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Learning Theories and Historical Events Affecting Instructional Design in Education: Recitation Literacy Toward Extraction Literacy Practices

Don W. Edgar[1]

Abstract

How learning occurs has been a question pondered by the masses since formal education began thousands of years ago. Understanding the process has included many paradigm shifts in thought and practice. A thorough look at one major paradigm shift occurred in the past century, which has led to a plethora of ideas when identifying best practices to encourage learning. A look into this transformation will exact a better understanding of learning and how it best arises, leading to designing instruction that greater impacts the learner.

Introduction

The process of learning has been an important consideration for early philosophers and educators that continues today. Looking back at the roots of learning and how it occurs, we see two major schools of thought about the nature of knowledge (epistemology). The two main positions can be divided into empiricism and rationalism (Schunk, 2004).

Rationalism has been defined as the nature of knowledge that is from reason (Schunk, 2004). Plato believed people have ideas, and they learn about ideas through reasoning (Gould & Mulvaney, 2007). Plato taught mental discipline. He believed if we exercised our mind, our mind would strengthen; therefore, he touted mental discipline. Rene Descartes also followed the rationalism philosophy. He believed doubt led to the search for absolute truth. He believed the mind exists because he doubts. Descartes uses deductive reasoning with the statement "I think, therefore I am."

Empiricism postulates experience is the source of knowledge (Schunk, 2004). Aristotle (384-322 BC) believed knowledge was gained through the environment (Durant, 1961). He believed knowledge was associative, meaning one idea will trigger the recall of the other. Another empiricist was John Locke (1632-1704) who believed all knowledge was gained through two types of experience: sensory impression and personal awareness (Durant, 1961). Furthermore, Locke believed the mind was blank at birth, and knowledge was gained through experience.

As we strive to understand the evolution of how learning occurs and is affecting the teaching and learning processes utilized presently, an in-depth review of theory and how they were formed is needed. History is a great teacher. Educators must understand the fallacies and worthy practices utilized in the past. Through an understanding of these ideologies, future theorists and educators can provide meaningful teaching practices resulting in student learning. Understanding the events that have arisen allows us the ability to understand the need for differential learning comprehension, such as recitation literacy and extraction literacy.

Sociopolitical Forces

Schools of education have been around since early Greek philosophers began questioning the world and our existence. Recitation literacy was prevalent because it was a common belief that the mind was a gift from God and not to be questioned. Although scientific understandings of the mind have been postulated for centuries, it was not until the 19th century that scientific understanding of the mind started forming. Edward Thorndike applied scientific psychology toward learning, and altered the view of learning and how it occurs (Wiburg, 2003).

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The human race has always felt the need to understand our surroundings, our existence, and our mind. Learning has been seen as a necessity to grow mentally and societal-wise. Before the turn of the 20th century, education was designed for mental discipline in its simplest form. Recitation literacy was postulated to effectuate knowledge. This knowledge gained through recitation of facts, literacy in the form of reading and writing, and knowledge of spoken language (Latin, Greek, and German) was equated with learning. Schools in the 19th century were for preparing students for entrance into college. Those individuals who were not college bound mostly entered the workforce prior to completion of high school. Families needed children to work and to support the family unit, and education beyond "necessary" skills such as being able to read and write was viewed by the common person as a frivolous novelty for the rich. A leading proponent of education for youth during the 19th century was Horace Mann. He believed and demonstrated the need for educating all youth. He was able to gain widespread acceptance of this idea in Massachusetts, and it spread to other regions of the country. After the enactment of the 1862 Morrill Act, access to higher education was opened to a more liberal population. Students who entered were given the opportunity to study vocations instead of the standard reading and writing. With the industrialization of America, there was a growing need for all types of vocationally educated people to meet societal needs.

With the onset of the 20th century and the changing world culture, due to World War I (WWI), learning and societal perceptions regarding learning were changing. Industry was producing products at a pace seen never before, because of high demand. Many schools emulated procedure via student instruction, treating students as raw materials, and the end products were what they envisioned (Bransford, Brown, & Cocking, 2000). This type of mass production of students affected the design of curriculum, instruction, and assessment in schools (Bransford et al., 2000).

One of the guiding principles for secondary education during this time was the Seven Cardinal Principles. These principles outlined the basic education of American youth after its report was released in 1918. They were health, command of fundamental processes, worthy home membership, vocation, civic education, worthy use of leisure, and ethical character (Gross, 1978).

After WWI, concerns arose regarding the centralized focus of secondary education. Ralph Tyler headed a team of evaluation staff who produced the "Eight-Year Study." This study developed appraisal instruments with the intention of measuring student performance more appropriately than previously done. This landmark research study in action convinced colleges that high school students could succeed based on their reading ability, interest in education, and ability to handle quantitative problems.

During the 1940s, America was again involved in a world war (WWII). The war created a great need for recruits adept at reading and interpretation of written manuals (McNeil, 2006). Military personnel were needed who could not just recite literature but understand it. This need was addressed by Robert Gagne through his theory of conditions of learning (Gagne, 1985). Also during this era, a major sociopolitical force was enacted by the federal government. The "G.I. Bill of Rights" provided educational and other benefits for veterans of WWII. This legislation had a number of important implications. One of those was to compensate our veterans for the sacrifices made in the war effort. Another was to reintegrate servicemen back into the U.S. economy (Baylis-Heerschop, n.d.). This legislation had tremendous impact on the U.S. and servicemen. It has been touted as the most enlightened pieces of legislation enacted by Congress.

The mid-1950s saw another major impact toward our society's view of education and educational needs. The baby boom was in full swing after WWII, and more people were able to enter higher learning institutions. In 1958, the Soviet Union launched Sputnik, and the United States was forced to reflect on current practices and consider new alternatives to education. Because of this milestone in technological innovations in 1958, Congress passed the National Defense Education Act (NDEA). This act appropriated federal funds to improve instruction in mathematics, foreign language, and science.

In the following decade, federal government again saw a need in American society. The Elementary and Secondary Education Act (ESEA) of 1965 was passed. There was significant change taking place in American society due to minorities who were educationally disadvantaged because of social and economic conditions. This legislation provided funds to supplement and improve education for children who were economically disadvantaged. President Lyndon B. Johnson was promoting a "War on Poverty," and America was going through major cultural changes in regard to attitudes and perceptions toward ethnic groups and their rights promoted by the Brown vs. Board of Education Supreme Court ruling in 1954.

The 1960s and 1970s saw many theories being involved. In 1965, Robert Gagne's theory of the conditions of learning was published, and analyzed learning objectives and their relationship toward appropriate instructional designs (Gagne, 1985). Cognitivism had taken a firm root in place of behaviorism as advocated by B. F. Skinner through operant conditioning. Albert Bandura, Jerome Bruner, Jean Piaget, Lev Vygotsky, and Robert Gagne's cognitivism approaches to learning were all being explored for possible explanations as to how learning should occur (Woolfolk, 2010).

The 1980s saw a revolutionary concept of innovation being introduced with the personal computer from Apple named the Apple IIe. This computer was gaining recognition for its abilities and uses and was envisioned to impact education heavily. As Thomas Edison had predicted in the 1800s (moving pictures would replace teachers), many thought the computer would replace teachers. The biggest challenge

education would face came in 1983 when the National Commission on Excellence in Education revealed its report titled "A Nation at Risk." This report was the result of an 18-month study conducted by members appointed to a commission by the education secretary Terrel Bell. The basis of the report and its findings were well stated (Bell, 1983) in the introductory part of the report:

> History is not kind to idlers. The time is long past when American's destiny was assured simply by an abundance of natural resources and inexhaustible human enthusiasm, and by our relative isolation from the malignant problems of older civilizations. The world is indeed one global village. We live among determined, well-educated, and strongly motivated competitors. We compete with them for international standing and markets, not only with products but also with the ideas of our laboratories and neighborhood workshops. America's position in the world may once have been reasonably secure with only a few exceptionally well-trained men and women. It is no longer. (p. 1)

The report was an eye opener for many. America was lagging in its educational system compared with other nations. The report proposed additional curriculum requirements, literacy standards, and language skills starting in elementary schools. The school system was in turmoil, but out of that turmoil a much-needed unification of ideas has emerged.

The 1990s has seen many innovations that affected our lives and that of students. The explosion of the World Wide Web developed in 1991 has availed more information than could be digested by learners. Although not widely accepted near its inception, it has become a mainstay in academic information retrieval. The ability to reach new forms of media (Internet and hypermedia) has allowed educators to approach learning and instruction in a new way (Leigh, 2006). Information can be readily accessed and distributed to learners. As we have entered the 21st century and reflect on the changes that have occurred in our culture, we have seen the needs of learners change. Society has moved from a community of learners whose knowledge was closely tied to local community experiences into a world of globalized learners. As our society continues to grow, our academic knowledge will continue to develop. Policy is a main driving force in education. Societal changes are a direct result of policy issues. A thorough understanding of societal and policy impacts has indicated the need for changes that have occurred in education. These driving forces are behind the development of theories to meet the needs of learners and society.

Theory Developments

Theories of learning differ in how they address critical issues. Theory by itself does not cover all situational factors present in educational classrooms. Practical experience has no overarching framework to organize knowledge of teaching and learning. Theory and practice help reform each other to enhance learning.

Theories of learning based on behaviorists' views dominated the psychology of learning during the first half of the 1900s. During this time period, students were only expected to understand and learn rudimentary skills such as reading, writing, and arithmetic. The classical conditioning theory of John Watson addressed this view. It developed the appreciation of literature, art, science, and so on through the association of students' early experiences with positive reactions. This theory along with Edward Thorndike's connectivism showed the positive relationship between stimulus and response (S-R). Thorndike postulated three learning laws. The "law of effect" stated a positive association with S-R strengthens connections, and a negative association weakens S-Rs. The "law of exercise" stated repetition increases probability of a correct response. The "law of readiness" stated if you feel ready and exercise that feeling, it provides satisfaction whereby if you force an action it provides annoyance.

Ivan Pavlov demonstrated how stimulus could elicit response (i.e., dogs: bell–salivate), but Watson and Thorndike extended S-R to learning contexts. Classical conditioning did not explain all behavior as Watson perceived, but stimulus toward understanding S-R was started.

B. F. Skinner formulated the operant conditioning learning theory. This theory postulated that the environment (stimuli, situations, events) serves as a cue for responding. Reinforcement consequences increase behavior; punishment consequences decrease behavior. Skinner believed behavioral change is learning. Stimuli and reinforcement may explain some human learning, but research indicates that to explain learning we must take into account people's thoughts, beliefs, and feelings (Bigge & Shermis, 1999; Gredler, 2005; Schunk, 2004).

The training needs of WWII personnel and the space race evoked new questions about learning. People needed to be taught skills that were complex. Simply knowing what to do and doing it (basic S-R) does not determine success in all instances. Robert Gagné developed the theory of learning that accounted for the variety of human understandings with the conditions of learning. Gagne's theory accounted for five categories of learning: verbal information, intellectual skills, cognitive strategies, attitudes, and motor skills. The skills to be learned are written into performance objectives, and the category of learning is identified. Task analysis is then used to identify prerequisite skills. Instructional events are selected for each objective to be taught. This theory provided for cumulative learning when implemented properly.

To this point in history, behaviorism theories were unable to explain certain social behaviors affecting learning. Jean Piaget theorized levels of complex reasoning. These levels or stages of cognitive development are as follows: Stage 1—Sensorimotor (birth–1 year), Stage 2—preoperational (2-3 years to 7-8 years), Stage 3—concrete operational (7-8 years

to 12-14 years), and Stage 4—formal operational (14 years and older). In Stages 1 and 2, the student needs concrete examples, pictures, visual aids, and so on to learn concepts. In Stage 3, the students still need concrete examples but begin to think logically and use examples. In Stage 4, students begin to think hypothetically and abstractly. Cognitive development starts at infancy and continues throughout adulthood. Knowledge is the outcome of interaction between the student and the environment (Woolfolk, 2010). Implications of Piaget's theory for education were to understand cognitive development, keep students active, create incongruity, and provide social interaction. Schemas are produced and linked to knowledge. Each learning process adds to the complex knowledge structures of the individual.

Another major theory of learning is constructivism. Constructivism operates on the premise that we all construct our own perspective of the world through individual experiences and schema (Schuman, 1996). "What someone knows is grounded in perception of the physical and social experiences which are comprehended by the mind" (Johansson, 1991). Constructivism can be seen in many writings such as Bruner, Kant, Dewey, Goodman, and Piaget (Woolfolk, 2010). We have seen an evolution of theorists and also of theories. As time and knowledge have grown, the use of theories and their applications has also. Theory and practice reform each other and learning.

Theories in Action

It is noted that education usually sees the influx of theory as it decreases in popularity with psychologists. The adoption rate of education is a slow process and usually classified in the late majority or laggard category because of the complexity of adoption rates in educational systems (Rogers, 2003). As behaviorism was declining in popularity in the 1960s in American psychology, it was emerging and having impacts on education. Paul Saettler (1990) stated six areas of impact of behaviorism on educational technology in America: the behavioral objectives movement, the teaching machine phase, the programmed instruction movement, individualized instructional approaches, computer-assisted learning, and the systems approach to instruction. The behavioral objectives movement stated that learning objectives should be used and specified in quantifiable and terminal behaviors.

The teaching machine phase was advocated by B. F. Skinner and used reinforcement to increase learning (operant conditioning). The programmed instruction movement was also advocated by B. F. Skinner, which outlined instruction based on learning theory. Individualized instructional approaches were concerned with individual learning, which was self-paced to the learner. Three individualized instructional approaches to learning most often used were the mastery, computer-assisted, and systems approach. Mastery learning was the major objective because it was

theorized that individuals can self-direct their learning. Computer-assisted learning was based on the use of technology through hardware/software and student learning. It was based on drill and practice but declined in use because it was seen as costly, lacking of technical support, and not integrated. The systems approach to instruction was based on flowcharts and sequencing of events. This system was rooted in military and business models and required continuous evaluations and/or modifications.

Cognitive psychology emerged in the 1950s and surfaced as a dominant learning theory in the late 1970s toward instructional design. Most instructional design models used in behavioral science was adapted in the cognitive realm. The major goal of instruction was to communicate or transfer knowledge to learners in the most efficient way possible. Tasks were analyzed and broken down into smaller steps. Information is used to develop instruction that moved from simple to complex and built on prior experience or schema.

Constructivism was far more intricate in designing instructional design processes. Constructivism upholds a more open-ended learning experience based on individuals' experience. This type of learning is not as easily evaluated, nor are the results the same for every learner because constructivism sees every learner as different based on his or her experiences. Perkins stated,

> Information processing models have spawned the computer model of the mind as an information processor. Constructivism has added that this information processor must be seen as not just shuffling data, but wielding it flexibly during learning—making hypotheses, testing tentative interpretations, and so on. (Perkins, 1991, p.21, in Mergel, 1998)

Constructivism promotes that the design of learning environments support the construction of knowledge by the learners. Understanding the historical effects and the development of theories is imperative to an understanding of where we have been and where we are going in education. Figure 1 illustrates the nature of the paradigm shift from recitation literacy toward extraction literacy as developed by the author through an intensive review of the literature..

Underlying Learning Theories

We have seen the philosophical foundations and needs of learners before WWII change. Learning has been classified for that period as recitation literacy because the needs of students were based on the desired outcome that knowledge was to be remembered, not understood. Most learners needed only to be able to read, write, and do simple mathematics. Theory dealt with that perceived need and was most understood through behaviorism. Behaviorism started out as simple stimulus–response and grew because of work by Pavlov, Watson, Thorndike, and Skinner. Learners had
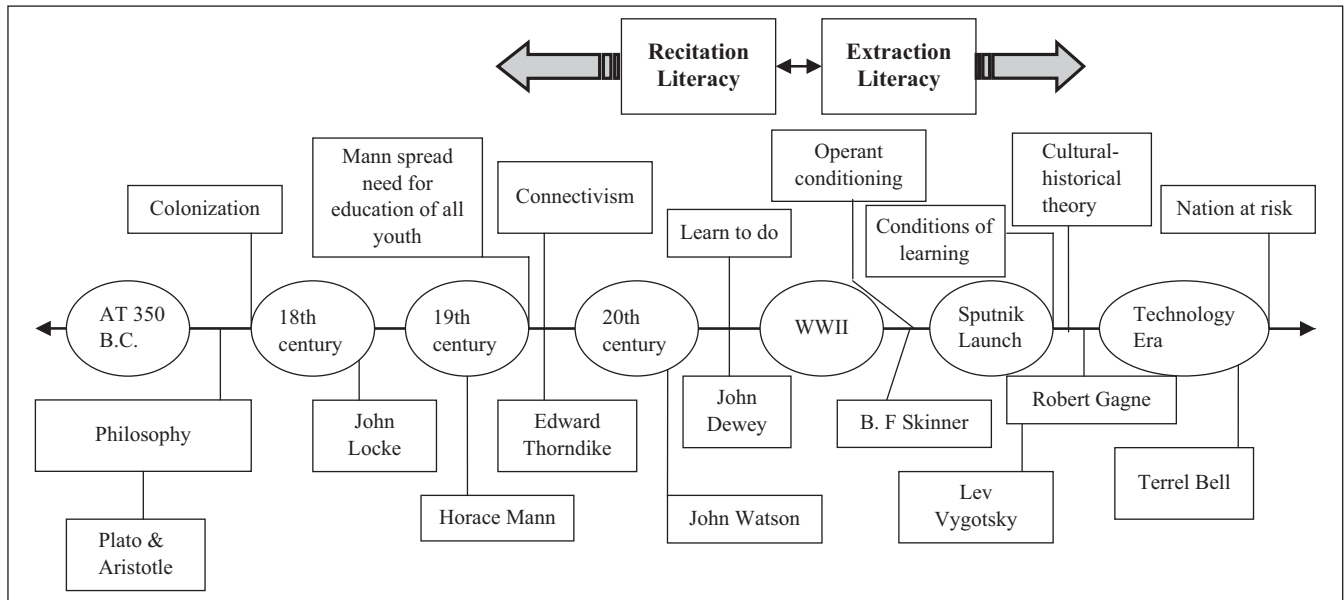
Figure 1. Literacy timeline from early philosophy to present

specific goals and responded in determined ways because of those directions (stimulus–response). If learners were met with situations where previous learning had not prepared them to understand a process, then they had no background experiences to deal with that situation until they learned a "correct" response. Behaviorism had many advantages to previous thought during its time, but as the world and learners have changed, so has the need for a new theory of learning.

After the launch of Sputnik, theories of how to best educate learners focused on the needs determined by this historical event. A new theory of learning processes was needed, and a cognitive approach to learning evolved. Gagne, Piaget, Bruner, and Dewey were all influential figures driving this era toward a cognitive approach. It was espoused that learners needed to understand with more complexity what they were expected to learn. Learning moved from recitation literacy toward extraction literacy to obtain this goal. A knowledgeable person was one who is a problem solver. This type of person was one who interacts with the environment toward investigating hypotheses and extending generalizations (Gredler, 2005). In the later part of the 20th century, another emergent view of cognitivism was presented with the understanding of the effects of social, cultural, and personal factors toward learning. Lev Vygotsky and Albert Bandura individually developed learning theories that dealt with those issues. Lev Vygotsky developed the cultural-historical theory, which took into account the nature of culture and its effect on learning, and the role of social interaction and its impact on the learner (Gredler, 2005). Bandura addressed cognitive deficiencies he foresaw with his social-cognitive theory. Bandura touted that observers could learn behavior through social settings such as observations (Bandura, 1986). His experiments with phobic patients of snakes are widely

known and promote the foundation of observation, and its effects toward cognition.

Beyond these major views and/or theories of learning, a third perspective learning theory has risen from the cognitive realm of educational theory. Constructivism adds to the basis of cognitivism and works of predominantly cognitivism theorists. Educational constructivism has been categorized into personal, social, and aphilosophical constructivism. Personal constructivism considers all knowledge to be personally constructed. Social constructivism believes that all knowledge is transactional and socially constructed. Aphilosophical constructivism touts that there are no assumptions about the nature of knowledge. Learners need to immerse themselves in activities of learning for personal meaning to occur. Gredler (2005) states three concerns about constructivism: "1) collaborative learning may be inappropriate for some learning, 2) low-ability learners and those from other cultures may face difficulties in the learning process, and 3) burdens are placed on the classroom teachers" (p. 90).

Environment Design

The design of learning environments is an important consideration when analyzing learning and the needs of learners. There are four perspectives about the design of learning environments. They consider the degree to which the environment is student-centered, knowledge-centered, assessment-centered, and community-centered.

Learner-centered environments focus on the "knowledge, skills, attitudes, and beliefs that learners bring to the educational setting" (Bransford et al., 2000, p. 145). Educators should tie learning with the experiences the learner brings to the educational environment. Understanding of this concept allows learners to make real connections in the learning process.
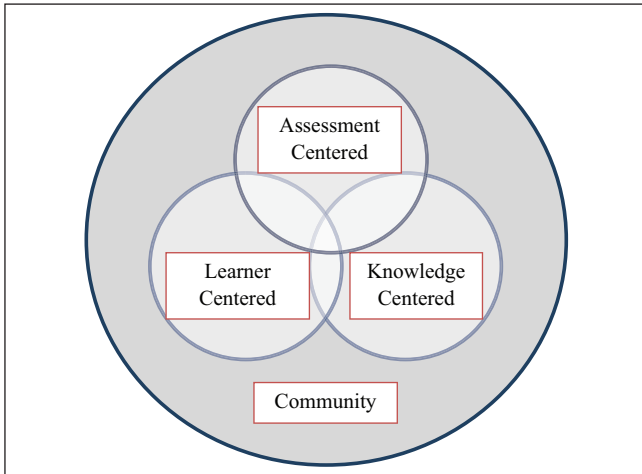
Figure 2. Perspectives on learning environments
Source: Adapted from Bransford, Brown, and Cocking (2000).

Knowledge-centered environments enable students to understand and transfer knowledge. Learners in this type of environment can learn their way around the discipline. They develop interconnected pathways of knowledge acquisition. Learners become skilled at how to make sense of ideas, and metacognition plays an integral part of describing this type of learner.

Assessment-centered environments "provide opportunities for feedback and revision and what is assessed must be congruent with one's learning goal" (Bransford et al., 2000, p. 145). There are two major types of assessment classified as formative and summative. Formative evaluations used in assessment-centered environments give feedback to improve learning and teaching. Summative evaluations measure learners' outcomes at the end of learning activities and units. Assessment is a key facet of designing, implementing, and carrying out a learning environment for learner progression.

Community-centered environments encourage the degree to which learning environments promote a sense of community. Aspects of community-centered environments are the classroom, the school, and the connection between the school and the larger community, as well as the home (Bransford et al., 2000). The understanding of community importance and its effect toward learning can have a significant impact on academic achievement.

Alignment of these four perspectives is needed for the learning environment. As seen in Figure 2, there is interwoveness between knowledge, community, and assessment environments, which are all part of the greater community environment. Each has influence on the other, and overlap occurs between each perspective.

Literacy and Instructional Design

Instructional design has been defined as "the systematic process of translating general principles of learning and instruction into plans for instructional materials and learning"

(McNeil, 2006). The educational system and its design have grown immensely since the days of Socrates, Aristotle, and Plato. We have changed from a view of mental discipline from early beginnings toward educational philosophies and learning by doing as presented by John Dewey at the turn of the 20th century.

The conception of instructional design can be primarily attributed to John Dewey and Robert Thorndike, but as a discipline, its birth should be credited to B. F. Skinner, Jerome Ausubel, and Jerome Bruner. Skinner combined strategy principles and components into the "first real empirically tested model of interaction" (Reigeluth, 1983). Skinner's orientation to instructional design was behavioral, and other behaviorist designs followed his basic model. Bruner and Ausubel's orientation to instructional design is cognitively based and can be traced to Dewey.

As we dissect recitation literacy and the accompanying instructional design process associated with it, we see a behaviorist approach predominately. Edward Thorndike's theory of connectivism represents the original stimulus–response model purported during this age of recitation literacy (Gredler, 2005). Due to the needs of learners at this time and the required low degree of processing, a behaviorist approach facilitated this educational design well. Recitation literacy only requires rote memorization, basic associations, and therefore behavioral educational design filled the needs of educators and learners

With the emergence of WWII, training needs of military personnel caused the educational tenets of American society to be challenged. There was an apparent need to educate personnel to think critically. Individuals needed to be able to problem solve, and they needed to be able to reason. Objectives were needed for learners to determine learner outcomes. With the launch of Sputnik, the space race was beginning, and America was behind. Because of the changing needs of learners many changes in educational systems resulted. In 1962, Robert Glaser introduced the concept of instructional design (Glaser, 1962).

This era of extraction literacy began with cognitive theories as the basis for instructional design. There was an increased need in processing by learners through reasoning and problem solving, and cognitive theory was in line with this need. The learner needed to be equipped to engage in generative, reflective reading; writing; calculating; phrasing, and then problem solving. Cognitive theories better equipped educators than did behaviorist approaches to instructional design. Learners are challenged to become adaptive experts who can solve problems and make contributions to society throughout their lives (Bransford et al., 2000).

Currently, we have entered into another era of learner needs. Learners have progressed, and the needs of society have continued to change. Today's learner has needs of high-level processing abilities and a more personal design of instruction. Students are more able to be self-directed and

process information. To equip learners with abilities, education has moved to a more constructivist approach. Today's theories view learning and take into account their ability to construct new knowledge based on prior knowledge or experiences (Kort, Reilly, & Picard, 2001).

Students must be prepared to be flexible in their abilities to adapt to new problems and settings in which learning and application of that learning takes place. Transfer of learning is an important aspect of understanding, which is often overlooked in understanding the depth of knowledge that learners possess. The ability of learners to transfer learning from one set of concepts to another, one subject to another, and across school to everyday life is an essential goal of education (Bransford et al., 2000). A holistic approach to learning is what is defining learning today, and learners are expected to have extraction skills to be knowledgeable in today's world.

Learners must have an initial level of learning for transfer to become possible. Learners must engage in practice so that skills will become learned and understood. Learners must also be taught in a variety of contexts for learning to be transferred. It must also be understood that learning involves transfer from previous experiences. Educators who allow learning to occur for the variety of experiences that learners bring into the classroom allow knowledge acquisition and the ability for learners to be able to transfer that knowledge from context to context. Today, learners are expected to construct new knowledge based on past experiences, and perform model-based reasoning, reflection, and metacognition (Kort & Reilly, 2002).

Conclusion

Understanding the process of learning has been a question undertaken by philosophers and educators since early human history. Early philosophers undertook this task by defining the nature of knowledge in regard to the nature of perceived reality (Gredler, 2005). Knowledge and understanding in early times was reserved for learners of high influence. They were usually well-to-do children of kings, priests, rulers, and philosophers.

As our world and culture has evolved, expansion of knowledge has occurred, and it has expanded to whom it is offered. Presently, society believes in educating all individuals and not just the well-to-do. Because of this paradigm shift, we have moved from education of individuals in terms of basic curriculum, that is, math, reading, writing, and language skills (Latin and Greek) toward practical knowledge. Learners are still expected to master basic skills needed to function in our society, but they are also given the opportunity to learn specific skills that apply to what they wish to discover and not what is perceived to be beneficial for everyone. Because of the transition of how knowledge acquisition is needed from a few to the masses, further understanding of how knowledge acquisition occurred, and methods were developed to address this changing need. In addition to being able to learn specific skills, we have also seen a shift in the last century from recitation literacy toward extraction literacy. Learners are expected to understand the applications they are learning and not just memorizing concepts to regurgitate them back to the instructor. This change of beliefs has been attributed to many happenings in our culture and world.

Our society and culture is ever changing due to expansion, innovations, and scientific breakthroughs. All of these changes can lead to euphoria, about the new ways to understand learning and learners, but it can also lead to information overload. Educators must be aware of this and understand that not all new ideas work well and are easily implemented. Glennan, Bodily, Galegher, and Kerr (2004) stated,

> Teachers and leaders caught up in daily struggle to keep a school running do not have the time to develop a school improvement framework and to find the resources needed to implement such a framework in their classes, but adoption of a comprehensive school improvement framework allows teachers and other school leaders to fit smaller initiatives into a larger picture, thus creating a "change culture" while adopting the fragmentation of disconnected projects or the adoption of the fad of the year. (p. 441-442)

The world has seen the growth of many insights through scientific learning, about how the mind works, and those factors that attribute to learning. The ways that learners process information are being understood more each day with discoveries about the mind, cultural attributes that affect learning, and how to make learning positive for today's learners. There are many ways we accomplish these ideas. Understanding knowledge-centeredness, which shows us what should be taught and how this knowledge should be organized is one way. As educators, we must also understand learner-centeredness, which includes who learns and the "how" and "why" of learning individually. It is also important to understand the effects of community-centeredness to understand the kinds of classrooms, schools, and how the community enhances learning (Bransford & Darling-Hammond, 2005). Another important factor we must understand is the value of being assessment-centered and how it affects learning. Assessment-centeredness looks at what kind of evidence there is for student learning and the role of teachers, parents, and community influences.

Through needs by industry, consumers, and the public, psychologists have delved into how the mind works. Through these investigations, a diversified view of how learners acquire knowledge has resulted. The transition from the mind as a sponge to presenting information based on how the mind collects information has occurred.

Basic recitation literacy is not definitive of learners in today's society. Learners must practice, tie learning to

experience, and understand and be able to transfer learning from different contexts. Transfer of learning allows learners to become more knowledge specific and able to use knowledge in a variety of situations, enabling them to be more productive citizens of the world. Many types of learning require learners to transfer existing knowledge to new situations, ideas, and concepts.

"Teachers have a critical role in assisting learners to engage their understanding, building on learners' understandings, correcting misconceptions, and observing and engaging with learners during the process of learning" (Bransford et al., 2000, p. 238). Learners must be engaged in the process of learning through understanding the relevance of information. This can be facilitated through many ways, and tying information into previous experiences can ensure knowledge acquisition. Educators must understand that learners may have misconceptions about learning that need to be addressed before learning can occur. Educators need to understand the cultural aspects of all learners and make critical decision in regard to this to facilitate the learning process in their classroom. Educators must also engage with the learners in the learning process. This allows learners to understand the role and expectations teachers have for them as learners, it allows learners to be more engaged, and it builds understanding and trust in the learning process.

Recently, theory and research have started to understand the complexities prevalent in the learning process. Unfortunately, "theory development and research face conceptual, theoretical, and social issues in their efforts to contribute to our understanding of learning and instruction" (Gredler, 2005, p. 168). We have seen, during the last century, the adaptation of theory because of its popularity and a great many misapplications. People tend to believe that someone has found a cure all when a new theory of learning is postulated. When something new and exquisite is developed, it is commonly tried and used it in all situations. Users do not understand the process of the theory and then may only use it in correct contexts sporadically. Through misapplication, many great theories have lost their value. Educators must take theory and apply it correctly so that learning can occur as it was theorized to. Theories are sometimes quite specific in their implementation process, and educators must understand the diversity that is prevalent in all classrooms, and that what works for one may not work for all. As stated earlier, theory by itself does not usually cover all situational factors present in educational classrooms. Practical experience has no overarching framework to organize knowledge of teaching and learning. Theory and practice help reform each other to enhance learning.

"Ideally, conceptualizations about learning can also provide a basis for connecting all of the important areas of expertise teachers need to develop to help all students succeed" (Darling-Hammond & Bransford, 2005, p.87). Understanding the learning process is a complex undertaking. We must understand that not one theory or belief is the cure in education today. All learners are different, and that individualized instruction and education facilitates learning.

Understanding the individuals in the classroom is paramount to success in learning and knowledge acquisition. For learners to become lifelong learners we must make the experiences they have positive and valuable. It is a daunting task that is set out for education but a task that is continually undertaken and envisioned through every learner who sits in our classrooms. As John F. Kennedy stated, "The goal of education is the advancement of knowledge and the dissemination of truth."

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Bio

Don W. Edgar's professional interests include methods of teaching, learner-centered instructional design, and delivery strategies. These interests allow his research focus to analyze the teaching and learning processes involved in secondary educational settings. A secondary research focus has been in the areas of communication between student teachers and their supervisors, and the impacts toward learning, efficacy held by student teachers, and the relationships between the two entities.