

Curriculum Development

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Let's begin with two foundational works on curriculum, one by Ralph Tyler (1949) and the other by Jerome Bruner (1960). These provide a good beginning, not only because they were among the first books on curriculum to be published but because the ideas they contain have been among the most enduring. Indeed, they continue to provide the foundation for our most current thinking in curriculum development.

Foundations

In 1959, at Woods Hole on Cape Cod, a group of 35 scientists, scholars and educators met with the purpose of discussing how to improve science education, to “examine the fundamental processes involved in imparting to students a sense of the substance and method of science” (Bruner, 1960, p. xvii). The meeting was sponsored by the National Academy of Sciences and over the course of the ten day meeting, several important themes emerged that were to have major implications not only for science education, but for education in general. Jerome Bruner's book, *The Process of Education*, was written to provide an account of the major themes and conclusions that emerged from that conference. While the entire book is worth reading (and re-reading), the chapter on the importance of structure speaks most directly to the development of curriculum.

The theme of structure as it developed at the Woods Hole conference refers to the importance of presenting the basic structures of the disciplines as the focal points of curricula. Basic structures consist of essential concepts, such as “supply and demand” in economics or “conflict” in history or “energy” in physics, and the relationships among them. Such concepts, when understood, enable students to understand many of the phenomena in that discipline *and* similar phenomena that may be encountered elsewhere. As Bruner wrote, “Learning should not only take us somewhere; it should allow us later to go further more easily...The more fundamental or basic is the idea, the greater will be its breadth of applicability to new problems” (pp 17-18). Bruner advocated that these fundamental ideas, once identified, should be constantly revisited and reexamined so that understanding deepens over time. This notion of revisiting and reexamining fundamental ideas over time is what has become known as a “spiral curriculum.” As time goes by, students return again and again to the basic concepts, building on them, making them more complex, and understanding them more fully.

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A decade before the conference that Jerome Bruner writes about, Ralph Tyler (1949) published his classic text on curriculum development. It was organized around four questions:

1. What educational purposes should the school seek to attain?
2. How can learning experiences that are likely to be useful in attaining these objectives be selected?
3. How can learning experiences be organized for effective instruction?
4. How can the effectiveness of learning experiences be evaluated?

This short volume, written to help educational institutions engage in curriculum building, called for the application of four corresponding principles in the development of any curriculum: *defining goals, establishing corresponding learning experiences, organizing learning experiences to have a cumulative effect, and evaluating outcomes*. Tyler's principles were the accepted approach to curriculum development for almost 30 years, and they guide the essential questions of curriculum development today, though they now are applied to newer ideas and considerations that extend or reinterpret his principles.

Curriculum Theory and Philosophy – A (Very) Brief Overview

Probably the biggest objection to Tyler's approach, and the cause of its demise in the 1970's, was its perceived mechanistic orientation to curriculum. As the theory was implemented in the 1950's and 60's, behavioral objectives provided the underpinning of its design, and the success or failure of the curriculum was based on pre-defined changes in student behavior. The assumption was that student outcomes – at least those that matter – could and should be measured. The result was that in order to measure the behaviors, tasks were broken down into smaller and smaller parts, resulting in tasks that lost their authenticity or meaningfulness. Tyler was a product of his time, and his ideas were written and interpreted in light of current educational perspective, which was behavioral in nature. His theory of curriculum development was simple, logical, and rational, but it fell out of favor as educators began to view learning experiences more holistically and assess outcomes that are not so easily measured.

In response to the curriculum approach advocated by Tyler, often called the *product approach*, came what is known as the *process approach*. This approach is most associated with the work of Lawrence Stenhouse (1974), who advocated principles for selecting content, developing teaching strategies, sequencing learning experiences, and assessing student strengths and weaknesses with an emphasis on empiricism. A process curriculum was designed to be not an outline to be followed but a proposal to be tested. Gone were the behavioral objectives and tight hierarchical learning tasks.

The process approach to curriculum development was extended after Stenhouse originally laid it out, morphing into the *praxis approach*, which added the element of commitment to curriculum development. This approach advocates a shared idea of the common good and the goal of informed and committed action to the model of curriculum development. Even more recently there has been an emphasis on the *context* of curriculum and the notion of curriculum as a social



process in which personal interactions within the learning environment take on considerable significance. [For more information on curriculum as product, process, and praxis, see the article by Smith (2000) on the following website: <http://www.infed.org/biblio/b-curric.htm>.] Last, it should be mentioned that developmental theorists continue to have a strong influence on how curriculum should be structured. Wildman (2007), for example, advocates curriculum built around what is known about development and the Vygotskian concept of scaffolding, or what Wildman calls “assisted performance.”

Examples of Recent Thinking in Higher Education

An article by Knight (2001) provides a convincing argument for the superiority of a process approach to curriculum development in higher education by outlining the problems with an “outcomes-led rational approach” to curriculum planning. Knight’s major point, however, is not to advocate one approach over another, but to stress the necessity of coherence in a curriculum. He returns to Jerome Bruner’s concept of the spiral curriculum, saying “Bruner depicted good curriculum as a spiral of repeated engagements to improve and deepen skills, concepts, attitudes and values, and extend their reach. The spiral curriculum has coherence, progression and, I claim, value” (p. 371). Contending that it is possible to provide coherence and progression in a process curriculum as well as in a product curriculum, he writes, “a good curriculum would plan for learning to take place through communities of practice in which group work and peer evaluation are normal, interpersonal contact is common and networks of engagement are extensive” (p. 377).

Other curriculum writers, particularly those from the UK, have gone beyond thinking of curriculum as product or process or the more recent extensions of those theories. Barnett, Parry, and Coate (2001) propose a model of curriculum that involves three domains: knowledge, action, and self. The knowledge component is comprised of discipline-specific subject matter; the action component includes the necessary skills of the discipline; and the self component includes identifying oneself with the competencies of the discipline. The authors give an example of a history major. For him or her, the knowledge domain would be the history specialty area, the action domain would include skills such as critical writing; the self domain would include a view of self as critical evaluator. They contend that the way the three domains are weighted and integrated differs depending on the subject matter and that curriculum development should take those different integration patterns into account.

Jan Parker (2003) argues for a “transformational curriculum.” Suggesting that the Barnett, et al. model be expanded and concentrate on the interaction of the three domains, Parker says that students should design their own interacting aspects of knowledge, action, and self. Such a curriculum “would engage the student’s love of knowledge, and use that to re-inspire the teacher’s, would develop a mature critical self, which was nevertheless sophisticatedly appreciative, would incorporate the Barnett value of dealing with supercomplex paradigms and value systems while understanding how and why to invest oneself” (p. 542). This approach to curriculum centers on metacognition and self-direction, and as the author says, transformation.



From the Theoretical to the Practical

The curriculum approaches outlined above are theoretical and give us food for thought – and perhaps bases for research. What we need, in addition, are practical, simple approaches to curriculum development. For that, we turn to curriculum, instruction, and assessment specialists such as Dee Fink, Grant Wiggins, and Jay McTighe.

Fink (2007) writes about designing significant learning experiences in college courses using a process called integrated course design (ICD). His model includes the familiar triad of learning goals, teaching and learning activities and feedback/assessment. Learning goals identify what we want students to learn, learning activities identify how students will learn what it is we want them to learn, and the feedback/assessment identifies how we will know students have achieved the intended goals. Fink emphasizes, however, that these components are all influenced by “situational factors,” such as course context, professional expectations, and the nature of the subject, the students, and the teacher. He presents a taxonomy of significant learning that outlines six kinds of learning to consider when designing a course. The taxonomy, unlike Blooms’s well-known cognitive taxonomy, is interactive rather than hierarchical. The identified kinds of learning include foundational knowledge, application, integration, human dimension, caring, and learning how to learn. Fink’s book (2003) explores each aspect of the taxonomy and includes feedback from professors who have used this approach to curriculum design and have found it helpful.

Currently, one of the most influential books on curriculum development is Wiggins and McTighe’s (1998, 2005) *Understanding by Design*. The authors call their approach “backward design” and, sure enough, they cite Ralph Tyler’s (1949) model as providing the logic behind their “new” idea. However, the backwards design model avoids the mechanistic predisposition of behaviorism and offers a major advantage by featuring the latest thinking in assessment. Though it draws most of its examples from K-12 education settings, the principles put forth by the authors are relevant to curricula at any level.

Wiggins and McTighe say their design is backward because it starts with the end, the desired results, first and then works backward to a curriculum based on acceptable evidence of learning. The stages in the backward design process are

- 1- Identify desired results
- 2- Determine acceptable evidence
- 3- Plan learning experiences and instruction

In stage 1, consideration is given to what students should know, understand, and be able to do, and here is where it becomes clear that the orientation to curriculum design is more constructivist than behaviorist. The authors suggest a framework for establishing curriculum content by considering three levels of knowledge: that which is worth being familiar with, that which is important to know and do, and that which represents an “enduring” understanding. Third level knowledge, enduring understandings, refers to essential principles of disciplinary and/or



interdisciplinary thought. Here, as you might expect, they reference Bruner (1960), reiterating his idea that these essential concepts and principles are what should anchor the curriculum, whether it be a unit of study, a course, or a major field comprised of a number of courses.

The authors offer four criteria for determining essential understandings:

- 1- To what extent does the idea, topic, or process represent a “big idea” having enduring value beyond the classroom?
 - 2- To what extent does the idea, topic, or process reside at the heart of the discipline?
 - 3- To what extent does the idea, topic, or process require uncoverage?
 - 4- To what extent does the idea, topic, or process offer potential for engaging students?
- (Wiggins & McTighe, 1998, 10-11)

Stage 2 asks how we will know if students have achieved the desired understandings and skills. At this point, thought is given to what assessment evidence will document that the desired learning has taken place. The authors advocate considering a wide range of evidence and assessment methods ranging from informal checks for understanding to complex performance tasks and projects. It is this stage that is probably the most “backward” for instructors. There is a strong tendency not to think about assessment until toward the end of a topic or unit or course. Considering assessment as evidence of learning, and considering it *before* teaching, puts assessment not only in a new place, but in a new light. (For a very interesting article presenting principles for assessment in higher education, see Wiggins “Toward Assessment Worthy of the Liberal Arts: The Truth May Make You Free, but the Test May Keep You Imprisoned” at http://www.maa.org/SAUM/articles/wiggins_appendix.html).

It is not until stage 3 that the learning experiences (instructional strategies) are planned. Since acceptable evidence has already been considered, the learning experiences are designed to enable students to produce the desired results. Teaching is viewed as a means to an end, not an end in itself. Wiggins and McTighe suggest asking the following questions during this stage:

- What enabling knowledge and skills will students need to perform effectively and achieve desired results?
- What activities will equip students with the needed knowledge and skills?
- What will need to be taught and coached, and how should it best be taught, in light of performance goals?
- What materials and resources are best suited to accomplish these goals?
- Is the overall design and effective? (Wiggins & McTighe, 1998, 13)



Curriculum Coherence

Regardless of theoretical orientation or practical perspective, curriculum writers emphasize the importance of curricular coherence. The concept is simple, hearkening back to Bruner and others before him,¹ who called for revisiting important ideas again and again in order to deepen understanding and encourage transfer. At the university level, where we have major fields of study that encompass a collection of courses, we have the opportunity to design a coherent curriculum. Such a curriculum need not be sequential in the traditional sense. It might be problem-based or issues-based, with students making ever-deepening inquiries into central concepts and principles. We are in a position to craft a series of courses, in whatever form, that are carefully orchestrated to advance the essential knowledge and skills of our fields of study and allow students to broaden and deepen their understanding as they progress through them. The idea is simple, but the work is hard.

There is a technique called *curriculum mapping* (Jacobs, 1997) that might be helpful in such an endeavor. It has been used successfully in the development of curricular scope-and-sequences in K-12 settings, but again it is a concept that has relevance for higher education. The technique is relatively straightforward, first involving the identification of the content and skills taught in each course at each level. A calendar-based chart, or “map,” is created for each course so that it is easy to see not only what is taught in a course, but when it is taught. Examination of these maps can reveal both gaps in what is taught and repetition among courses, but its value lies in identifying areas for integration and concepts for spiraling. What are students taking at the same time in different courses? Are there ways to integrate the content to enlarge understanding? What do students take at one level that is repeated at the next? Are there ways to spiral conceptual understanding and skill development?

For the past year, the Education Department has been working on increasing the coherency of its curriculum, and using a process similar to curriculum mapping to do so. We have engaged in departmental “conversations” on the first Friday of each month to discuss course goals, content, and assignments. It has been an eye-opening exercise and, yes, hard work, as we have tried to articulate the essential knowledge and skills of teacher education and our own assumptions and values that frame them. We have examined our course content, our required assignments, and our class activities to consider the alignment of courses typically taken during the same semester (horizontal alignment) and those taken in sequence (vertical alignment). We have drawn diagrams and made charts; we have listed and sorted; we have agreed and disagreed. Progress clearly has been made in reducing redundancy and discarding topics that do not contribute to what we have determined to be our essential knowledge and skills, but after a year, we are still not finished. We look forward to the university-wide discussion of academic challenge as a way of extending and informing our continued conversations.

¹ In 1929, Alfred North Whitehead wrote, “Let the main ideas which are introduced into a child’s education be few and important, and let them be thrown into every combination possible. The child should make them his own, and should understand their application here and now.” (p. 2).



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