Preservice teachers planning and preparation practices: a comparison of lesson and unit plans developed using the backward design model and a traditional model
by Lynn Marie Kelting-Gibson

A dissertation submitted in partial fulfillment of Doctor of Education in Education
Montana State University
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Abstract:
This study compared lesson and unit plans designed by elementary preservice teachers who developed their plans using the backward design model, with plans developed by elementary preservice teachers who developed their plans using a traditional model of curriculum design. The plans were evaluated using Danielson's Framework for Professional Practice by means of six components: (1) demonstrating knowledge of content and pedagogy, (2) demonstrating knowledge of students, (3) selecting suitable instructional goals, (4) demonstrating knowledge of resources, (5) designing coherent instruction, and (6) assessing student learning. The subjects who designed the plans were elementary preservice teachers enrolled in Educational Planning and Management (EDEL 401) either Spring Semester 2002 or Fall Semester 2002.

To compare the two curricular designs among all six components of planning and preparation the researcher utilized multivariate analysis of variance. To compare the two curricular designs within each specific component the researcher chose analysis of variances.

Results from the study included evidence that elementary preservice teachers who were taught curriculum design using the backward design model outperformed elementary preservice teachers who were taught curriculum design using a traditional model when developing lesson and unit plans. Similarly, preservice teachers who were taught curriculum design using the backward design model outperformed preservice teachers who were taught curriculum design using a traditional model on all six components of the framework for professional practice.

The researcher concluded that the teacher education program at Montana State University: 1) incorporate the backward design model when teaching curriculum design; 2) provide inservice on backward design for all preservice teacher educators who teach or require lesson or unit planning in their courses; 3) utilize Danielson's Framework for Professional Practice in courses for preservice teachers; and 4) use both the backward design model and the framework to help teacher educators improve upon the areas in which research has shown weaknesses in preservice teacher preparation practices.

PRESERVICE TEACHERS' PLANNING AND PREPARATION PRACTICES: A

COMPARISON OF LESSON AND UNIT PLANS DEVELOPED USING THE

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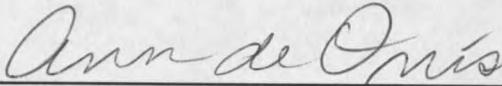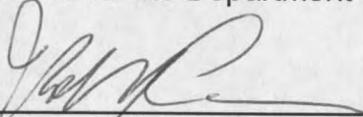
APPROVAL

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This dissertation has been read by each member of the dissertation committee and has been found to be satisfactory regarding content, English usage, format, citations, bibliographic style, and consistency, and is ready for submission to the College of Graduate Studies.

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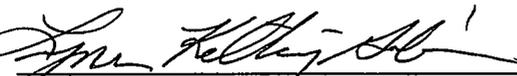
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ABSTRACT

This study compared lesson and unit plans designed by elementary preservice teachers who developed their plans using the backward design model, with plans developed by elementary preservice teachers who developed their plans using a traditional model of curriculum design. The plans were evaluated using Danielson's Framework for Professional Practice by means of six components: (1) demonstrating knowledge of content and pedagogy, (2) demonstrating knowledge of students, (3) selecting suitable instructional goals, (4) demonstrating knowledge of resources, (5) designing coherent instruction, and (6) assessing student learning. The subjects who designed the plans were elementary preservice teachers enrolled in Educational Planning and Management (EDEL 401) either Spring Semester 2002 or Fall Semester 2002. To compare the two curricular designs among all six components of planning and preparation the researcher utilized multivariate analysis of variance. To compare the two curricular designs within each specific component the researcher chose analysis of variances.

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CHAPTER 1

INTRODUCTION TO THE STUDY

Introduction

"To begin with the end in mind means to start with a clear understanding

of your destination. It means to know where you're going so that you better

understand where you are now so that the steps you take are always in the right

direction" (Covey, 1989, p. 98). When the author wrote this statement he

indicated that to varying degrees, people use this principle in many different

aspects of life. When constructing a home, for example, one designs its every

detail before he hammers the first nail. In business, one clearly defines what she

is trying to accomplish before the business even opens. The same is true in

parenting. If parents want to nurture self-disciplined, responsible children, they

keep that end in mind as they interact with their children on a daily basis (Covey,

1989).

A parallel can be drawn to the field of curriculum development. Grant

Wiggins and Jay McTighe have co-authored a book called Understanding by

Design, which follows Covey's principle of beginning with the end in mind.

Instead of using the phrase "begin with the end in mind" though, the authors use

"backward design". The same principle is applied but is used specifically for

planning curriculum.

The field of curriculum development is not static; new procedures are being suggested for changing existing curricula all the time, even though it may be a new name for an old or existing idea. However, if individuals look back over the history of curriculum development, they will learn that the backward design process is somewhat unique, not found in historical literature.

Curriculum development has been in existence since the mid-1800s when William Harvey Wells divided all students in the city of Chicago into grades and established a distinct course of study for each subject at each grade level (Tyack, 1974). In 1892, the National Education Association's Committee of Ten was charged with developing a plan for standardizing the high school curriculum. The plan was to prepare secondary school adolescents for the entrance requirements of college by using subject differentiation at public schools. Subjects recommended included history, geography, mathematics, modern languages, grammar, literature and art, physical science, and natural history (Kliebard, 1995). This central, discipline-oriented, college preparation curriculum survives to this day, as does the idea that curriculum planning is, for the most part, subject naming, specifying content, and ordering the treatment (Walker & Soltis, 1986).

These pragmatic intentions were given philosophical validation by educational theorists who believed "the task of the school was to deliver a prescribed body of subject matter, based on idealist and/or realist views of knowledge" (Dittmar, 1993, p. 6). Adding to the philosophical justification for

curriculum according to individual subject areas were those educational philosophers who favored technical approaches to curriculum development.

The technical-scientific approach is a way of thinking, a planning of curricula to optimize students' learning. "According to this point of view, curriculum development is a plan or blueprint for structuring the learning environment and coordinating the elements of personnel, materials, and equipment" (Ornstein & Hunkins, 1998, p. 196). In contrast, those in the nontechnical-nonscientific group stress "not the outputs of the production but rather the learner, especially through activity-oriented approaches to learning and teaching. Those favoring this approach note that not all ends of education can be known nor, indeed, do they need to be known in all cases" (Ornstein & Hunkins, 1998, p. 196).

The dominance of the organization of curriculum using the technical-scientific approach was apparent among public schools in the United States (Dittmar, 1993; Orstein & Hunkins, 1998). Since the 1920s, curriculum development was driven by the technical-scientific approach. Influential models developed by Charters (1923), Tyler (1949), Taba (1962), and Hunkins (1980) directed curriculum developers and teachers in their planning processes for years. All models noted similar steps in curriculum construction (see appendix B): (1) define the goals, purposes, or objectives, (2) define experiences or activities related to the goals, (3) organize the experiences and activities, and (4) evaluate the goals.

In 1998, Grant Wiggins and Jay McTighe presented a similar model but changed the order of the steps familiar to the previously mentioned curriculum developers. Wiggins and McTighe included these steps: (1) identify the desired results, (2) determine the acceptable evidence, and (3) plan learning experiences and instruction (see appendix C). The authors expected that by designing curriculum using their approach, educators would use more standard-based teaching as opposed to activity-based instruction. The latter was mostly hands-on without being minds-on. Wiggins and McTighe also expected educators would use more standards-based teaching as opposed to coverage-oriented instruction, where the teacher merely checks off topics that were covered and moves on (Wiggins & McTighe, 1998).

Typically, many teachers begin with textbooks, time-honored activities, and favored lessons rather than obtaining those tools from standards or targeted goals. The authors promote the reverse: "One starts with the end – the desired results (goals or standards) – and then derives the curriculum from the evidence of learning (performances) called for by the standard and teaching needed to equip students to perform" (Wiggins & McTighe, 1998, p. 8). The backward design the authors are advocating is "logically forward and commonsensical but backward in terms of conventional habits, whereby teachers typically think in terms of a series of activities or how best to cover a topic" (Wiggins & McTighe, 1998, p. 8). This backward approach to design also departs from another common procedure, thinking about assessment as something to do at the end of

a lesson. Backward design promotes choosing goals and standards in terms of assessment evidence as one begins to plan a course or unit (Wiggins & McTighe, 1998).

Statement of the Problem

It was not known whether the backward design approach and the traditional approach to curriculum design differed in terms of demonstrating knowledge of content and pedagogy, demonstrating knowledge of students, selecting suitable instructional goals, demonstrating knowledge of resources, designing coherent instruction, and assessing student learning when used during elementary preservice teacher education. Traditionally, preservice and inservice teachers design curriculum by writing objectives, developing experiences related to those objectives, and then deciding how to assess those experiences, in that order. Assessment often became an afterthought and was not integral to the planning. Wiggins and McTighe (1998) presented a different curriculum planning process for educators called "backward design". Backward design calls for teachers to reverse the order and determine how students are to be assessed before designing the instruction itself. Wiggins and McTighe believe this process allows for greater coherence among instructional objectives, key performances, and teaching and learning experiences.

Statement of the Purpose

The purpose of this study was to determine if variations in cultivating knowledge of content and pedagogy, demonstrating knowledge of students, selecting suitable instructional goals, demonstrating knowledge of resources, designing coherent instruction, and assessing student learning existed between lesson and unit plans designed by two groups of former Montana State University elementary preservice teachers; those from a traditionally taught Educational Planning and Management (EDCI 401) class and those from an Educational Planning and Management class taught using the backward design technique. At this stage in the research, designing a curriculum "backwards" means, "one starts with the end – the desired results (goals or standards) – and then derives the curriculum from the evidence of learning (performances) called for by the standard and the teaching needed to equip students to perform" (Wiggins and McTighe, 1998, p. 8). The traditional approach to curriculum design often includes these four steps: (1) selecting objectives or purposes of the school, (2) selecting educational experiences related to the objectives and purposes, (3) organizing these experiences, and (4) evaluating the purposes (Ornstein & Hunkins, 1998).

Rationale for the Study

Wiggins and McTighe (1998) described their "backward" design as being the most effective of curricular design strategies. The researcher was intrigued

with the philosophical underpinnings of this approach and its possible value, especially when utilized with preservice teachers; therefore, the researcher wanted to compare lesson and unit plans designed using the backward design model to those developed using the traditional curricular design process. Investigating preservice teacher's (1) knowledge of content and pedagogy, (2) knowledge of students, (3) selection of instructional goals, (4) knowledge of resources, (5) design of coherent instruction, and (6) assessment of student learning were components utilized for the comparison. These were six components that Charlotte Danielson (1996) identified as being critical when defining and describing excellence in teaching during the planning and preparation process.

Research Questions

This study sought to answer the research question: Were the population means for the scores from the planning and preparation framework the same or different for the two groups; lesson and unit plans that were designed by elementary preservice teachers having been taught a traditional method of curriculum design and lesson and unit plans that were designed by elementary preservice teachers having been taught the backward design method? Relatively little empirical research has been completed that compares any types of curriculum development processes. However, researchers focusing on enhancing professional practice have identified 22 essential components of the

complex activity of teaching clustered into four domains of teaching responsibility: planning and preparation (Domain 1), classroom environment (Domain 2), instruction (Domain 3), and professional responsibilities (Domain 4). "These responsibilities seek to define what teachers should know and be able to do in the exercise of their profession" (Danielson, 1996, p. 1). For the purpose of this study, the researcher chose to examine only domain one, planning and preparation, in order to compare the backward design method and the traditional method when used in teacher preparation.

Danielson (1996) believed the skills listed in domain one, planning and preparation, "are demonstrated primarily through the plans that teachers prepare to guide their teaching and ultimately through the success of those plans as implemented in the classroom" (p. 30). Therefore, the six components of domain one were the focus of the six sub-research questions that also guided this study:

1. Were the population means for the scores from the demonstrating knowledge of content and pedagogy component of the planning and preparation framework the same or different for the two groups?

2. Were the population means for the scores from the demonstrating knowledge of students component of the planning and preparation framework the same or different for the two groups?

3. Were the population means for the scores from the selecting instructional goals component of the planning and preparation framework the same or different for the two groups?

4. Were the population means for the scores from the knowledge of resources component of the planning and preparation framework the same or different for the two groups?

5. Were the population means for the scores from the designing coherent instruction component of the planning and preparation framework the same or different for the two groups?

6. Were the population means for the scores from the assessing student learning component of the planning and preparation framework the same or different for the two groups?

Significance of the Study

On Saturday, March 2, 2002, President Bush pledged to work to enlist a new generation of well-trained teachers to help America's children succeed in school. Highlighting his educational agenda, Bush said in his weekly radio address: "The effectiveness of all education reform eventually comes down to a good teacher in a classroom. A good teacher can literally make a lifelong difference" (Bozeman Daily Chronicle, 2002. p. A3). In 2002 Bush approved nearly three billion dollars from the education budget to be used for teacher training, recruiting, and hiring. The president said earlier in the year, "We've spent billions of dollars with lousy results. Now it's time to spend billions of dollars and get good results" (Bozeman Daily Chronicle, 2002, p. 1). If money is

going to be spent on educational reform and teacher training, it would be imperative to know on which useful strategies money should be spent.

The improvement of our nation's educational system is under greater scrutiny than ever before because of Bush's educational agenda. When designing curriculum, a vital component of teacher training, it was important to determine which curricular design process allowed for the teacher to cultivate knowledge of content and pedagogy, demonstrate knowledge of students, select suitable instructional goals, demonstrate knowledge of resources, design coherent instruction, and assess student learning, components of planning and preparation tasks required of beginning teachers (Danielson, 1996). These six components include those aspects of teaching that are expected of experienced as well as beginning teachers. Therefore, it was imperative that when planning and preparing curriculum, future educators learned to employ the curriculum process that best incorporated these six components of effective teaching.

Definition of Terms

For the purposes of this study, the following operational definitions were used. Although some of these terms are widely accepted in education, the researcher chose to include them because they often have several meanings.

1.   Acceptable evidence: The collected assessment evidence needed to document and validate that the goals, standards, or objectives were accomplished (Wiggins & McTighe, 1998).

2. Alignment: When the objectives, assessments, teaching and learning experiences, and the curriculum all support the standards or goals that were initially utilized.

3. Assessment: A broad and relatively nonrestrictive label for the kinds of measuring and testing teachers must do. It is a deliberate effort to determine a student's status regarding such variables as the student's knowledge, attitudes or skills (Popham, 1999).

4. Backward Design: "One starts with the end – the desired results (goals or standards) – and then derives the curriculum from the evidence of learning (performances) called for by the standard and the teaching needed to equip students to perform" (Wiggins and McTighe, 1998, p. 8).

5. Coherent Instruction: When the teacher translates instructional goals into learning experiences through the instructional design of the lesson or unit. Instructional goals, instruction, activities, assessments, resources, and research support each other and are a reflection of content standards (Danielson, 1996).

6. Curriculum: A plan for action, a course to be run, or a written document that includes strategies for achieving desired goals or standards (Tyler, 1949; Taba, 1962).

7.   Curriculum Development: "The process of designing a curriculum or a component of the curriculum and analyzing the impact on student learning" (Danielson & McGreal, 2000, p. 109). This includes designing lesson plans, unit plans, or a particular course of study.

8.   Elementary Preservice Teachers (K-8): "Teachers who are taking professional education courses and have been formally admitted to a teacher education program, but have not yet had sole responsibility for a classroom on a full-time, contractual basis" (Ehrig, 1992, p. 7).

9.   Enduring Understanding: The big ideas, the important understandings that we want students to retain and get inside of after they have forgotten many other details (Wiggins & McTighe, 1998).

10.   Framework for Professional Practice: Well-established definitions of expertise and procedures to certify novice teachers and strengthen practicing teachers. Such procedures are the public's guarantee that the members of the teaching profession hold their colleagues and themselves to the highest standards (Danielson, 1996).

11.   Inservice Teachers: "Teachers who have completed a teacher education program, hold at least a bachelor's degree, and have sole responsibility for a classroom on a full-time, contractual basis" (Ehrig, 1992, p. 7).

12.   Instructional Goals: Clear purposes stated in terms of student learning. They are "worthwhile and represent learning central to a discipline as well as high-level learning for the students" (Danielson, 1996, p. 68). They

must take into account state and local standards, a district's curriculum, and the requirements of external mandates.

13.   Objectives: A description of a learning outcome, describes where we want students to go and they pinpoint the destination (Price & Nelson, 1999).

14.   Progressivism: "A contemporary reform movement in educational, social, and political affairs" (Ornstein & Hunkins, 1998, p. 45).

15.   Standards: What every student should know and be able to do in each content area. Standards can be national, state, or local. Standards should apply equally to students of all races and ethnicities, from all linguistic and cultural backgrounds, both with and without special needs.

16.   Traditional Curriculum Design: Often includes the following steps when developing curriculum: (1) selecting objectives or purposes of the school, (2) selecting educational experiences related to the objectives and purposes, (3) organizing these experiences, and (4) evaluating the objectives or purposes (Ornstein & Hunkins, 1998).

Assumptions

Charlotte Danielson (1996) established several assumptions about the uses of frameworks for professional practice: (a) given the complexity of teaching, a professional framework is invaluable for novice teachers, (b) veteran teachers who rarely devote time to professional dialogue and sharing techniques will find using a framework for professional practice a means of providing the

opportunity for genuine professionalism, (3) with a framework of professional practice in hand, educators can conduct conversations about where to focus improvement efforts, and (4) through the use of a framework for professional practice, educators can "define clearly what constitutes excellence in teaching. . . to the general public" (Danielson, 1996, p. 7). Further, the framework for professional practice can be utilized in the evaluation of the planning and preparation process; therefore, for the purposes of this study it was assumed that the research conducted using the framework for professional practice transferred to effective evaluation practices when assessing unit and lesson plans from both the backward design and traditional approaches.

Students learn to plan lessons and units using a variety of formats and designs. The experimental group used the backward design format and the control group used the traditional format. Therefore, another assumption was the students in each section used the formats provided.

Limitations and Delimitations

Workshops and college courses throughout the country put emphasis on the use of backward design when discussing curriculum development. Dr. Judith Hilton, professor of secondary education at The Metropolitan State College of Denver used <u>Understanding by Design</u> in her college courses with notable results ("Using Understanding by Design," 2002). Workshops such as "Assessment, Evaluation, and Curriculum Redesign"(2002) and "Relearning by

Design" (2002) also emphasized the work of Wiggins and McTighe. Although

state-by-state, as well as district-by-district efforts to find the most effective

curriculum/lesson plan format has grown and will continue to grow as a direct

result of the book Understanding by Design, selection of subjects for this study

were limited to a population comprised of a convenience sample of Educational

Planning and Management students (EDEL 401) from one four-year public,

comprehensive, land-grant university. For this reason, findings were not broadly

generalizable to findings in other districts, states, or regions of the country.

However, Cronbach, et al. (1980) suggested that creating a research design that

balances "depth and breadth, realism and control" permits "reasonable

extrapolation" or "modest speculations on the likely applicability of findings to

other situations under similar, but not identical conditions" (p. 231). The design

of this study reflected Cronbach's criteria through a focus on quantitative

methodology including an information-rich sample and careful attention to data

collection and data analysis protocol (Betances, 1999). Consequently, in chapter

five, extrapolations from this researcher's findings resulted in lessons learned

and potential applications to future curriculum design efforts.

Summary

This study focused on the value of the backward design model as

preservice teachers in the elementary education program at Montana State

University developed lesson and unit plans utilizing this design. Charlotte

Danielson (1996) developed a six-component framework for determining the effectiveness of preservice and inservice teachers' ability to design valuable instruction and organize the content that the students are to learn. The framework was the rubric used to compare lesson and unit plans from both the experimental group and the control group.

CHAPTER 2

REVIEW OF THE LITERATURE

Introduction

This study was designed to examine the question underlying the backward design approach as presented in the text Understanding by Design (1998): Were the population means for the scores from the planning and preparation framework the same or different for the two groups; lesson and unit plans that were designed by elementary preservice teachers having been taught a traditional method of curriculum design and lesson and unit plans that were designed by elementary preservice teachers having been taught the backward design method? This design was supported by an empirical knowledge base of Grant Wiggins and Jay McTighe, who developed the backward design method.

The research for this literature review was divided into four sections. The first section traced the process of curricular design as it related to development and change from its inception in the 1850s. Changes in curriculum were presented as they lead up to the innovative backward design approach.

The second focused on the backward design approach, the research base for the design, and similar designs such as standards-based education. There have been a few other developments in curricular design that were similar and those were discussed in this section.

Section three discussed the framework that was used to compare the backward design approach to the traditional curriculum design process. The framework included six components that were essential when planning and preparing curriculum. The six components were demonstrating knowledge of content and pedagogy, demonstrating knowledge of students, selecting instructional goals, demonstrating knowledge of resources, designing coherent instruction, and assessing student learning. Each component was presented individually. The six components are what preservice teachers should know and be able to do when planning and preparing curriculum.

Section four considered preservice teacher preparation in the six different areas referred to in the evaluation framework. This final section revealed strengths and several weaknesses in preservice teacher education in the planning and preparation stage.

Historical Foundations of Curriculum

Section one of the literature review examined a century of changes in curriculum content and curriculum development. Most of the changes that took place were a direct result of past and current world events. The history started in the mid-1800s and ended during the 1980s. In this section there were two types of curriculum discussed. One was the content, or the topics and material, which were covered during a certain timeframe. The other type was development, or the process of creating a curriculum that meets the needs of the students.

Universal Education

During the mid-1800s schools in the United States began dividing students into different classes according to their age. In urban communities with more and more children attending school, this became an essential and practical step in keeping class numbers down and student abilities somewhat similar. By 1860 most of the schools in cities and large towns were graded. The proper classification of students was only the beginning for this new graded system. The next step was to design a course of study and examinations for each grade level.

From 1856 to 1864, William Harvey Wells was the superintendent of the Chicago public schools. "Almost single-handedly, Wells divided over 14,000 children into ten grades and assigned 123 teachers to these primary and grammar grades. Each teacher was expected to follow a uniform schedule for teaching the subjects of spelling, arithmetic, and reading" (Tyack, 1974, p. 45). In 1862, Wells published A Graded Course of Instruction with Instructions to Teachers which outlined specific material to be covered in each subject at each grade level and prescribed proper teaching methods. Wells' book was widely adopted in many cities as an official curriculum (Tyack, 1979).

Transitional Period

In the 1890s the development of curricula began. The 1890s brought a heightened public awareness of changes in American society. Growth in popular journalism, rapid advancements in railroads as a means of transportation, growth

of cities, and the influx of students into secondary schools were significant factors

in the transformation of American society. America changed from relatively

isolated, self-contained communities into an urban, industrial nation (Kliebard,

1995). With the changes taking place, the National Education Association (NEA)

organized three committees between 1892 and 1895: the Committee of Ten on

Secondary School Studies, the Committee of Fifteen on Elementary Education,

and the Committee on College Entrance Requirements. The three committees

were charged with determining curricula for schools (Orstein & Hunkins, 1998).

The Committee of Ten, chaired by Charles W. Eliot, president of Harvard

University, identified in their report nine academic subjects as central to the high

school curriculum. The classes were (1) Latin; (2) Greek; (3) English; (4) other

modern languages; (5) mathematics (algebra, geometry, trigonometry, and

higher or advanced algebra); (6) physical sciences (history, civil government, and

political economy); and (9) geography, geology, and meteorology (National

Education Association, 1894). The committee also recommended four courses

of study or programs in the high school: (1) classical; (2) Latin scientific; (3)

modern languages; and (4) English. Each program included offerings of the nine

courses to varying degrees (Kliebard, 1995; Ornstein & Hunkins, 1998).

The Committee of Ten took a position that all students, regardless of their

course of study, were to be entitled to the best ways of teaching the various

subjects. Despite this position, the committee indirectly tracked college-bound

students into the first two superior programs, Classical and Latin Scientific,

calling Modern Languages and English "distinctly inferior to the other two" (Report of the Committee of Ten on Secondary Schools, 1894, p. 48). The first two programs were more likely to provide the requirements needed for college acceptance. The Committee ignored art, vocational education, physical education, and music, arguing that these courses contributed little to mental discipline (Kliebard, 1995; Ornstein & Hunkins, 1998). The Committee did agreed to allow local school authorities to determine how these extra subjects should be introduced into the programs if they chose to include them (Report by the Committee, 1894).

The second committee, The Committee of Fifteen on Elementary Education, lead by superintendent of schools William H. Maxwell of Brooklyn, New York, was heavily influenced by Charles Eliot and the Committee of Ten. The Committee reduced the number of elementary grades from ten to eight and stressed the three Rs, as well as history, geography, English grammar, and literature (Orstein & Hunkins, 1998). The idea of newer or interdisciplinary subjects was rejected because an elementary education was preparation for high school, and courses taught in the elementary grades should reflect the high school curriculum.

The third committee, established in 1895 by the National Education Association, was the Committee on College Entrance Requirements. Consisting mainly of university and college presidents, the Committee recommended strengthening the college preparatory elements of the high school curriculum.

They believed the admission requirements and classical subjects for mental training best served all students. "It also made recommendations regarding the number of credits required in different subjects for college admission . . . and served as a model for the Carnegie Unit, a means for evaluating credits for college admission" (Orstein & Hunkins, 1998, p. 80), which is still in existence today in most high schools.

These committees were instructed to bring consistency and order into rather diverse and somewhat muddled programs. Their responsibility was to make recommendations regarding content and organization of elementary and secondary school curricula. During this period committee leaders and members tended to be content specialists and university professors who often recommended college preparatory curriculum (Taba, 1962). Unfortunately local school systems adopted them without thinking about students who were not on the college track.

With more and more students attending elementary and secondary schools during the early 1900s, demands arose for changes in schools to meet the needs of a changing society. "The pace of industrial development and immigration led a growing number of educators to question the classical curriculum and the constant emphasis on mental discipline and incessant drill" (Orstein & Hunkins, 1998, p. 80). The scientific movement in education and psychology influenced this shift in curriculum in the late nineteenth and early twentieth centuries. Most notably the social theories of Darwin, Spencer, and

Herbart; the pragmatic theories of William James and Charles Peirce; and the pedagogical impact of Montessori, Froebel, Pestalozzi, helped shape school curriculum at this time. The scientific movement rejected the classical curriculum and instead, put emphasis on technical, vocational, and scientific subjects – fitting into the concurrent age of industrialism, materialism, and colonialism (Orstein & Hunkins, 1998).

Abraham Flexner, John Dewey, and Charles Judd also influenced the Commission on the Reorganization of Secondary Education. Flexner proposed a "modern" curriculum which consisted of four basic areas: (1) science (the major emphasis of the curriculum); (2) industry (occupations and trades of the industrial world); (3) civics (history, economics, and government); and, (4) aesthetics (literature, languages, art, and music) (Flexner, 1923).

Dewey argued that subjects could not be placed in an order of importance and that attempts to do so were erroneous. Any study or body of knowledge was capable of expanding the child's experience, and experiencing – that is, being stimulated to internalize and develop intellectual capabilities – was the process of educating the child (Dewey, 1916). Dewey did consider science, scientific inquiry, and the method of inquiry to be the best forms of knowledge for a society; thus he elevated the place of science in education (Orstein & Hunkins, 1998).

Charles Judd was a colleague of Dewey's who, like Dewey and others, "constructed a science of education based on the methods of finding facts and

then applying them as a basis for reasoning out solutions to problems and for making decisions" (Orstein & Hunkins, 1998, p. 83). By preparing students to make decisions and deal with problems, he believed students would be ready for the changing world and the problems they would encounter as adults. In his book The Scientific Study of Education, Judd was concerned with what he called "systematic studies . . . of the curriculum" (Judd, 1918, p. 197). To systematize curriculum would be to apply scientific strategies, and "the purpose of scientific studies here, as in every other sphere, is to facilitate natural evolution and to give it rational guidance" (Judd, 1918, p. 200).

Reorganization of Education

In 1918 the NEA Commission on the Reorganization of Secondary Education published the Cardinal Principles of Secondary Education, which, as previously noted, was influenced by Flexner and Dewey. The purpose of this commission was to establish a basis for designing a curriculum that would serve all youth, not just those entering college (Perkinson, 1965). The Commission emphasized the whole child (not just the cognitive area of study), education for all youth (not just college-bound students), diversified areas of study (not classical or traditional), common culture, ideas, and ideals for a democratic society (not religious, elitist, or mental, discipline learning) (Cardinal Principles, 1918). The Commission on the Reorganization of Secondary Education became an important component in progressive education.

The Cardinal Principles were a stepping-stone toward what society needed and wanted at this time. Most importantly, there was acknowledgement of the responsibility of schools to serve all children and youth, not just those who were college-bound. The Commission on the Reorganization of Secondary Education, Abraham Flexner, John Dewey, and Charles Judd were all a part of the era of progressive education that was about to impact schools; the traditional education, which had dominated American education for so long, was now vanishing (Orstein & Hunkins, 1998).

Society was changing; because of industrialization, certain social institutions such as family and church were believed to be in a state of decline. Education was to be thoroughly restructured in order to take up the slack. Kliebard (1995) believed

> The scope of the curriculum needed to be broadened beyond the development of intelligence to nothing less than the full scope of life activities, and the content of the curriculum had to be changed so that a taut connection could be maintained between what was taught in school and the adult activities that one would later be called to perform. (p. 77)

As a result of this state of decline, curriculum became more than just subjects and the amount of time needed to study each subject; curriculum was now viewed as a science. Curriculum-makers needed to devise programs of study that prepared individuals specifically and directly for the role they would play as adult members of a changing society. They would also examine the ideas of planning and describing curriculum using principles and methodology – topics of which were now being studied in the literature.

<u>Curriculum as a Field</u>

Several researchers, including Bobbit, Charters, Kilpatrick, Rugg, and Caswell, added literature to the new field of curriculum. Authors presented new information describing their view of curriculum and how it should be developed. Franklin Bobbit published a book called <u>The Curriculum</u>, which was considered by some to be the first book solely about curriculum as a science. Bobbit outlined the principles of curriculum planning focusing on an activities approach, which he defined as "a series of things which children and youth must do and experience by way of developing abilities to do things well and make up the affairs of adult life." The purpose of curriculum, Bobbit believed, was to outline the knowledge that would be important for each content area, and then to develop activities to train the learner and improve his or her performance (Bobbit, 1918, p. 42).

In his later book, <u>How to Make Curriculum</u>, Bobbit (1924) states "Curriculum-making must find guiding principles which will lead it with all the certainty that is possible in the right directions . . . that education is to prepare men and women for the activities of every kind which make up well-rounded adult life" (p. 7). Being prepared for the life of an adult was considered the main purpose of developing curriculum.

The first task of curriculum makers was to determine which activities ought to make up the lives of women and men. Along with these, the individual qualities and skills necessary for proper achievement – called educational

objectives – were included. Bobbit's method for choosing objectives was quite sophisticated for the period, and most guidelines can also be applied today: (1) choose objectives that are for all students, not just a few; (2) emphasize objectives that are important for adult living and success; (3) choose practical objectives; (4) avoid objectives that disagree with the community; (5) involve the community when choosing objectives; and (6) establish criteria for objectives.

The sixth guideline for choosing objectives directs curriculum developers into the next step of the curriculum development process: establishing specific activities and criteria related to the objectives. This final step in the development process allows educators to establish how far students will go each year in attaining the objectives. By establishing criteria, teachers can determine whether students have the abilities to perform activities properly (Bobbit, 1924).

Werrett Charters advocated a very similar approach to Bobbit's form of curriculum development. He viewed the curriculum as a series of objectives determined by variations of ideals that students must attain by way of variations of activities (Charters, 1923). In addition, though, he felt objectives were observable and measurable. Charters did not use the term assessment or evaluation, but instead started thinking about how the objectives could be verifiable. Charters also believed in evaluating the materials used to realize the objectives. He stated, "we are confronted by the task of evaluating the material so as to provide the learner with the best or with one or more alternatives of

equal value" (Charters, 1923, p. 78). It wasn't until years later that the term evaluation was actually used (Orstein & Hunkins, 1998).

Both Bobbit and Charters had a deep impact on curriculum development, as did several others. One of those activity-centered curricularists was William Kilpatrick. In 1918 Kilpatrick wrote an article called "The Project Method", where he stated, "We have a wholehearted purposeful act carried on amid social surroundings" (p. 321). Kilpatrick believed each person has a purposeful act, on which to follow through, in order to accomplish the objective or aim. Some advocates thought this idea of "purposeful act" was innovative and new, but most believed it was rooted in the curriculum ideas of Bobbit and Charters who stressed similar ideas using objectives and related activities. Kilpatrick argued that his ideas were different in that the child should plan curriculum. "We saw how far intent and attitude go in determining learning. These are at their best when pupils engage actively in enterprises they feel to be their own, for which they accept the responsibility" (Kilpatrick, 1932, p. 119).

Leaders of curriculum development such as Kilpatrick, Bobbit, Charters, Rugg, Whipple, and several others, formed a committee that developed two volumes of The Twenty-Sixth Yearbook of the National Society for the Study of Education (NSSE). Part I, Curriculum-Making: Past and Present (1926) and Part II, The Foundations of Curriculum Making (1930) were both landmark texts that criticized traditional curriculum, synthesized progressive practices, described the nature of curriculum making, and outlined characteristics of the ideal curriculum.

The committee recognized the need for curriculum reform and the need for "those who are constructing our school curriculum" to determine "an overview . . . and orientation . . . to curriculum making" (Rugg, 1926, p. 1).

Harold Rugg, the chairperson of the NSSE Yearbook, defined the role of the curriculum specialists. Their role was to plan curriculum in advance and to include four tasks: (1) "a statement of objectives, (2) a sequence of experiences to achieve the objectives, (3) subject matter found to be . . . the best means of engaging in the experiences, and (4) statements of immediate outcomes of achievements to be derived from the experiences" (Rugg, 1926, pp. 52-53). Rugg concluded that curriculum was adapting scientific methods and that there was a need for specialization and for professional training (Rugg, 1926).

In 1928, Harold Rugg coauthored The Child-Centered School with Ann Shumaker. In an era that stressed children becoming involved in the development of their own curriculum, the authors emphasized the need for curriculum specialists to preplan curriculum using their scientific and technical knowledge and for the teacher to implement the curriculum (Rugg & Shumaker, 1928). Rugg and Shumaker discussed the important role of the curriculum maker. The authors didn't agree with the idea of using student input, but instead, advocated cooperation among educational professionals from different areas, including classroom teachers, curriculum specialists, test experts, and administrators (Orstein & Hunkins, 1998).

Throughout the 1920s and 1930s, researchers claimed curriculum specialists, administrators, and classroom teachers, rather than students, developed curriculum. Most local and state districts were developing their own curriculum guides with the selection of methods and activities being left to the teachers. Caswell and Campbell (1935) were concerned that this practice of curriculum development was limited. Rather, they thought curriculum represented a method of incorporating the scientific process, organization, instruction, and evaluation. "An adequate curriculum can be developed only when all elements in the experience of the learner are considered, and when an orderly program is provided to assist the teacher in bringing these varied elements into suitable relationships" (p. 69). For the authors, curriculum represented a procedure or process, rather than a limited body of content.

The process that Caswell and Campbell used for curriculum development involved several ideas and are listed as follows: (1) state the principles presumed to guide the development of the curriculum; (2) determine the educational aims; (3) establish the scope of the curriculum; (4) determine the student purposes; (5) set up activities for realization of purposes; (6) select subject matter; (7) decide on the grade placement and time allotment of presenting materials; (8) choose teaching procedures; (9) evaluate the outcomes of instruction; and, (10) organize instruction (Caswell & Campbell, 1935).

These ideas grew from Hollis Caswell's position as the curriculum advisor for the state of Virginia from 1931-1932. It was Caswell who created a radically

new and different statewide course of study for elementary education. Kliebard

(1995) stated of Caswell

> A new curriculum device, the scope and sequence chart, was developed,
> a kind of deliberate cross-hatching of two approaches to organizing the
> curriculum: one, the major functions of social life's curriculum drawn from
> longstanding, social efficiency ideas, provided the scope, the actual
> subject matter of the study; the second, centers of interest, provided the
> sequence of these activities by attending to the interests that children
> presumably exhibited as they proceeded from early childhood to later
> maturity. (pp. 192-193)

Progressivism

Although the progressive movement in education was influential in some

areas of the country, traditional methods and subject matter still dominated the

school curriculum. Because of its college preparatory emphasis (i.e., being test

driven and dominated by college entrance admission requirements) traditional

curriculum was difficult to think about replacing. Nevertheless, many community

members, administrators, and educators supported efforts to stimulate curriculum

reform, partially abandoning the traditional approach.

One of those efforts was to embrace the progressivist philosophy.

"According to progressivist thought, the skills and tools of learning include

problem-solving methods and scientific inquiry. . . . heavy emphasis is placed on

how to think, not what to think. . . . the curriculum is interdisciplinary. . . . and, the

teacher helps students locate, analyze, interpret, and evaluate data" (Orstein &

Hunkins, 1998, p. 46). From 1932 to 1940, the Progressive Education

Association assumed one of the most ambitious efforts to determine which

curriculum was more effective in preparing students for their future, a progressive curriculum or a traditional curriculum. The research became known as the Eight-Year Study. In this study twenty-nine progressive or experimental high schools implemented their own curriculum to see whether the traditional curriculum was more effective than a progressive curriculum. The study found the experimental or progressive group did just as well or better for college preparation (Kliebard, 1995; Orstein & Hunkins, 1998).

In the Eight Year Study the authors declared, "it was assumed that education is a process which seeks to change the behavior patterns of human beings" (Smith & Tyler, 1942, p. 11). As a result of the study, members confirmed the need for comprehensive evaluation, as part of curriculum development. Members also advocated the infusion of behavioral objectives in curriculum thinking (Kliegard, 1995). Even though the members of the Eight Year Study reported plans to improve curriculum, ideas developed did not filter down to schools because teachers were not actively involved in the curriculum planning process. Curriculum making was frequently a top-down progression with curriculum guides being developed by central offices (Kennedy-Manzo, 1999; Kliegard, 1995; Taba, 1962).

Ralph Tyler played a key role in the evaluation of the Eight Year Study, and some of his ideas were the basis of the evaluation component of the Study (Orstein & Hunkins, 1998). Tyler went on to publish numerous articles and books related to evaluation, curriculum, and instruction. His most famous book, Basic

Principles of Curriculum and Instruction, became an important resource for curriculum makers in any subject or grade level. Tyler (1950) covers four basic questions curriculum developers need to answer when writing curriculum and planning instruction: "(1) What educational purposes should the school seek to attain? (2) What educational experiences can be provided that are likely to attain these purposes? (3) How can these educational experiences be effectively organized? and, (4) How can we determine whether these purposes are being attained?" (p. 1).

In a short, easy-to-understand way, Tyler gave many curriculum developers a simple model in which to prepare most school curricula. "The Tyler model summed up the best principles of curriculum making for the first half of the twentieth century. This model has been utilized and adapted by many curricularists. In fact, many practitioners in schools consider the Tyler model as a metanarrative of the way to create curricula" (Orstein & Hunkins, 1998, p. 93). Both Tyler and Caswell developed curriculum models that, in variations, are still widely used today to design curricula.

Curriculum for all Students

By 1940, foundations discontinued subsidizing research in the area of curriculum development. Instead, World War II was beginning to divert the country's attention to the more important issue of national defense; but, by the mid-'40s, American education was back in the spotlight.

Schools were failing to design programs that met the needs of all students, especially those who were not entering college-prep or vocational programs. Policymakers and researchers were determined to make education more functional by rewriting the high school curriculum. The newly developed curriculum was called life adjustment education, which "better equips all American youth to live democratically with satisfaction to themselves and profit to society as home members, workers, and citizens" (Ravitch, 1983, p. 66). The curriculum consisted of courses such as guidance and education in citizenship, home and family life, use of leisure, inter-group education, health and safety, tools of learning, human relationships, work experience, and occupational adjustment (Ravitch, 1983). The idea for "life-adjustment education" came from a study commissioned in 1945 by the U.S. Office of Education. This curriculum was utilized in the late 1940s and early 1950s until the United States fell behind in the space race with the Soviet Union's launch of Sputnik in 1957. At this time schools were again forced to re-evaluate the curriculum (Manzo, 1999). In response, the National Defense Act of 1958 called on the National Science Foundation to restructure curricula in science, math, and foreign languages. A few years later the law was expanded to include English and social studies (Manzo, 1999).

As the civil turmoil of the 1960s erupted, academic rigor took a back seat to educational unrest. Groups of minorities, women, and the handicapped demanded equality and pushed to get their viewpoints added to the curriculum.

They promoted a more "balanced curriculum that incorporated the contributions of all people" (Manzo, 1999, p. 16).

In the 1970s public concern erupted over poor performance on international mathematics and science assessments, declining student test scores, and challenges within the country to the nation's claims of equal educational opportunity for minority students (Education Commission of the States, 1996). Even though test scores and the overall performance of minority students had improved since the early 1980s, concern did not decrease (Berliner & Biddle, 1995; Education Commission of the States, 1996). Instead, it became increasingly evident that in the next century education would be the key – not only to individual quality of life, but also to the economic health of the nation (Betances, 1999; Marshall & Tucker, 1992; Reich, 1991).

Curriculum Models

Changes such as these, involving curriculum content, were often in direct response to world events. Content changed to meet the needs of society during different time periods. In the case of curriculum development methods, that wasn't always so; models of developing curriculum withstood the tests of time. The Tyler model of curriculum development was one of those models. Tyler used four simple questions that teachers would answer in order to plan curriculum. What educational purposes should the school seek to attain? What educational experiences can be provided that are likely to attain these purposes? How can these educational experiences be effectively organized? How can we

determine whether these purposes are being attained? These still had great appeal because the questions were so reasonable. In the 1960s, a colleague of Tyler's, Hilda Taba, also made her mark in the field of curriculum development by expanding on Tyler's model and developing her own.

Taba used many of Tyler's ideas except she developed an approach that included the teachers in the development process. Tyler designed his questions to be utilized by administrators, content specialists, and curriculum makers – more of a top-down approach. Taba's (1962) seven major steps to the model included (1) diagnosis of needs, (2) formulation of objectives, (3) selection of content, (4) organization of content, (5) selection of learning experiences, (6) organization of learning activities, and (7) evaluation and means of evaluation. Educators everywhere have used Taba's model. Many believed it had much merit, but others felt it puts too much emphasis on the teacher. Teachers may not have the expertise or the time needed to design effective curriculum. Nevertheless, Taba's model made it clear that there has been and will continue to be a broad base of involvement that is essential for curriculum decision-making.

In the late 1970s Francis Hunkins developed what he called a Decision-making Model. It is similar to other models with the exception of the first stage of curricular decision-making: curriculum conception and legitimization. The first stage requires curriculum developers to engage in a search for understanding, besides just creating an educational program. The other six stages include

diagnosis, content selection, experience selection, implementation, evaluation, and maintenance (1980).

The work of Madeline Hunter and her colleagues at UCLA began during this same time period. "They developed a set of prescriptive teaching practices designed to improve teacher decision making and thus enhance student learning" (Danielson & McGreal, 2000, p. 13). Hunter developed a lesson design that included seven steps: (1) anticipatory set, (2) statement of objective, (3) instructional input, (4) modeling, (5) checking for understanding, (6) guided practice, and (7) independent practice. The Hunter model guided views of teaching into the 1980s and started a trend toward instructionally focused staff development that continues to this day (Danielson & McGreal, 2000).

Today, researchers and content specialists continue the struggle to find the perfect model for curriculum development. Annually, they negotiate the changes in curriculum content in response to the needs of society. The information presented in this section offers a descriptive view of what has taken place in the area of curriculum and curriculum development over the past century. The material presented represents the key players who had a major influence in education.

The next section is a continuation of the history section, in that it is an overview of curriculum over the past two decades; but this section more thoroughly connected the relevance of researchers' writings with that of backward design. The 1980s and 1990s were two very important decades,

which influenced Grant Wiggins and Jay McTighe when they developed their method of curriculum design called backward design.

Backward Design

Backward design is a process of curriculum development that integrates the works of Jerome Bruner and his colleagues from the 1960s and 1970s, and later, the Teaching for Understanding project of Howard Gardner, David Perkins, and their Project Zero Colleagues in the 1980s. Even though Grant Wiggins' and Jay McTighe's book was published several years later, studies and research done in the 1980s and 1990s helped identify key components of their design. This section of the literature review presents the information that facilitated the development of the backward design process. What the literature review was unable to present was the comparison of the innovative backward design model with other models. Very little research, if any, has been conducted in this specific area.

Grant Wiggins is the President and Director of Programs for Relearning by Design. He is the author of several assessment books and has written many articles for a variety of journals. Jay McTighe is an independent consultant who has worked with more than a thousand educators over the past six years in a "work smarter" approach to designing, validating, reviewing, field-testing, and anchoring performance tasks. He has also published several articles and books related to educational development (Relearning by Design, 2002). The research

base for the theory was the outgrowth of 15 years of research by these two authors. Much of the conceptual structure came from Grant Wiggins and his colleagues at Relearning by Design, and his earlier work with the Coalition of Essential Schools. In addition, Relearning by Design sponsored a national curriculum design award process for several years. The entries and winners helped define many of the central ideas in Understanding by Design (Wiggins & McTighe, 2002).

Cognitive Learning

When Wiggins and McTighe first started work on their design, they wanted to make sure that their work was intellectually rigorous while focused on student inquiry. Jerome Bruner's and his colleagues' work on the cognitive learning model and constructivist theory played an important role in this component (Wiggins & McTighe, 2002). "Bruner's constructivist theory was a general framework for instruction based upon the study of cognition" (Kearsley, 2002, p. 1). A major premise in Bruner's framework was that learning was an active process in which learners constructed new ideas based upon their current or past knowledge while interacting with new information. "The learner selects and transforms information, constructs hypotheses, and makes decisions, relying on a cognitive structure (i.e., schema, mental models) to do so" (Kearsley, 2002, p. 1). The learner "focuses on the 'how' to learn, rather than 'what' to learn" (Craig & Reed, 2002, p. 1).

While developing their model of curriculum development, the authors kept Bruner's (1973) three basic principles in mind: "(1) Instruction must be concerned with the experiences and contexts that make the student willing and able to learn (readiness), (2) Instruction must be structured so that it can be easily grasped by the student (spiral organization), and (3) Instruction should be designed to facilitate extrapolation and or fill in the gaps (going beyond the information given)" (Kearsley, 1994, p. 2). Later, in this manuscript, when the backward design is explained in more detail, the constructivist theory will surface as an important element of the design.

Teaching for Understanding

Another example of research that shaped the views of the authors and parallels their work is the Teaching for Understanding Project of Howard Gardner, David Perkins, and their colleagues at Harvard. Readers of Understanding by Design and articles from the Teaching for Understanding Project will notice many similarities between the pieces of work. Besides having worked with researchers from Harvard, the authors also integrated research done on authentic learning by Fred Newmann over the past decade (Wiggins & McTighe, 2002).

Project Zero. Both Perkins and Gardner were working at Project Zero at the time the authors worked with them. Project Zero, which was actually a research group from the Harvard Graduate School of Education, has been an

organization for over 34 years. "Project Zero's mission was to understand and enhance learning, thinking, and creativity in the arts, as well as humanistic and scientific disciplines, at the individual and institutional levels" (President and Fellows of Harvard College [PFHC], 2000, p. 1). Project Zero was founded by the philosopher Nelson Goodman, who believed that "arts learning should be studied as a serious cognitive activity, but that "zero" had been firmly established about the field; hence, the project was given its name" (PFHC, 2000, p. 1). " Project Zero researchers study human cognition in a range of domains and seek to apply their findings to the improvement of thinking, teaching, and learning in diverse educational settings" (Wiske, 1998, p. 5)

From 1972 to July 1, 2000, Howard Gardner and David Perkins served as co-directors of Project Zero. During that time the researchers involved in the project maintained a strong commitment in the arts and other disciplines. They studied individuals and groups of students mostly in American public schools, particularly those from disadvantaged areas. Project Zero's work was seen in numerous publications, and was written by the many researchers who worked in the program (PFHC, 2000). The information presented in this research was that of Howard Gardner, David Perkins, and their colleagues because of their impact on the authors of Understanding by Design.

The work of Grant Wiggins and Jay McTighe parallels the teaching for understanding work done by Perkins and Gardner. Each author conducted

research in specific areas of teaching for understanding and will be presented

separately and together in the following paragraphs.

David Perkins. David Perkins conducted long-term programs of research

and development in the areas of teaching and learning for understanding,

problem solving, creativity, reasoning in the arts, sciences, and everyday life;

more recently, he studied the role of educational technologies in learning and

teaching, and strategies that enhance learning in organizations (PFHC, 2000).

The information presented here covered developments in the areas of teaching

and learning for understanding as they correlate to backward design.

David Perkins (1992, p. 2) stated, "We know a lot about how to educate

well. The problem comes down to this: We are not putting to work what we

know." In his book Smart Schools and in several other articles, Perkins

addressed how students were learning but had a strikingly superficial

understanding of what had been taught (Perkins, 1991; Perkins, 1992; Perkins,

1993; Perkins & Blythe, 1994). It is important for students to develop

understanding, not just memorize facts and figures (Wiske, 1998). Perkins

placed understanding at the forefront of his research.

In 1988-89, Project Zero directors Gardner, Perkins, and Perrone brought

together university and public school colleagues to arrange research toward

pedagogy of understanding. Teachers from numerous schools participated in a

series of meetings where they were taught to use a framework for developing a

curriculum unit. The teachers used the framework and made suggestions for

improvement. From this, the researchers developed the Teaching for Understanding Framework (Wiske, 1998). The framework provides teachers with a language for developing, discussing, and implementing a particular topic or an entire course.

The framework highlights four key areas. The first area is *generative topics.* These are topics, themes, concepts, or ideas that are central to the subject matter, interesting to students, accessible, interesting for teachers, and ". . . help people understand and deal with the world" (Perkins, 1992, p. 5). Generative topics lend themselves to teaching for understanding. The second concept is clarifying what students will understand by formulating *understanding goals* – specific objectives from the generative topics. To build focus, a teacher generates a few understanding goals for a lesson or unit of instruction.

Third, teachers foster student understanding by designing *performances of understanding* that support understanding goals. Students should be engaged in performances from the beginning to the end of a unit that utilize higher level thinking skills. The fourth concept of the framework is the need to measure students' understanding through *ongoing assessments.* Traditionally, teachers assess at the end of a lesson or even a unit. The researchers recommend that students need criteria, feedback, and reflection from the beginning to the end of instruction – a process called ongoing assessment (Perkins & Blythe, 1994; Wiske, 1998).

David Perkins suggested choosing generative topics as the first step in Teaching for Understanding. The generative topics are developed from the variety of disciplines in which teachers teach. Gardner and Boix-Mansilla (1994) encouraged the use of essential questions that promote understanding of generative topics. Essential questions are those which students arrive at independently and often have a deeply personal answer. Essential questioning is a key component of Wiggins and McTighe's backward design.

Perkins' research and other research by Project Zero were in response to the mediocre educational system in the United States. In the 1980s public concerns were fueled by the publication of what has since become perhaps the most well-known interpretation of the gap between the future requirements of American citizens and the schooling provided by the current system of education: A Nation at Risk: The Imperative for Educational Reform (National Commission on Excellence in Education, 1983). This report, which warned of the threatening results of an American education characterized by a "rising tide of mediocrity" (p.5), was viewed by many Americans as the single most important event launching the movement to develop high and clearly developed academic standards for all students (Marzano & Kendall, 1996).

Howard Gardner. Gardner (1991) also responded to the raft of books and reports about the "educational crisis". He felt the descriptions of failing schools were accurate, but didn't go far enough. Even when schools appeared to be successful, they fail to achieve their most important mission. ". . . even students

who have been well trained and who exhibit all the overt signs of success –
faithful attendance at good schools, high grades and high test scores, accolades
from their teachers – typically do not display an adequate understanding of the
materials and concepts with which they have been working" (p. 3).

Howard Gardner is best known in the field of education for this theory of
multiple intelligences, but he was also involved in Teaching for Understanding
research. Gardner felt strongly that, "students do not understand, in the most
basic sense of that term, that is, they lacked the capacity to take knowledge
learned in one setting and apply it appropriately in a different setting. Study after
study has found that, by and large, even the best students in the best schools
can't do that" (Brandt, 1993, p. 1). This led Gardner to do more research in the
area of authentic instruction or what is also called real-life instruction. Gardner
believed that there were two ways to develop understanding that were more
authentic: apprenticeships and children's museum-type programs. He felt these
learning situations minimize mindless learning and maximize students'
understanding of why they are doing things. Students in these settings were free
to try things out in new ways (Brandt, 1993).

Of those students who were given the opportunity to try things out in new
ways, many came to know the field of study in their own ways. Gardner "posited
that all human beings are capable of at least seven different ways of knowing the
world – labeled the *seven human intelligences*" (Gardner, 1991, p. 12).
According to this analysis we are all able to know the world through language or

linguistic intelligence, logical-mathematical analysis, spatial representation,

musical thinking, the use of the body to solve problems or bodily kinesthetic

intelligence, an understanding of other individuals or interpersonal intelligence,

and an understanding of ourselves or intrapersonal intelligence (Gardner, 1991;

Gardner, 1983). Gardner (1991) acknowledged

> These differences challenge an educational system that assumes that
> everyone can learn the same materials in the same way and that a
> uniform, universal measure suffices to test student learning. . . . I argue
> that a contrasting set of assumptions is more likely to be educationally
> effective. Students learn in ways that are identifiably distinct. The broad
> spectrum of students. . . would be better served if disciplines could be
> presented in a number of ways and learning could be assessed through a
> variety of means. (p. 12)

Gardner suggested replacing rote or conventional performances that don't meet

the needs of all learners with performances of disciplinary understanding. "Such

performances occur when students are able to take information and skills they

have learned in school or other settings and apply them flexibly and appropriately

in a new and at least somewhat unanticipated situation" (Gardner, 1991, p. 8).

Fred Newmann. Making learning real or authentic is a challenge for

educators. Both Gardner and Perkins and their colleagues have emphasized the

importance of teaching for understanding by making learning real; using learning

experiences that relate to the real world. The authors of backward design have

also incorporated research done on authentic learning by Fred Newmann and his

colleagues at the University of Wisconsin.