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Analysis of 100 Years of Curriculum Designs

Lynn Kelting-Gibson
Asst. Prof., Montana State University, USA
lynn.keltinggibson@montana.edu

Fifteen historical and contemporary curriculum designs were analyzed for elements of assessment that support student learning and inform instructional decisions. Educational researchers are purposely paying attention to the role assessment plays in a well-designed planning and teaching process. Assessment is a vital component to educational planning and teaching because it is a way to gather accurate evidence of student learning and information to inform instructional decisions. The purpose of this review was to analyze 100 years of curriculum designs to uncover elements of assessment that will support teachers in their desire to improve student learning. Throughout this research the author seeks to answer the question: Do historical and contemporary curriculum designs include elements of assessment that help teachers improve student learning? The results of the review reveal that assessment elements were addressed in all of the curricular designs analyzed, but not all elements of assessment were identified using similar terminology. Based on the analysis of this review, it is suggested that teachers not be particular about the terminology used to describe assessment elements, as all curriculum models discussed use one or more elements similar to the context of pre, formative, and summative assessments.

Key Words: Curriculum (Historical and Contemporary), Curriculum Design, Pre-Assessment, Formative Assessment, Summative Assessment

INTRODUCTION

On Saturday, March 2, 2002, President Bush, of the United States of America, 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" (Associated Press, 2002, p. A3). In 2002, President Bush approved nearly three billion dollars from the education budget to be used for teacher training to realize his No Child Left Behind (NCLB) initiative.

Because of NCLB, teacher training programs for pre-service teachers and professional development workshops for practicing teachers have called attention to the use of

assessment strategies to find out if all students are learning. This training provides the necessary background information needed for teachers to understand why it is important to assess their students.

Dating back to the 1950s and 1960s and even prior, there were specific reasons that teachers assessed their students. Traditionally, assessments were used "to diagnose students' strengths and weaknesses, to monitor students' progress, to assign grades to students, and to determine instructional effectiveness" (Popham, 2011, p. 13). Today, these are all still important reasons for assessing students; however, because of NCLB, there are three new assessment reasons of which teachers should be aware. These reasons are "test results determine public perceptions of educational effectiveness, students' assessment performances are increasingly seen as part of the teacher evaluation process, and as clarifiers of instructional intentions, assessment devices can improve instructional quality" (Popham, 2011, p. 18). Through professional development such as workshops and classes, in-service and pre-service teachers can learn more about assessment to feel comfortable in today's teaching environment.

If it is essential for teachers to know about assessment, it is important to provide a definition of the word assessment. Assessment in this research will be defined as "the collection, evaluation, and use of information to help teachers make decisions that improve student learning" (McMillan, 2011, p. 9). McMillan adds, "Thinking about teaching as phases that occur before, during, and after instruction is aligned with three major types of assessments – pre-assessment, formative assessment, and summative assessment" (McMillan, 2011, p. 7). Knowledge and practice of those three essential assessment elements is a necessary competency of a professional educator, a skill required of all teachers.

The improvement of the United States educational system is under greater scrutiny than ever before because of Bush's educational agenda. When designing curriculum, a fundamental component of pre-service and in-service teacher training, it is important to include assessment elements that support the teacher in his or her need to assess student learning. The purpose of this review was to analyze 100 years of curriculum designs to uncover assessment elements that will support teachers in their desire to improve student learning. Throughout this research the author seeks to answer the question: Do historical and contemporary curriculum designs include elements of assessment that help teachers improve student learning?

Context

Assessment practices in current educational systems are seen as essential because of NCLB and the emphasis on student learning. The use of pre-assessment, formative assessment, and summative assessment strategies is necessary for quality teaching and student learning. In his most recent book, *Classroom Assessment for Teachers*, Witte (2012) emphasizes three questions that can be asked relative to student learning and the instruction they receive: "(1) Where are my students?, (2) Where do my students need to be?, and (3) How do my students get there?" (p. 9). The actual utilization of pre, formative, and summative assessments can help answer the three questions presented.

In the following paragraphs each question is addressed and includes the assessment element/s used to answer it.

Where are my students?

To address this question, pre-assessment of students in the classroom, in order to determine their content knowledge and skills, is essential. Pre-assessment is when a teacher checks students before instruction to ascertain students' knowledge, interests, and attitudes and it is used as a starting point for designing instruction (McMillan, 2011). An often overlooked, important instructional strategy, pre-assessing learners can help teachers accurately match the skills and instruction to where students are currently functioning (McTighe and O'Connor, 2005; Stiggins & DeFour, 2009). This is necessary if students are to experience instruction at the optimal level.

Once teachers are able to begin instruction, now knowing where students are at academically, they need to monitor student progress by providing feedback during and/or after a learning event. The strategy used for this is called formative assessment. Formative assessment is on-going, frequent, intentional feedback and it leads to increased learning (Popham, 2011; Stiggins & Chappius, 2012; Wormeli, 2006). "Formative assessment is the most useful assessment teachers can provide for students and for their own teaching decisions" (Wormeli, 2006, p. 200).

Where do my students need to be?

After the formative assessment process takes place, teachers use summative assessments to determine if students are where they need to be. "Summative assessment is a formal evaluation of progress and/or performance…so that students can be informed of what they still need to learn if they are to reach the intended learning targets (Witte, 2012, p. 11). When answering the initial question of this paragraph, we need to first look at our learning targets for the learning path then choose appropriate formative and summative assessments to determine if the intended destination is reached.

How do my students get there?

As a teacher, it is critical to inform our students of all intended learning targets before we teach each lesson. How teachers get there is their decision. Consequently, assessment is a necessary element of the instructional process that must be present when a child first enters school until he or she graduates from high school. There is no specific assessment technique or measure that only applies to elementary, middle or high school students; however, all types of assessments have potential value for student growth and learning (Witte, 2012).

REVIEW OF LITERATURE

The research used for this study was from historical and contemporary curricularists when they presented a combination of curriculum theory and curriculum design in their work. Curricularists, whose total of fifteen curriculum theory/design combinations explained the how and why of curriculum and the components of curriculum that

provided direction and guidance during the development process, were selected for inclusion. Throughout this review the curriculum theory and design combinations will be indicated by the term curriculum designs. Also included was additional assessment research which gave support to the assessment elements in each design.

Historical Curriculum

Prior to 1900 the idea of curriculum was simply describing it in terms of subjects, time allotted to these subjects, and when in years students would take these subjects. Beginning in early 1900, curriculum was viewed differently as more of a science with principles and methodology (Kliebard, 1995; Orstein & Hunkins, 1998). Each curriculum viewed in this manner is presented in chronological order from early 1900 to present day and each is labeled with the name of the author/s presenting his/her/their theory and design.

Franklin Bobbit

Franklin Bobbit published a book called *The Curriculum* (1918), 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 activity's 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" (Bobbit, 1918, p. 42). The purpose of curriculum, Bobbit believed, was to outline the knowledge that would be important for each content area, and then develop activities to train the learner and improve his or her performance.

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 and developing curriculum was quite sophisticated for the period, and most suggestions can 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 guidelines of choosing objectives direct 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. McMillan (2011) states "Criteria are the specific behaviors or dimensions that are evidenced to successfully attain the standard" (p. 34). By establishing criteria, teachers can determine whether students have the abilities to perform activities properly (Bobbit, 1924). Teachers can clarify their expectations and articulate descriptions of dimensions by helping students understand the criteria to be employed when determining the quality of their performance (Popham, 2008; McMillan, 2011). As noted by Bobbit, McMillan, and Popham, establishing criteria is a necessary assessment element.

William Kilpatrick

Another important curricularist 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). In other words, Kilpatrick believed each person has a purposeful act on which to follow through in order to accomplish the objective or aim. He divided his methodology into four steps: "(1) purposing, (2) planning, (3) executing, and (4) judging" (Kilpatrick, 1918, p. 333). Some advocates thought this idea of "purposeful act" was innovative and new, but most believed it was rooted in the curriculum ideas of Bobbit who stressed similar ideas using objectives and related activities. Kilpatrick argued that his ideas were different in that he advocated the child should have considerable input in the planning of curriculum along with the teacher. He states, "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).

When considering the assessment piece of his design, Kilpatrick (1918) believed the teacher should be able to judge the purposeful act. Popham (2011) suggests that when scoring students' responses to a purposeful act, you are trying to make a judgment regarding the sufficiency of that response. The criteria to be used in making that judgment will influence the way you score a student's response. As McMillan (2011) states, "Evaluation is the process of making judgments about what is good or desirable. For example, judging whether a student is performing at a high enough level to move on…or whether to carry out a particular instructional activity requires judging" (p. 168). "As already mentioned this judgment should not be arbitrary but based on some recognized set of criteria" (Witte, 2012, p. 223). Being able to judge a purposeful act helps teachers determine whether students have met a specific level of competency.

Harold Rugg

Leaders of curriculum development 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).* 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).

> Imagine how much more probable would be the emergence of a generation of people informed and trained to think if the curriculum of our schools not only prepared adequately for life, but actually anticipated the problems of the generation of youth now growing up (Rugg, 1926, p. 7).

Harold Rugg, the chairperson of the NSSE, 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). The assessment component of Rugg's design is outcomes of achievement. Suskie (2009) explains, "Outcomes are goals that refer to a destination rather than the path taken to get there…the outcomes rather than the process. A goal that truly describes an outcome explains why we do what we do" (pp. 116-117). Wiggins & McTighe (2005) suggest a similar definition, "An intended outcome is a desired result, a specific goal to which educators commit" (p. 346). Outcomes of achievement should be directly derived from student experiences as they work to fulfill the goals of their lessons.

Werrett Charters

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, 1929). He claims, "The standards of our day demand that our courses of study be derived from objectives which include both ideals and activities that we should frankly accept usefulness as our aim rather than comprehensive knowledge…" (Charters, 1929, p. 4). According to Charters (1929), "there are four steps in curriculum construction: (1) selecting objectives, (2) dividing them into ideals and activities, (3) analyzing them to the limits of working units, and (4) collecting methods of achievement" (p. 101).

Charters (1929) did not use the term assessment or evaluation but instead started thinking about how the objectives could be verifiable. To be verifiable, objectives should be measureable and observable. "Measurement is a trait used to determine how much of a trait, attribute, or characteristic and individual possesses. Thus, measurement is the process by which traits, characteristics, or behaviors are differentiated" (McMillan, 2011, p. 10). For objectives to be observable and accurate, anecdotal observations or notes will help provide accurate records of how objectives are met (McMillan, 2011).

Hollis Caswell and Doak Campbell

Throughout the 1920s and 1930s, researchers claimed curriculum specialists, administrators, and classroom teachers should develop 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. 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.

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)

The process that Caswell and Campbell used for curriculum development involved several steps 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).

Caswell and Campbell are really the first to use the assessment term "evaluation" in curriculum design when they included step nine, evaluate the outcomes of instruction. Popham (2011) states: "When classroom teachers engage in evaluation, those teachers are typically arriving at conclusions about the quality of their own instructional efforts….the attempt on the part of the teachers to determine how well they're doing instructionally" (p. 353). Russell & Airasian (2012) believe "Evaluation is the process of making judgments about what is good or desirable….it is the product of assessment that produces a decision about the value or worth of a performance based on information that has been collected, synthesized, and reflected on" (p. 11). By including evaluation in their design, the author feels that Caswell and Campbell are focusing on the teachers' evaluation of their own instruction.

Ralph Tyler

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 the Eight-Year Study, the authors "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 (Kliebard, 1995).

Ralph Tyler played a key role in the evaluation of the Eight-Year Study, and some of his ideas were the basis of its evaluation component (Ornstein & Hunkins, 2009). 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 by which to prepare most school curricula because "he summed up the best principles of curriculum making for the first half of the twentieth century" (Ornstein & Hunkins, 1998, p. 93). One of the principles of curriculum making included an assessment element. Tyler (1950) asks, "How can we determine whether purposes are being attained?" (p. 1). If we look at attainment and achievement as being synonyms, student achievement of course objectives or purposes should be the major component of subject matter grades (Russell and Airasian, 2012). Achievement is used to describe school-based learning. Achievement is the knowledge and skills students acquire (Popham, 2011). Teachers and students alike seek to attain educational purposes of their school system. Attainment or achievement is what Tyler saw as a necessary element of his design.

Hilda Taba

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. Tyler designed his questions to be utilized by administrators, content specialists, and curriculum makers – more of a top-down approach. Although Taba used many of Tyler's ideas, she developed an approach that included the teachers in the development process. Taba's (1962) seven major steps to the design 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) an evaluation. Teachers believed it had much merit, but others felt it put too much emphasis on the teacher; they may not have the expertise or the time needed to design effective curriculum. Nevertheless, Taba's design made it clear that there has been and will continue to be a broad base of teacher involvement that is essential for curriculum decision-making.

The two elements of assessment included in Taba's model are steps one and seven: diagnosis of needs and evaluation, respectively. Popham (2011, p. 9) suggests, "diagnostic assessment is particularly useful for teacher's planning if the assessment is carried out at the beginning of an instructional sequence." Once learning objectives are known and shared with students, pre-assessments prior to the teaching of lessons are needed for the diagnostic purpose of finding out what students know about the planned learning activities (Oberg, 2009). Regarding evaluation, Popham, (2011) states, "…it involves the actual process of judging and determining the quality of work of a student" (p. 223).

Contemporary Curriculum

Possessing a historical sense of curriculum allows us to realize the fact that the field of curriculum is continuing to mature. Contemporary curriculum is an increasingly

diverse and dynamic field of study that now involves political and social interpretations. It is ever-changing, incorporating knowledge from many disciplines (Ornstein & Hunkins, 1998, 2009). The following authors present more contemporary ideas of curriculum.

Jerome Bruner

"Jerome 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 the learners constructed new ideas based upon their current or past knowledge while interacting with new information. In this model "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 this constructivist model of curriculum design, the author (Bruner, 1977) had four basic themes in mind: (1) structure – students are given a fundamental structure of the chosen subject, rather than simply the mastery of facts and techniques, so that it can be easily grasped by the student, (2) "readiness – instruction must begin where the learner is and starts whenever the student arrives to begin his career as a learner," (p. ix), (3) intuition – "instructional emphasis should be placed on the importance of a student's intuition, a careful examination of the nature of intuitive thinking might be of great aid to those charged with curriculum construction and teaching" (p. 55), and (4) interest – "instruction should be designed to facilitate students in the desire to learn and how it may be stimulated, we must consider how interest in learning can be stimulated" (p. 14).

Bruner's thoughts on his theme of readiness suggest teachers must begin instruction where the learner is. To find out student readiness, or where the learner is, McMillan (2011) claims readiness tests both "predict achievement and diagnose weaknesses.…readiness tests are helpful in identifying skills that need to be mastered" (p. 415). Gronlund (2006) adds, "These are tests given at the beginning of a course or unit of instruction that cover those prerequisite skills necessary for success in the planned instruction" (p. 5).

Francis Hunkins

In the late 1970s Francis Hunkins developed what he called a *Decision-Making Model* that "urged educators to engage students in learning how to question and then to construct meaning through particular questioning strategies" (Ornstein & Hunkins, 1998, p. 249). 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 1) engage in a search for understanding, besides just creating an educational program. The other six stages include: 2) diagnosis, 3) content selection, 4) experience selection, 5) implementation, 6) evaluation, and 7) maintenance (1980). The uniqueness of this design is the feedback and adjustment loop that is built into this model; "This loop allows decision makers as they proceed through the model,

to refer back to previous stages to make necessary modifications" (Ornstein and Hunkins, 1998, p. 202).

Similar to Taba's model, Hunkins includes two of the same assessment methods, diagnosis and evaluation. The importance of diagnosis is shared by Shermis & Di Vest, (2011) when they write, "Without some understanding of where students stand at the beginning of instruction you will probably be using inefficient methods with unreliable outcomes….pre-assessment of knowledge gives you more specific information about students' entering behaviors that contribute to readiness for learning the subject matter you teach" (p. 327). To discuss the evaluation stage, Chappuis et al., (2012) maintain, "I can make evaluations. This means I can identify criteria upon which to make a judgment, apply it to a specific situation, and express an opinion based on the criteria. I can also justify my opinion by using the criteria" (p. 70).

Madeline Hunter

The work of Madeline Hunter and her colleagues at UCLA began during the late 1970s as well. "They developed a set of prescriptive teaching practices designed to improve teacher decision making and thus enhance student learning" (Danielson & McGreal, 2000, p. 13). At the forefront of Hunter's teachings is student motivation and staff development. "Motivation, a student's intent to learn, is one of the most important factors in successful accomplishment….Therefore, we need to become knowledgeable about and skilled in the use of professional techniques that have high potential for increasing student motivation" (Hunter, 2004, p. 13). The model that Hunter designed embeds motivational teaching and learning. Hunter (1982) developed a model 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 in the 1980s and started a trend toward instructionally focused staff development that continues to this day (Danielson & McGreal, 2000).

The prominent assessment element in Hunter's model is step five, check for understanding. Fisher & Frey (p. 2007) assert,

> When their teachers regularly check for understanding, students become increasingly aware of how to monitor their own understanding….The background knowledge that students bring into the classroom influences how they understand the material you share and the lessons or learning opportunities you provide. Unless you check for understanding, it is difficult to know exactly what student are getting out of a lesson….The act of checking for understanding not only corrects misconceptions; it can also improve learning. (pp. 2-4)

Price & Nelson (2007) claim, "Checks for understanding are specific active participation strategies designed to help teachers monitor student progress toward an objective. A teacher's goal is to check individual student learning throughout the lesson" (p. 117).

Howard Gardner

Howard Gardner is best known in the field of education for his theory of multiple intelligences, but he was also involved in Teaching for Understanding research. Gardner felt strongly that "students do not understand…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…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. He felt learning situations such as apprenticeships and children's museum-type programs minimize mindless learning and maximize students' understanding of why they are doing things (Brandt, 1993).

Students who were given the opportunity to choose authentic instruction came to know the field of study in their own ways. Gardner posited, "all human beings are capable of at least seven different ways of knowing the world – labeled the *seven human intelligences"* (Gardner, 1991, p. 12). Gardner's ideas provide a place in the school curriculum, not only for cognitive excellence, but for different types of mastery. He felt teachers must nurture all types of intelligences that contribute to the worth of the individual. According to this analysis everyone is able to know the world through types of intelligences: 1) verbal/linguistic, 2) logical/mathematical, 3) visual/spatial, 4) musical/rhythmic, 5) bodily/kinesthetic, 6) interpersonal, 7) intrapersonal, and 8) naturalistic (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 (1991) believed that performance of disciplinary understanding occurred when students took information and skills learned, in ways they learn best, and applied them flexibly and appropriately in new and somewhat unanticipated situations. McMillan (2011) defines performance assessment in a similar context, "Performance assessments require students to construct a more extensive and elaborate answer or response. A well-defined task is identified, and students are asked to create, produce, or do something, often in settings that involve real-world application of knowledge and skills" (p. 64).

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. 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." It is important for students to develop understanding and not just memorize facts and figures (Wiske, 1998). Perkins placed understanding at the forefront of his research.

In 1988-89, Project Zero directors, Perkins, Gardner, and others, 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, Perkins and other directors 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*, topics that lend themselves to teaching for understanding. These can be 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). 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 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). Shermis & Di Vesta (2011) also support ongoing assessment:

> During instruction, formative assessment takes on its full meaning. In this phase, assessments are moment-to-moment as well as periodic. They are made through monitoring of goal achievement by teachers and students, which informs them how well the lessons are progressing; how well students are responding to instruction; how well instructional goals are being achieved….Although we typically think of assessment after instruction as summative, it can also be used to make inferences that are formative. Assessment after instruction can be used to provide feedback for changing instruction in the future. (pp. 114-115)

Fred Newmann and Gary Wehlage

Authentic learning research was also conducted by Fred Newmann and his colleague, Gary Wehlage, at the University of Wisconsin. Newmann and Wehlage (1993) chose to develop standards for authentic instruction because they saw two common problems that make conventional schooling inauthentic: "(1) Often the work a student does, does not allow them to use their minds well, and (2) The work has no intrinsic meaning or value to students beyond achieving success in school" (p. 2). Like Gardner and Perkins, Newmann and Wehlage suspected that meaningful learning does not always take place in the classroom. "Unfortunately, even the most innovative activities – from school councils and shared decision making to cooperative learning and assessment by portfolio – can be implemented in ways that undermine meaningful learning, unless

they are guided by substantive, worthwhile educational ends" (Newmann & Wehlage, 1993, p. 1).

Newmann and Wehlage (1993) contended teaching efforts should be directed toward meaningful, authentic forms of student achievement. These authors encouraged educators to examine their teaching in the following five areas: (1) higher-order thinking – requires students to use ideas and information in ways that transform their meaning, (2) depth of knowledge – the level of student knowledge as they consider lesson ideas, (3) connectedness to the world – the extent to which the lesson has meaning beyond the instructional context, (4) substantive conversation – the extent of talking to understand and learn the material of a lesson, and (5) social support for student achievement – the respect, inclusion, and high expectations of all students in the learning process (Newmann & Wehlage, 1993). The use of this five-part framework was designed to help teachers reflect upon their teaching.

In reflecting upon their teaching, teachers were encouraged to use substantive conversation to determine what material was being learned. Chappius et al. (2012) suggest using personal communication as assessment, "Asking instructional questions is both a teaching and an assessment strategy: through careful questioning, we can access prior knowledge, pique curiosity, check for understanding, provoke and explore thinking, and create new learning (p. 264).

Grant Wiggins and Jay McTighe

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. Besides having worked with researchers from Harvard, the authors also integrated research done on authentic learning by Newmann and Wehlage (Wiggins & McTighe, 2005). 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 (Wiggins & McTighe, 2002).

Wiggins and McTighe understood the importance of the imposition of standards and assessments and set out to design a procedure for curriculum development that would encourage educators to focus on enduring understanding when designing curriculum; this understanding led to the writing of the book *Understanding by Design*, a backward design approach to curricular design. The authors expected that by designing curriculum using their approach, educators would use more standard-based teaching as opposed to activity-based instruction where the work is mostly hands on without being "minds on" and coverage-oriented instruction where the teacher merely checks off topics that were covered and moves forward (Wiggins & McTighe, 2005).

"To ensure that learning is more successful and better focused, curricula must be built upon worthy and authentic tasks that provide a rationale for content, skills, and modes of instruction" (Wiggins, 1997, p. 56). The logic of backward design suggests a planning progression for curriculum that incorporates three stages: (1) identify desired results, (2) determine acceptable evidence, and 3) plan learning experiences and

instruction (Wiggins & McTighe, 1998). The backward design approach encourages teachers to think like assessors, not activity designers. With the design's focus on results and acceptable evidence, stage two emphasizes three assessment components: performance tasks and criteria, other evidence, and self-assessment. When planning to collect evidence of understanding, teachers must consider a range of assessment techniques. When the authors speak of evidence of understanding, they are referring to evidence gathered through various informal and formal assessments before, during and after a course or a unit of study. Witte (2012) adds:

> Evidence is comparable to these terms (data and information), yet it does not exceed them in meaning. Evidence implies correctness or tightness to what is collected; it is proof that helps confirm the finding….Teachers need to know that students have learned desired goals of the lesson; teachers seek out and collect confirmatory evidence that desired progress toward intended outcomes has been met. (p. 66)

Isman, Caglar, Dabaj, and Ersozlu

Fairly recently, "A New Model for the World of Instructional Design: A New Model" was shared by Isman, Caglar, Dabaj, and Ersozlu (2005). This model is based on a theoretical foundation of constructivism by Jerome Bruner where the emphasis is placed on the learner rather than the teacher. Their new constructivist model is composed of four processes: (1) input, (2) process, (3) output, and (4) feedback (Isman et al., 2005, p. 33). In step one input activities are designed based on a needs-assessment given to students. After the needs assessment is given, units are planned, aims and objectives are written and methodology is considered. The second step begins with a pre-assessment of unit knowledge. As a result of the pre-assessment the teacher has an idea regarding student readiness and how to best redesign units if necessary. Once the unit is reorganized, students' needs are considered in the implementation. Pre-assessments also help teachers diagnose student weaknesses, focus on future instruction, and student placement within classes (Popham, 2011; Shermis & Di Vesta, 2011). Step three is output. During implementation of the unit the teacher uses formative assessments in the form of quizzes. Spinelli (2012) states, "formative assessment is ongoing so that the student's progress is monitored regularly throughout the instructional period, thereby allowing teachers to modify and adjust instruction" (p. 40). As another form of output teacher then uses summative assessments, typically a final examination, to show whether the students learned or not. Summative assessments usually come at the end of a classroom process or activity and aim to provide a summary of what students know and are able to do as a result of instruction (McMillan, 2011; Popham, 2011; Russel & Airasian, 2012). The final and fourth step of this model is feedback. After the evaluation process in stages two and three are complete, the teacher gets the feedback of the students' knowledge on the unit (Isman et al, 2005). In order to improve student performance, teachers must provide feedback; they must constantly assess student learning and behavior (Russell and Airasian, 2012).

METHOD

While conducting this historical review, the following databases were explored: Education Resources Information Center (ERIC), the university online catalog, The

Handbook of Research on Teaching, and JSTOR (journal storage). Using vocabulary and combinations of the following keywords: curriculum, historical, design, theory, educational, components, and assessment, the researcher looked online and in university libraries to select primary and secondary sources of curriculum theory and design dating back to 1918. Using the snowball method, the researcher went through the reference sections of the selected books and articles and found additional studies that filled gaps and met the criteria (van Dinther et al., 2011). Curriculum, curriculum design, curriculum theory, and assessment were the four key terms used to begin this literature review research on historical and contemporary curriculum research.

There are numerous definitions to describe curriculum; but for this research, *curriculum* will be defined as "a description of what teachers are supposed to teach and students are supposed to learn in each course of study….The curriculum describes *what* is taught but does not prescribe *how* the content is taught (Ravitch, 2007, p. 66). Thinking about contemporary curriculum, the author supports Ravitch's definition but would like to add standards as being the key elements to what teachers are "supposed" to teach. The emphasis currently is on the implementation of common core state standards, national standards, or state standards for those areas not included in common core. C*urriculum design* will be defined as, "the way we conceptualize the curriculum and arrange its major components (subject matter content, instructional methods and materials, learner experiences or activities) to provide direction and guidance as we develop curriculum" (Ornstein & Hunkins, 2009, p. 16). Similar to Ornstein & Hunkins, the author of this study looks at curriculum design as having similar key components but would like to add assessments to methods and learner experiences. Curriculum design will also be used interchangeably with curriculum models. Finally, *curriculum theory* will be defined as "a process that engages us in imagining the how and why of certain phenomena. It challenges us to analyze why we think a curriculum should be developed in a certain way for particular students and focused on certain content "(Ornstein & Hunkins, 1998, p. 172). To add to this definition, the author views curriculum theory as an arrangement of ideas explaining how curriculum works and ways in which we can teach what we think is important.

The research chosen for this study includes historical and contemporary curriculum theory and design by authors who integrated both into their work. When looking at theorists' work only, ideas were presented but the implementation of those ideas into classroom curriculum development, were not. For this research it was important to know what major components of curriculum designs/models were used to provide direction for teachers when planning for and assessing student learning.

FINDINGS

In order to analyze curriculum designs to find if they include elements of assessment that help teachers assess student learning, it will be important to look for the inclusion of one or more of the three significant assessment elements: pre, formative, and summative. Table 1 presents the assessment elements that are included in the curricularists' designs (models).

Table 1: Assessment elements within curriculum designs listed chronologically by author

Author (Year)	*Assessment Component*	*Assessment Definition*	*Assessment Elements (Pre, Formative and/or Summative)*
Frank Bobbit (1918)	Criteria to perform activity properly	Teachers establish criteria to determine whether students have the abilities to perform activities properly.	Summative
William Kilpatrick (1918)	Judging	The teacher should be able to judge the purposeful act.	Summative
Harold Rugg (1926)	Statements of immediate outcomes	Statements of immediate outcomes of achievements to be derived from the experiences.	Formative Summative
Warrett Charters (1929)	Verifiable	Teachers should find objectives measureable and observable.	Summative
Hollis Caswell and Doak Campbell (1935)	Evaluate	Teachers will evaluate the outcomes of instruction.	Summative
Ralph Tyler (1950)	Purposes attained	How can we determine whether the purposes are being attained?	Summative
Hilda Taba (1962)	Diagnosis of needs and Evaluation	Teachers find out what students need before planning and later choose how to evaluate objectives.	Pre Summative
Jerome Bruner (1977)	Readiness	Knowing where the student is at in their learning and challenging them just enough for them to learn more.	Pre
Francis Hunkins (1980)	Diagnosis Evaluation	Teachers find out what students need before planning and later choose how to evaluate objectives.	Pre Summative
Madeline Hunter (1982)	Check for understanding	Teachers check students' understandings of objectives while being guided and then after independent practice.	Formative Summative
Howard Gardner (1983)	Performances of disciplinary understanding	Performances occur when students take information and skills they have learned and apply them flexibly and appropriately in a new and at least somewhat unanticipated situation.	Summative
David Perkins (1992)	On-going assessments	Students need criteria, feedback, and reflection from the beginning to the end of instruction.	Formative Summative
Fred Newmann and Gary Wehlage (1993)	Substantive conversation	The extent of talking to understand and learn the material of a lesson.	Pre Formative Summative
Grant Wiggins and Jay McTighe (1998)	Determining acceptable evidence	Assessing essential knowledge and skills that contribute to performances.	Pre Formative Summative
Isman, Caglar, Dabaj, and Ersozlu (2005)	Process Output Feedback	Units, which are planned, are assessed before getting started in instruction. The teacher gives quizzes to understand whether students are learning, it is feedback for the teacher. Evidence which shows whether the students learn or not.	Pre Formative Summative

As revealed in Table 1, each curriculum design identified at least one element of assessment. The primary source of assessment and evaluation used by curriculum designers was

summative assessments. As indicated, 13 of the 15 designs included some type of summative assessment. Terminology used for what we now know as summative assessments was: (1) criteria to perform activity properly, (2) verifiable, (3) judging, (4) statement of immediate outcomes, (5) purposes attained, (6) evaluation of independent practice, (7) on-going assessments, (8) substantive conversation, and (9) acceptable evidence. All assessments align with the definition of summative assessment as being "assessments conducted after instruction primarily as a way to document what students know, understand, and can do" (McMillan, 2011, p. 6).

Teachers should know prior to giving any summative assessment what the students knew initially, before teaching the lesson, and what students were learning as they traveled through the lesson. Indicated in Table 1, six designs included the use of pre-assessments. As stated previously, pre-assessment is when a teacher checks students before instruction to ascertain students' knowledge, interests and attitudes and it is used as a starting point for designing instruction (McMillan, 2011). The terminology used in the designs for pre-assessments was: (1) diagnosis of needs, (2) diagnosis, (3) readiness, (4) substantive conversation, and (5) determining acceptable evidence.

The use of formative assessments in the designs listed in Table 1 was as frequent as the use of pre-assessments; six designs mentioned something similar to formative assessment use. Formative assessment occurs during teaching, it is on-going. McMillan (2011) suggests, "It is a way of assessing students' progress, providing feedback and making decisions about further instructional activities" (p. 6). Terminology used in the designs to indicate the use of formative assessments was: (1) statements of immediate outcomes, (2) check for understanding, (3) guided practice, (4) on-going assessments, (5) substantive conversation, and (6) determining acceptable evidence. As with pre-assessment and summative assessment use, formative assessment should play an integral role in the assessment process that occurs in teaching. One can see, viewing Table 1, curricularists' designs include at least one assessment element.

DISCUSSION AND CONCLUSION

The research question for this article asked: Do historical and contemporary curriculum designs include elements of assessment that help teachers assess student learning? Using up-to-date research to define assessment and the role assessment plays in our existing educational system, it was found that all curriculum designs analyzed used at least one assessment element teachers can use to measure student learning. As suggested in the research, a good assessment system includes the use of pre-assessments, formative assessments, and summative assessments (Chappius et al.; McMillan, 2011; Oberg, 2009; Popham, 2011; Witte, 2012). Also stated in the research, "It is important to think about classroom assessment as a process that supports and enhances student learning….This means that teaching and assessment coexist in dynamic interaction, each feeding and influencing the other" (McMillan, 2011, p. 2). Over the past 100 years designers of curriculum have included assessment elements as a stage or a step in their designs that support and enhance student learning. These assessments have coexisted with the teaching process or curriculum design each has proposed. What is interesting about the findings is that the term "assessment" was never used. This is not important, though. What is important is that fact that, like most jargon in education, something implemented years ago comes back as a newly termed concept or model years later.

On few occasions has the use of jargon been more apparent than in this historical review. Currently, the use of the term pre-assessment, to find out what students know, is commonplace. Over the period of this review, synonyms used for pre-assessment were diagnosis and diagnosis of needs, readiness, substantive conversation, and determining acceptable evidence. Formative assessments, those assessments used daily to find out what students know at that particular moment, were also commonly used but with a different term. Terminology used for formative assessments were statements of immediate outcomes, check for understanding, guided practice, on-going assessments, substantive conversation, and determining acceptable evidence. The third assessment element discussed was summative assessment, those assessments that typically take place at the conclusion of instruction. The use of summative assessments in historical and contemporary designs/models was prevalent, but again terminology was different. Terms used were criteria to perform activity properly, verifiable, judging, statement of immediate outcomes, purposes attained, evaluation, on-going assessments, substantive conversation, and acceptable evidence. This list is a good indication that the use of assessments has been, and will continue to be, an important stage or step in all curriculum designs.

What is evidenced through the research is that all major historical and contemporary curriculum designs included at least one element of assessment for learning that will help form instructional decisions on the part of the teacher or school district. Yes, pre-assessments, formative assessments, and summative assessments are necessary for a good assessment system, but being able to identify other terminology used by curricularists discussed in this study may even be more necessary as teachers move forward when selecting methods of student assessment.

Over the timeframe of this research, post 1918, methods and approaches to student assessment have been established and developed. We must ask though, are these actually new or just newly named methodologies given to former approaches? If the latter is so, teachers should look for assessment elements that meet their needs and the needs of their students. Even though the use of current assessment vocabulary is important for discussion purposes, so is the teacher's comfort in their use of terminology that expresses what they actually do in the classroom. It is suggested that teachers continue the use of student assessment but not be particular about the terminology used, as all curriculum models discussed is this study use one or more similar to the context of pre, formative and summative assessments. As asserted by Witte (2012) all types of assessments have potential value for student growth and learning.

The results of this historical literature review indicate several suggestions for further research. This study included theories in combination with designs. There are theories that stand by themselves, without a design, that could be researched, and there are theory and design combinations that were not included that could be addressed. For further study, it also seems relevant to review curriculum that is somewhat unconventional, such as reporting what students have accomplished from year to year or when students move through a system at their own pace. As stated previously, the needs of the current educational system emphasizes the use of assessments to determine if students are learning. Witte (2012) advocates the following regarding assessment use, "information and data that is obtained through classroom assessment can help answer the fundamental questions that every educator asks of themselves: *Am I truly effective with my teaching and are my students learning what they need to learn?"* (p. 3).

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