire's *Pedagogy of the Oppressed* influenced the thinking of some present-day radicals. Freire believed that education should enlighten the masses about their oppression, prompt them to feel dissatisfied with their condition, and give them the competencies necessary for correcting the identified inequities.[120]

Many radicals draw on the theory of Habermas, who emphasizes that education's goal is emancipation of the awarenesses, competencies, and attitudes that people need to take control of their lives. In this view, educated people do not follow social conventions without reflection. In writing about Habermas and his critical theory of education, Robert Young notes that the theme of emancipation dates back to Roman times and was also expressed by many Enlightenment philosophers. Students must accept responsibility for educating themselves and demand freedom.[121]

Radical curricularists believe that individuals must learn to critique knowledge. Learning is reflective; it is not externally imposed by someone in power. William Ayers posits that students should be invited by the teacher not to just "learn" the curricula, but to travel and to experience the curricula as coadventurers and, perhaps at times, coconspirators. More recently, William Ayers, along with coauthor Rick Ayers writes, "Our students must become the subjects of communication, actors in their own dramas and writers of their own scripts, even as we ourselves resist being transformed into objects by the mechanisms of surveillance that so profoundly define the modern educational institution."[122] To Ayers, "curriculum is an ongoing engagement with the problem of determining what knowledge and experiences are the most worthwhile."[123] Teachers function as "awareness makers." They are present within the curricular arena to "expose, offer, encourage, stimulate,"[124] and, we would add, to challenge, create awe and wonder, and nurture inquisitiveness.

Curricula in the radical camp are characterized by teachers' and students' actions that break barriers, challenge and unpack preconceptions, critically analyze theories, and discover new ways to process significant questions. And curricula are perceived essentially as all the

materials offered and implied and all the experiences planned and unplanned that happen both inside and outside the school.[125]

Curricula are not just endpoints or waypoints on a predetermined school journey. Curricula are a universe of possibilities and of limitless avenues of inquiry, a plethora of experiences that engage the minds, the bodies, and the spirits of teachers and students. Such curricula are exploding galaxies of intended and unintended consequences.

Although we do not characterize ourselves as radical curricularists, we do believe that many, if not most, of the features of the radical curricular design should be incorporated into more traditional designs. Students should be challenged in their learning; students should have adventures in total learning in cognitive, physical, emotional, and spiritual realms. Education is an adventure!

Perhaps the biggest difference between mainstream educators and radicals is that radicals view society as deeply flawed and believe that education indoctrinates students to serve controlling groups. Many radicals view the Western intellectual tradition, and its standard curricula, as imperialistic and oppressive. Curricula with a radical design address social and economic inequality and injustice. Radical educators are overtly political.

HUMANISTIC DESIGN. Humanistic designs gained prominence in the 1960s and 1970s, partly in response to the excessive emphasis on the disciplines during the 1950s and early 1960s. Humanistic education appeared in the 1920s and 1930s as part of progressive philosophy and the whole-child movement in psychology. After World War II, humanistic designs connected to existentialism in educational philosophy.

Humanistic psychology developed in the 1950s in opposition to the then-dominant psychological school of behaviorism. This new psychological orientation emphasized that human action was much more than a response to a stimulus, that meaning was more important than methods, that the focus of attention should be on the subjective rather than objective nature of human existence, and that there is a relationship between learning and feeling.

Within this context, the ASCD published its 1962 yearbook, *Perceiving, Behaving, Becoming*.[126] This book represented a new focus for education—an approach to curricular design and instructional delivery that would allow individuals to become fully functioning persons. Arthur Combs, the yearbook's chairperson, posed some key questions: What kind of person achieves self-realization? What goes into making such a person?[127] The emphasis was on empowering individuals by actively involving them in their own growth. The ASCD's 1977 yearbook, *Feeling, Valuing, and the Art of Growing*, also stressed the affective dimensions of humanistic educational designs and emphasized human potential. It suggested that educators must permit students to feel, value, and grow.[128]

Abraham Maslow's concept of self-actualization heavily influenced humanistic design. Maslow listed the characteristics of a self-actualized person: (1) accepting of self, others, and nature; (2) spontaneous, simple, and natural; (3) problem oriented; (4) open to experiences beyond the ordinary; (5) empathetic and sympathetic toward the less fortunate; (6) sophisticated in interpersonal relations; (7) favoring democratic decision-making; and (8) possessing a philosophical sense of humor.[129] Maslow emphasized that people do not self-actualize until they are 40 or older, but the process begins when they are students. Some educators miss this point and think that their humanistic designs will have students attain self-actualization as an end product.

Carl Rogers's work has been another major humanistic force. Rogers advocates self-directed learning, in which students draw on their own resources to improve self-understanding and guide their own behavior. Educators should provide an environment that encourages genuineness, empathy, and respect for self and others.[130] Students in such an environment naturally develop into what Rogers called fully functioning people. Individuals able to initiate action and take responsibility are capable of intelligent choice and self-direction. Rogers stressed knowledge relevant to problem solving. Classroom questions foster learning and deep thinking. The quest is collaborative and the inquiries are multidisciplinary. There is no need to "stay within

discipline lines." Mistakes are accepted as part of the learning process. Conclusions are regarded as temporary. Students approach problems with flexibility and intelligence; they work cooperatively but do not need others' approval.[131]

In the 1970s, humanistic education absorbed the notion of *confluence.* Confluence education blends the affective domain (feelings, attitudes, values) with the cognitive domain (intellectual knowledge and problem-solving abilities). It adds the affective component to the conventional subject-matter curriculum.[132]

Confluent education stresses participation; it emphasizes power sharing, negotiation, and joint responsibility. It also stresses the whole person and the integration of thinking, feeling, and acting. It centers on subject matter's relevance to students' needs and lives. Humanistic educators realize that the cognitive, affective, and psychomotor domains are interconnected and that curricula should address these dimensions. Some humanistic educators would add the social and spiritual domains as well.[133]

Some humanistic designs stress intuition, creative thinking, and a holistic perception of reality. They produce curricula that prioritize the uniqueness of the human personality but also transcendence of individuality. As Phenix notes, such a curriculum presents reality as a "single interconnected whole, such that a complete description of any entity would require the comprehension of every other entity."[134] James Moffett suggests that a curriculum that emphasizes spirituality enables students to enter "on a personal spiritual path unique to each that nevertheless entails joining increasingly expansive memberships of humanity and nature."[135] He cautions that society must foster morality and spirituality, not just knowledge and power. Transcendent education is hope, creativity, awareness, doubt and faith, wonder, awe, and reverence.[136] (See Curriculum Tips 6.3.)

For humanists, education should address pleasure and desire such as aesthetic pleasure. Emphasizing natural and human-created beauty, humanistic curriculum designs allow students to experience learning with emotion, imagination, and wonder. Curricular content should elicit emotion as well as thought. It should address not only the conceptual structures of knowledge, but also its implications. The curriculum design should allow students to formulate a perceived individual and social good, and encourage them to participate in a community.[137]

CURRICULUM TIPS 6.3 The Curriculum Matrix

In designing a curriculum, keep in mind the various levels at which we can consider the curriculum's content components. The following list of curriculum dimensions should assist in considering content in depth.

1. Consider the content's intellectual dimension. This is perhaps curriculum's most commonly thought-of dimension. The content selected should stimulate students' intellectual development.
2. Consider the content's emotional dimension. We know much less about this dimension, but we are obtaining a better understanding of it as the affective domain of knowledge.
3. Consider the content's social dimension. The content selected should contribute to students' social development and stress human relations.
4. Consider the content's physical dimension, commonly referred to as the *psychomotor domain of knowledge.* Content should be selected to develop physical skills and allow students to become more physically self-aware.
5. Consider the content's aesthetic dimension. People have an aesthetic dimension, yet we currently have little knowledge of aesthetics' place in education.
6. Consider the content's transcendent or spiritual dimension, which most public schools almost totally exclude from consideration. We tend to confuse this dimension with formal religion. This content dimension does not directly relate to the rational. However, we must have content that causes students to reflect on the nature of their humanness and helps them transcend their current levels of knowledge and action.

Source: Adapted from Arthur W. Foshay, "The Curriculum Matrix: Transcendence and Mathematics," *Curriculum* (Autumn 1990), pp. 36–46.

Although humanistic curricular designs have great potential, they have many of the same weaknesses as learner-centered designs. They require that teachers have great skill and competence in dealing with individuals. For many teachers, they also require almost a complete change of mindset because they value the social, emotional, and spiritual realms above the intellectual realm. Also, available educational materials often are not appropriate.

One criticism of humanistic design is that it fails to adequately consider the consequences for learners. Another criticism is that its emphasis on human uniqueness conflicts with its emphasis on activities that all students experience. Yet another criticism is that humanistic design overemphasizes the individual, ignoring society's needs. Finally, some critics charge that humanistic design does not incorporate insight from behaviorism and cognitive developmental theory.

Problem-Centered Designs

The third major type of curriculum design, problem-centered design, focuses on real-life problems of individuals and society. Problem-centered curriculum designs are intended to reinforce cultural traditions and address unmet needs of the community and society. They are based on social issues.[138]

Problem-centered designs place the individual within a social setting, but they differ from learner-centered designs in that they are planned before the students' arrival (although they can then be adjusted to students' concerns and situations). With problem-centered design, a curricular organization depends in large part on the nature of the problems to be studied. The content often extends beyond subject boundaries. It must also address students' needs, concerns, and abilities. This dual emphasis on both content and learners' development distinguishes problem-centered design from the other major types of curriculum design.

Some problem-centered designs focus on persistent life situations. Others center on contemporary social problems. Still others address areas of living. Some are even concerned with reconstructing society. The various types of problem-centered design differ in the degrees to which they emphasize social needs, as opposed to individual needs.[139]

6.3 International Baccalaureate Schools
Created in Switzerland in 1968 for students in international schools, International Baccalaureate (IB) schools aim to broaden students' learning and have caught interest around the world. Watch this example of an IB school in this video. What curriculum design does it resemble? Cite some features from the video to support your thinking.

https://www.youtube.com/watch?v=YOG6Z708W10

LIFE-SITUATIONS DESIGN. Life-situations curriculum design can be traced back to the 19th century and Herbert Spencer's writings on a curriculum for complete living. Spencer's curriculum emphasized activities that (1) sustain life; (2) enhance life; (3) aid in rearing children; (4) maintain the individual's social and political relations; and (5) enhance leisure, tasks, and feelings.[140] The Commission on the Reorganization of Secondary Education, sponsored by the National Education Association, recommended this design in 1918. The commission outlined a curriculum that would deal with health, command of fundamentals, "worthy home membership," vocation, citizenship, leisure, and ethical character.

Three assumptions are fundamental to life-situations design: (1) dealing with persistent life situations is crucial to a society's successful functioning, and it makes educational sense to organize a curriculum around them; (2) students see the relevance of content if it is organized around aspects of community life; and (3) having students study social or life situations will directly involve them in improving society.

One strength of life-situations design is its focus on problem-solving procedures. Process and content are effectively integrated into curricular experience. Some critics contend that the students do not learn much subject matter. However, proponents counter that life-situations design draws heavily from traditional content. What makes the design unique is that the content is organized in ways that allow students to clearly view problem areas.

Another strong feature of life-situations design is that it uses learners' past and present experiences to get them to analyze the basic aspects of living. In this respect, the design significantly differs from experience-centered design, in which the felt needs and interests of learners are the sole basis for content and experience selection. The life-situations design takes students' existing concerns, as well as society's pressing problems, as a starting point.

Life-situations design integrates subject matter, cutting across separate subjects and centering on related categories of social life. It encourages students to learn and apply problem-solving procedures. Linking subject matter to real situations increases the curriculum's relevance.

However, it is challenging to determine the scope and sequence of living's essential aspects. Will major activities of today be essential activities in the future? Some critics believe that life-situations design does not adequately expose students to their cultural heritage; moreover, it tends to indoctrinate youth to accept existing conditions and thus perpetuates the social status quo. However, if students are educated to be critical of their social situations, they will intelligently assess, rather than blindly adhere to, the status quo. Some critics also contend that teachers lack adequate preparation to mount life-situations curriculum. Others argue that textbooks and other teaching materials inhibit the implementation of such a curriculum. Further, many teachers are uncomfortable with life-situations design because it departs too much from their training. Finally, life-situations organization departs from the traditional curriculum promoted by secondary schools, colleges, and universities.

RECONSTRUCTIONIST DESIGN. Educators who favor reconstructionist design believe that the curriculum should foster social action aimed at reconstructing society; it should promote society's social, political, and economic development. These educators want curricula to advance social justice.

Aspects of reconstructionism first appeared in the 1920s and 1930s. George Counts believed that society must be completely reorganized to promote the common good. The times demanded a new social order, and schools should play a major role in such redesign. Counts presented some of his thinking in a speech titled, "Dare Progressive Education Be Progressive?"[141] He challenged the Progressive Education Association to broaden its thinking beyond the current social structure and accused its members of advocating only curricula that perpetuated middle-class dominance and privilege. Counts expanded on his call for a reconstructed society in *Dare the Schools Build a New Social Order?* He argued that curricula should involve students in creating a more equitable society.[142]

Harold Rugg also believed that schools should engage children in critical analysis of society in order to improve it. Rugg criticized child-centered schools, contending that their laissez-faire approach to curriculum development produced a chaos of disjointed curriculum and rarely involved a careful review of a child's educational program.[143] In the 1940s, he observed that the Progressive Education Association still overemphasized the child. The association's seven stated purposes all referred to the child; not one took "crucial social conditions and problems" into consideration.[144]

Theodore Brameld, who advocated reconstructionism well into the 1950s, argued that reconstructionists were committed to facilitating the emergence of a new culture. The times demanded a new social order; existing society displayed decay, poverty, crime, racial conflict, unemployment, political oppression, and the destruction of the environment.[145] Such an argument certainly remains relevant. Brameld believed that schools should help students develop into social beings dedicated to the common good.

The primary purpose of the social reconstructionist curriculum is to engage students in critical analysis of the local, national, and international community in order to address humanity's problems. Attention is given to the political practices of business and government groups and their impact on the workforce. The curriculum encourages industrial and political changes.

Today, educators who believe that curricula should address social inequality and injustice tend to call themselves reconceptualists rather than reconstructionists. However, like reconstructionists, they believe that the curriculum should provide students with the learning requisite for altering social, economic, and political realities. We could classify reconceptualists as a variation of curricular radicals, the difference being that reconceptualists may not deem as given that the

Western intellectual tradition and its standard curricula are imperialistic and oppressive. Rather, reconceptualists accept that the world is dynamic and ever changing, requiring that curricula must present myriad possibilities of learning and reacting.

Curriculum Design Theoretical Frameworks

MODERN INFLUENCED DESIGNS (CONSTRUCTIONIST PERSPECTIVE). We live in modern times. Most of us approach and interact with our times with a modernistic mindset. How we approach curriculum design and curriculum overall is influenced by this intellectual stance. Most of the curriculum designs presented in this chapter have modernistic underpinning and assumptions.[146]

Modernism has been with Western society since the mid-16th and early 17th centuries. The scientific method developed by Francis Bacon (1561–1626) and expanded by Isaac Newton (1642–1727) planted this approach to analyzing the mysteries of reality. The belief of cause and effect gained acceptance not only among intellectuals, but also among the workers and industrial leaders of the 18th and 19th centuries. Frederick Taylor carried the scientific banner into the early 20th century. The world could be managed, manipulated, even controlled. Scientific management could bring about specific results with the least amount of effort.[147]

Contrary to what critics of modernity state, we still, in the majority of cases of curriculum design and development, accept the assumptions of the modern theoretical stance and act accordingly. We still view curricula as containing various parts: objectives, contents, experiences, and evaluations. These parts can be identified and manipulated so as to generate designed effects that can be measured. We can educate with a good degree of certainty. But we in this camp must recognize that a competing theoretical framework appeared in the latter part of the 20th century: postmodernism.

POSTMODERNISM-INFLUENCED DESIGNS (POSTCONSTRUCTIVIST PERSPECTIVE). Certainty, or the striving for certainty believing that it can be obtained, is a hallmark of modernism. Doll denotes what separates postmodernism from modernism is how individuals employ doubt and the processes of inquiry.[148] One of the authors of this book wrote a paper that doubt and suspicion are really the goals of the curriculum.[149]

In modernism, one can, conceptually at least, make phenomena static, eliminate motion, stop time. In reality, nothing is static, unchanging. In a physics textbook, one can observe a diagram of an atom. Its components appear stationary on the page. That is illusion. In reality, the parts are in motion, constantly changing location. In postmodernism or postconstructivism, "there is nothing like an event, curriculum, subject, object, cause, or effect as thing or phenomenon in itself. This perspective leads us to the pure mobility of life generally and the unfinalized and living curriculum."[150]

Mobility, ambiguity, uncertainty, chaos, complexity are all aspects of the postmodern, postconstructive perspective. While we can plan for certain contents and experiences to be presented to students, we cannot be certain that the results achieved will be exactly as stated in a curriculum guide or lesson plan. Engaging students with curricula produces multilayered learnings in intellectual, emotional, and even spiritual realms. And the learnings do not cease at the end of the lesson or school day. Learnings when combined with creativity and imagination flourish in myriad ways, some anticipated, most unforeseen.[151]

Postmodernism does not just refer to the realm of curriculum. As Doll denotes, postmodernism subsumes chaos theory, complexity theory, and the concept of nonlinearity in the sciences, mathematics, and medicine.[152] Curriculum designs that might exist or rather evolve and morph under postmodernism would generate both stability and flexibility.[153] Or, as Wolff-Michael Roth has noted, such designs would enable curricula in the making.[154] To add clarity to this discussion, think of curricula in a postmodern world as improvisational theater. What the actors do, students and teachers, depends upon what actions and statements the thespians do and utter. Masters

of improvisation find thrills in dealing with disequilibrium. As Slattery asserts, "Postmodern (dis)equilibrium is the acceptance of permanent psychic discomfort as the best understanding of consciousness."[155] In improvisation, there is a playfulness. In postmodern play, energy is focused on serious business: intelligent learning.[156]

The Shadows within Curricula

Most people, educators included, think of the curriculum as a plan with identified materials, contents, and experiences. As Ayers indicates, this plan deals with two questions: Are the materials, contents, and experiences of educational worth? By what means can educators get students to optimize their utilization of the materials, content, and experiences so that a more complete understanding is attained rather than a mere knowing?[157]

However, the planned and visible curriculum, including contents, materials, and planned experiences, is also accompanied by "shadow curricula." Such shadow curricula are briefly discussed in Chapter 1: the operational curriculum, the hidden curriculum, the implicit curriculum, and the null curriculum. All curricula, regardless of design, have these shadow curricula.

The operational curriculum is the curriculum that actually gets taught or that emerges as a result of the teachers selecting particular aspects of the planned curriculum. Teachers decide what aspects of the content to stress, what materials to use, what experiences to provide students, and what motivational prompts to employ. The teacher's decisions are influenced by his or her "read" of the community's and the school's political, social, and philosophical views and beliefs. Also impacting the teacher's instructional choices are his or her own educational, political, social, and even economic histories. A teacher's curricular choices also are influenced by experiences brought into the classroom and the teacher's personality.

The hidden curriculum, as previously indicated, arises from the interactions among students and between students and teachers. Essentially, the hidden curriculum presents content and understandings that are implicit in the operational curriculum. The hidden curriculum can be influenced by the sequencing and emphases of the operational curriculum content and engaged experiences.[158] Even teachers' instructional strategies, and particularly their questions, influence the hidden curriculum either positively or negatively. A skillful or devious teacher can use the hidden curriculum for propaganda or indoctrination purposes. We might not think teachers of this stripe exist in schools, but many teachers who are fearful about their job security do, in fact, engage in such action, partly in response to community political dispositions and mores. Intangible aspects of community life do have an impact on the formal, the operational, and the hidden curriculum, as well as the null curriculum, discussed next.

The *null curriculum,* as discussed by Eisner, refers to curriculum content, values, and experiences that are omitted by the teacher but recognized as being ignored by students, the community, or both. They often are controversial topics.[159] Also, the null curriculum can relate to ways of learning. Some schools, even though they might deny it, do not want students taught to challenge authority, or, as Ayers notes, be coconspirators in modifying the curriculum.[160]

Shadow curricula exist because curricula are the products of humans. Educators make decisions about what content to teach and what experiences contribute to a student's total development. Teachers make some decisions without comprehending all the consequences of those decisions. Students make decisions also: whether to accept or reject content presented or experiences provided. Students are influenced in myriad ways by their home environment, their family's culture, and their prior educational experiences. A multitude of factors influences the actions of all the players in the educational drama. For students of curriculum, it is important to study the "shadows" of curriculum within the focus of curriculum design. A tree exists on a hillside, and it casts its shadow. We must study the tree, but perhaps more can be learned if we focus on the shadow. What impact does the shadow have on the plants within it? How might we learn about the effectiveness of a particular design by looking at its shadow?

Conclusion

Curriculum design, especially currently, is a complex activity both conceptually and in its implementation. Designing a curriculum requires a vision of education's meaning and purpose. But the complexity of curriculum designs is fueled largely by myriad educational visions. These visions play into the dynamics of educational dialogue, increasingly challenging and often contentious. Not surprisingly, as we reflect more deeply on why we educate, and as we gain new insights from research, especially brain research, we often become overwhelmed regarding just how to structure a curriculum so as to optimize student learning and satisfy a cacophony of community voices, from local to national. Despite this expanding universe of voices regarding the purpose or purposes of schools, we cannot avoid our responsibilities as educators. Curriculum design, more than ever, must be carefully considered so that the curriculum imparts essential understandings, attitudes, and skills.

Having said that, educators must realize that in our dynamic times, there will be increasing challenges to actually deciding what is indispensible for students to know and do in the 21st century. The times are not static; they are dynamic. Knowledge is exploding, the world is changing. No one curriculum design can exist in stone. We in the world are experiencing an increasingly rapid series of "nows." The universe is expanding. Knowledge is exploding. Chaos exists.

The curriculum designs presented in this chapter certainly can guide our actions when considering curricula. But we must be aware of all the factors that influence our thinking; we must reflect deeply on our rationales for what we do and select, and for what we omit. We must be open to hybrid and entirely new designs that meld new technologies. Remember that while diversity is present and chaos exists, we still will have the basic components of curricular design. Table 6.1 presents an overview of the major designs currently in use.

Table 6.1 | Overview of Major Curriculum Designs

Design	Curricular Emphasis	Underlying Philosophy	Source	Spokespeople
Subject Centered				
Subject design	Separate subjects	Essentialism, perennialism	Science, knowledge	Harris, Hutchins
Discipline design	Scholarly disciplines (mathematics, biology, psychology, etc.)	Essentialism, perennialism	Knowledge, science	Bruner, Phenix, Schwab, Taba
Broad-fields design	Interdisciplinary subjects and scholarly disciplines	Essentialism, progressivism	Knowledge, society	Broudy, Dewey
Correlation design	Separate subjects, disciplines linked but their separate identities maintained	Progressivism, essentialism	Knowledge	Alberty, Alberty
Process design	Procedural knowledge of various disciplines; generic ways of information processing, thinking	Progressivism	Psychology, knowledge	Adams, Dewey, Papert
Learner Centered				
Child-centered design	Child's interests and needs	Progressivism	Child	Dewey, Kilpatrick, Parker
Experience-centered design	Child's experiences and interests	Progressivism	Child	Dewey, Rugg, Shumaker
Radical design	Child's experiences and interests	Reconstructionism	Child, society	Freire, Habermas, Holt, Illich

(*Continued*)

Table 6.1 | (Continued)

Design	Curricular Emphasis	Underlying Philosophy	Source	Spokespeople
Humanistic design	Experiences, interests, needs of person and group	Reconstructionism, existentialism	Psychology, child, society	Combs, Fantini, Maslow, Rogers
Problem Centered				
Life-situations design	Life (social) problems	Reconstructionism	Society	Spencer
Reconstructionist design	Focus on society and its problems	Reconstructionism	Society, eternal truths	Apple, Brameld, Counts, Rugg
Postmodern design (Postconstructivist)	Lived experiences	Chaos theory	Science	Prigogine
Relationship between order and chaos	Deconstruction of texts	Complexity theory	Knowledge, quantum physics	Doll
Transformatory (or becoming) change	Child, focus on society and the world, all realms of culture	Open systems	Postmodernism	Slattery
Postconstructivist design	Child and teacher, the world		Postconstructivism	Roth
Open systems view				

Discussion Questions

1. Describe the foundations of curriculum design as established by Doll, Dewey, and Bode.
2. What are the differences between subject-centered designs, learner-centered designs, and problem-centered designs?
3. Which design dimensions are the most important to create a viable curriculum? Make your case for your response.
4. What are the benefits of being knowledgeable of the various designs in modern and postmodern frameworks, even if you do not subscribe to some of them?

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