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Constructivist education : exploring the constructivist theory and No Child Left Behind to develop an effective kindergarten program

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Abstract

This paper is a literature review of Constructivist Education Theories and how they can be incorporated into a No Child Left Behind (NCLB) classroom. The focal point of this paper will be the theories of Constructivist Education. In addition, will be discussed, the benefits of and problems concerning Constructivist Education. Also, guidelines for incorporating Constructivist Education into a NCLB classroom will be established. The conclusion of this paper will share which theories work and which do not. Also, recommendations for additional research are included.

CONSTRUCTIVIST EDUCATION: EXPLORING THE CONSTRUCTIVIST THEORY AND NO CHILD LEFT BEHIND TO DEVELOP AN EFFECTIVE KINDERGARTEN PROGRAM

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This paper is a literature review of Constructivist Education Theories and how they can be incorporated into a No Child Left Behind (NCLB) classroom. The focal point of this paper will be the theories of Constructivist Education. In addition, will be discussed, the benefits of and problems concerning Constructivist Education. Also, guidelines for incorporating Constructivist Education into a NCLB classroom will be established. The conclusion of this paper will share which theories work and which do not. Also, recommendations for additional research are included.

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CHAPTER 1

INTRODUCTION

Historical Background

DeVries, Zan, Hildebrandt, Edmiaston, and Sales (2002), over the last two decades, credit the works of Jean Piaget for the foundation of Constructivist Education. These recent Constructivist scholars follow Piaget's thinking that children actively interpret their experiences in the physical and social worlds, and as a result, construct their own knowledge, intelligence, and morality.

Before Piaget, the underlying principles of Constructivist Education were incorporated into educational reform that could be dated to Socrates in the 5th century B.C. Socrates integrated intellect and character into knowledge through dialogue with the student. He acknowledged human potential and self-realization as more valuable than learning facts, for Socrates viewed learning as an inner experience that awakened the learner to the world around them (Matthews, 2003). In an effort to escape ritual procedures, Socrates believed in allowing natural consequences to take place, for students were guided to set goals that were in accord to their own values.

Before the age of Psychological Constructivism emerged from the work of Piaget and Vygotsky, Constructivist Education went through an identity transformation. This transformation involved an evolution of Progressive Education by philosophers who wanted educational reform. The underlying principles of Constructivist Education were influenced by the exploration of philosophers and educators such as: Jean-Jacques

Rousseau; Fredrich Froebel, the founder of kindergarten; Johann Heinrich Pestalozzi; and John Dewey. Rousseau argued that civilization was the root of corruption. He was searching for a way to permit children to develop their natural instincts. He wanted children to retrieve information from their environment and construct their own knowledge (Null, 2004).

Johann Heinrich Pestalozzi was a Swiss educator who adopted the teachings of Rousseau. In addition, he felt that parents and teachers should not teach children any information that they could discover on their own. Pestalozzi established an *object-teaching method* as an instructional approach. He believed that students learn best when they are immersed in topics of interest through the use of objects, or concrete tools that encourage them to focus on the lesson (Null, 2004). Hands-on learning was the focus of his reform.

Friedrich Froebel and John Dewey drew upon Rousseau's philosophy to encourage student freedom, to enhance individualized instruction, and to develop self-awareness (Null, 2004). A child's educational development should come from the child, rather than outside sources. The primary role of the educator was to facilitate the natural tendencies in the student (Matthews, 2003).

Over time new philosophers and educators wrote about the role of the child in school; the principles of Progressive Education that were developed by Pestalozzi and Dewey were still being used in laboratory schools. They believed in the learner and encouraged children to learn by self-discovery to construct their own knowledge. They

believed that learners would reach their potential and would share information that was needed.

Even though there are different definitions of Constructivist Education, one common view that is held by all is that learners create their own knowledge, which is based on the interaction of prior knowledge and ideas and new knowledge (Richardson, 2003).

Today, the Constructivist movement is in conflict with the No Child Left Behind (NCLB) legislative mandates that guide the learning of children in the classroom. Early Childhood educators are searching for a way to incorporate child-centered educational practices while attempting to accommodate the requirements of NCLB.

NCLB is a national educational act designed to change the culture of America's schools by closing the achievement gap, offering more flexibility, giving parents more options, and teaching students based on proven research findings. Under the accountability provisions, states must describe how they will close the achievement gap and make sure all students achieve academic proficiency. NCLB empowers schools by promoting local control and flexibility, and it gives states and districts the flexibility to find innovative ways to improve teacher quality (ED.gov, 2002).

Purpose of the Study

The purpose of this literature review is to examine the literature concerning Constructivist Education and to develop guidelines for an effective Constructivist

program in a *No Child Left Behind* environment. Questions guiding this study are as follows:

1. What are the main educational theories or philosophies for Constructivist Education?
2. What are the benefits of Constructivist Education?
3. What are some problems with Constructivist Education?
4. What are some guidelines for an effective Constructivist program in a NCLB environment?

Need for the Study

This literature review is needed to find an effective way to incorporate Constructivist Education into the classroom in a NCLB environment. Looking at benefits of and problems with Constructivist Education will suggest the guidelines for an effective Constructivist Education program.

Limitations of the Study

Limitations of this literature review included the following: (a) locating resources, many of the books that were located, were previously checked out, (b) effective time management, trying to find time to work on the paper while raising four children, (c) describing how the guidelines correlate with NCLB, by trying to reshape my own classroom to meet time allocations and district mandates passed down from NCLB, and (d) finding an effective way to communicate broad Constructivist terms.

Definitions

The following terms will be defined for this literature review to eliminate confusion and ambiguity.

Accommodation: Reshaping the existing knowledge configurations to accept new experiences (Zahorik, 1995).

Accretion: Programming new information based on existing structures (Zahorik, 1995).

Arbitrary Truth: Knowledge that can only be gained through transmission from other people in some form (DeVries, et al., 2002).

Assimilation: A shaping procedure in which new experiences are recognized through existing knowledge configuration to accept the new experience (Zahorik, 1995).

Autonomous: Following moral rules that are self-constructed, self-regulating principles (DeVries & Zan, 1994).

Authentic: Problems that are likely to occur in the real world (DeVries & Zan, 1994).

Behaviorism: Teaching with techniques that usually include the systematic recording of specific behavioral observations that provide the basis for evaluating the child's behavior and giving feedback (DeVries & Zan, 1994).

Child-Centered: Activities or curriculum that are focused on child interest and ability. The children are interactively involved in their own learning.

Constructivist Education: Children are actively involved in reflection of their experiences and constructing their own knowledge (DeVries et al., 2002).

Discovery Teaching: Teaching which engages children in activities that have been planned so that the student involvement leads to a programmed conclusion (Zahorik, 1995).

Divergent: An activity where there is no preconceived outcome (Zahorik, 1995).

Extension Teaching: Students use original activities as a basis in their attempt to solve a new problem (Zahorik, 1995).

Hands-On Activities: Activites which allow children to manipulate objects to construct their own knowlegde.

Holistic: An activity that is broad and multifaceted and has not been simplified or shaped for pedagogical purposes (Zahorik, 1995).

Interpersonal Relationships: Interactive relationships in a learning environment to aid in a child's construction of the self (DeVries & Zan, 1994).

Logico-Mathematical Relationships: Noticing similarities and differences among textures, colors, and media (DeVries & Zan, 1994).

Metacognition: Making meaning by thinking about thinking (Gagnon & Collay, 2001).

NCLB: No Child Left Behind is legislated mandates with the goal of keeping all children learning at grade level.

Object Teaching Method: All people can and should learn. Learning begins at birth and requires parental attention. Instruction should involve dialogue and centered more around objects than books. Teachers should discover how to structure their presentation and find out how children learn (Null, 2004).

Operationalize: Elaborating a plan or a system.

Physical Knowlegde Activities: Activities that allow you to act on a variety of materials to observe the range of effects and reactions (DeVries et al., 2002).

Play: An opportunity to explore the social roles and rules of the world of a child (DeVries et al., 2002).

Restructuring: The process of generating new structures or new information (Zahorik, 1995).

Scaffolding: Using the teacher as a support system, which allows children to move forward using new competencies (Berk & Winsler, 1995).

Sociomoral Atmosphere: An atmosphere in which respect for others is invariably practiced (DeVries et al., 2002).

Sociomoral Environment: An environment in which children's social and moral interactions are cultivated and cooperative peer and adult interactions are encouraged (DeVries & Zan, 1994).

Tuning: Steady adaptation of existing structures (Zahorik, 1995).

Use Activity: Activities that describe procedures that influence students to reflect on what they have learned (Zahorik, 1995).

CHAPTER II

REVIEW OF LITERATURE

Theories of Constructivist Education

The general perception of Constructivist Education is that it is a theory of learning, or it is a means to understand in a sociomoral environment. Individuals create their own understandings about what they already know and with the new knowledge with which they come into contact (Richardson, 2003).

DeVries and Zan (1994) describe Constructivist Education in the following manner: "Constructivist Education engages the child's interest, inspires active experimentation, and fosters cooperation between adults and children, and among children themselves" (p.62). The teacher's relations with children are crucial to the sociomoral environment. The Constructivist teacher attempts to collaborate with children and promote cooperation among children (DeVries & Zan, 1994).

Constructivist teaching is guided by six theory statements, which are discussed below, that were developed because of the realization that something more was needed other than Behaviorism to explain rational, logical, cognitive development that transpires between stimuli and feedback. This realization provided a theoretical basis for Constructivist teaching (Zahorik, 1995).

The first three Constructivist theory statements are based on the role of *knowledge* (Zahorik, 1995). The first of the principles of the six theory statements is that knowledge is constructed by humans. Knowledge is not simply a list of data and notions to be

discovered. Humans create or construct knowledge as they look for meaning in their experiences. The second theory statement is that knowledge is conjectural and fallible. Because knowledge is incessantly being constructed by humans, knowledge can never be static. The understanding that what we invent is always provisional and ongoing. The third theory statement is knowledge grows through exposure. Our understanding becomes more concrete if someone tests it against new circumstances. This knowledge is critiqued and grows with each new encounter (Zahorik, 1995).

Another view of constructing knowledge holds that only knowledge that is justified is true. Progressive educators usually attempt to justify information they present by asking students, 'how do you know,' in order to convince their students that the knowledge is true (Perkinson, 1993). In this manner, educators are imparting rational thinking techniques as a means of teaching students to justify their knowledge.

The last three Constructivist theory statements are based on the role of humans (Zahorik, 1995). The fourth theory statement recognizes that humans have a built-in aversion to disorder. Making meaning of something is an inevitable consequence of being human and driven by instinct. Humans constantly analyze the environment. Meaning that exists is often rearranged in an effort to understand it better. The fifth theory statement says that humans have internal *knowledge structures* that guide perception, understanding, and action. All humans embrace meanings that are in steady alteration. These prior experiences direct new experiences. The sixth and final theory statement communicates that human learning is a matter of strengthening internal

knowledge structures. When humans engage in experiences, they activate their *accessible knowledge*. As this continues, accessible knowledge becomes more intricate with more connections. These connections can adapt understanding or eradicate prior knowledge structure (Zahorik, 1995).

Zahorik (1995) described how Piaget theorized that cognitive functioning involved assimilation and accommodation the following way:

> Assimilation is a shaping process in which new experiences are received through existing knowledge structures, while accommodation is reshaping the existing knowledge structures to accept the new experience. The whole process, which is driven by a desire to achieve equilibrium or create a balance between personal constructions and new experiences, results in a cognitive structure that is more integrated or accepts more ideas and that is more differentiated or contains more substructures. This construction includes the following three kinds of cognitive progression: *Accretion* is programming new information based on existing structures. *Restructuring* is the process of generating new structures, and *tuning* is steady adaptation of existing structures. (p.11)

Berk and Winsler (1995) identified how Piaget's theory of cognitive functioning, the theories of Vygotsky, and their beliefs about development compliment each other. Vgotsky described two lines of cognitive development- the natural and the social- that result from the child's experience in the environment. In Vgotsky's theory, children transform their new knowledge based upon pre-existing internal concepts and reflection. The pace at which children cognitively develop is influenced by the environment.

Berk and Winsler (1995) stated that: "Piaget focused on what it is with the organism that leads to cognitive change; Vygotsky explored how social experience might cause important revisions to the child's thinking" (p.110).

Furthermore, Berk and Winsler (1995) explained that Piaget accented the natural side in his translation of structural change in children's thinking, while Vygotsky accented the social side. Vygotsky placed emphasis on the significant role of communication and speech about children's naturally formed concepts.

Criticisms of the Behaviorist approach for dealing with difficult children focus on its psychological conjectures and its failure to concede the origins and causes of misbehavior. In Behaviorism, behavior is controlled through reward and punishment. The Constructivist belief is that such external control operates against the development of autonomy and against the meaningful construction of knowledge (DeVries & Zan, 1994).

There are five basic elements of Constructivist teaching that are derived from the aforementioned theory statements. The first element is activating prior knowledge. What is learned is continuously learned in relation to what we already know, our accessible knowledge structure; it is important that this prior knowledge be acknowledged. When teachers are familiar with students' prior knowledge, they can modify their planning for future learning experiences more effectively. The teacher can prepare to facilitate in building on certainties, or to re-direct when erroneous beliefs are present (Zahorik, 1995).

The second element is *acquiring knowledge*. Students must encounter knowledge that assists them in shaping the extent to which it fits their existing knowledge structure. Students need to experience a focus and all its related parts to develop understanding. Connections do not occur effectively if the content is experienced as remote fragments of data. In the process of acquiring knowledge, the Constructivist teacher provides

reinforcement in the form of scaffolding. The teacher provides support as the student learns the building blocks of information. The teacher builds on students' prior knowledge by accumulating resources that support topics of what they are learning. As the student begins to acquire knowledge, the scaffold is removed gradually until the student is independent. In the process of scaffolding the teacher can take on the role of a model (Zahorik, 1995).

Scaffolding consists of engaging students in interesting and culturally meaningful problem solving activities, having children learn to communicate and collaborate toward a joint goal, providing an adult model that inspires competence and is responsive to the needs of the child, adjusting the amount of adult intervention to the child's needs, appropriately challenging the student, and fostering self-regulation. Scaffolding can consist of moment by moment adjustment to the educational needs of a child (Berk & Winsler, 1995).

The third element is, *understanding knowledge*. Once students have been exposed to new material, the process of understanding begins. The student begins to weigh new information to existing knowledge. This will help to determine if the information supports or conflicts with prior knowledge. One way to do this in the classroom is through dialogue between teacher and students or among students in small groups in which students take turns sharing their interpretations, rationalizations, declarations, insights, and ideas (Zahorik, 1995).

DeVries and Zan (1994) shared several proposed criteria for good physical knowledge activitities that will aid students in the construction of logico-mathematical relationships:

> The child must be able to produce the phenomenon by his or her own action. The child must be able to vary his or her action. When the variations in the child's action result in corresponding variations in the object's reaction, the child has the opportunity to organize—that is, to construct—these relationships. The reaction of the object must be observable. The reaction of the object must be immediate. (p. 70)

The fourth element is *using knowledge*. Providing students with activities in which they can use prior knowledge and about which they can develop understanding to expand and enhance their knowledge. The most effective activities for learning knowledge are through problem-solving activities that are authentic, interesting, holistic, long-term, and social. Activities that require students to solve problems must be purposeful. Students must integrate and operationalize their knowledge as they make an effort to decipher the problem (Zahorik, 1995).

One major concept of Progressive Education that is embraced by Constructivist Educators is that children learn best if they are allowed to choose the topics they are interested in learning, when they will learn about that topic, and at what pace they will proceed. This responsibility is passed on to the child rather than the teacher, allowing the child to take ownership of his or her learning.

Authentic problems are those that are likely to occur in the real world. Interest is critically important if students are to extend their understanding through activity, because if they are not interested in the activity, they will not participate at the appropriate level.

A holistic activity is one that is broad and diverse and has not been overly simplified or shaped for pedagogical purposes. Long-term activities refer to activities that will involve students for several days. A short term activity may not engage students long enough for them to reorganize their *knowledge structures*. A social activity is more useful than work in isolation. When students have a chance to work within a group to solve a problem, they have the opportunity to constantly voice ideas and receive feedback on their knowledge and skills (Zahorik, 1995). Early childhood education had a focus on social and emotional development (Chall, 2000). The ideal goal of education is to educate the whole child- and a happy child.

The Social Constructivist Theory explains that individuals first make individual meaning. Their thinking is renegotiated through dialogue with others to construct collective meaning. Finally, they construct meaning by reviewing collective meaning with a larger community. These three steps describe the process of socially constructing knowledge (Gagnon & Collay, 2001).

Piaget describes three categories of knowledge that are reflected in activities. These categories are physical knowledge, logico-mathematical knowledge, and conventional arbitrary knowledge (DeVries & Zan, 1994). Physical knowledge is based on experiences of acting on objects and observing their reactions. Part of physical knowledge comes from observing attributes of the object. A child cannot construct physical knowledge without understanding how the object is manipulated, for physical knowledge cannot be developed without logical reasoning (DeVries & Zan, 1994).

Logico-mathematical knowledge is the result of reflective mental actions by students as they work with objects. Logico-mathematical knowledge introduces children to the attributes that objects have as children work with them. The origin of logico-mathematical knowledge is children's own constructive scheme. Children will make their own conclusions from what they experience through interaction with an object. The construction of intelligence is the building block for prospective logico-mathematical relationships (DeVries & Zan, 1994).

Conventional arbitrary knowledge is arbitrary truth agreed upon through discussion. Dates or holidays are examples of arbitrary knowledge. Another example of arbitrary knowledge is a red stoplight, which indicates that you should stop, because this knowledge is understood in our society. Letter names and letter sounds are other examples of arbitrary knowledge that are agreed upon and understood by members in a society (DeVries & Zan, 1994).

The fifth element is reflecting on knowledge. Students attain knowledge, intensify their understanding, and use it to solve problems. To fully understand and relay knowledge, students need to reflect on their learning experiences. Reflection is examining one's understanding of his or her way of processing information. This process is also known as metacognition. The student must be aware of the strategy, which is used to determine the solution to the problem. Autonomous behavior allows the student to set goals and make plans to realize them (Zahorik, 1995).

Students record their thinking to document learning. Reflective metacognition, or making meaning of learning by rationalizing their thoughts, can be done only as a methodical process with sustained effort. Including students in a routine process for analyzing their own thinking is essential to learning to be a learner (Gagnon & Collay 2001).

From these five basic elements, four types of Constructivist teaching are developed. *Application* is where the teacher begins by drawing on prior knowledge to have students acquire some subject matter or skill. The activities are designed to increase understanding. Students are engaged in *use activities* that describe procedures that influence students to reflect on what they have learned. The use of an activity in this type of teaching is convergent, meaning that it has one or more known outcomes. The activity is arranged so that students arrive at a fixed outcome. Thus, the student will reflect on prior knowledge to determine the effect of the new findings to evaluate whether they conflict or concur with the new findings (Zahorik, 1995).

Discovery teaching engages students in an activity that has been planned so that the student involvement leads to a programmed conclusion. Through the activity, students will incidentally obtain and understand the anticipated content. The end of the lesson would encourage reflection of the new learning by allowing children time to review their learning interaction (Zahorik, 1995).

Edification of the key ideas of a subject involves, not only acquiring general standards, but also development of an attitude toward learning and inquiry and toward the

possibility of solving problems on one's own. A significant factor is a sense of excitement about discovery- discovery of consistencies of previously unrecognized relations and similarities between ideas, with an ensuing sense of self-assurance in one's abilities (Bruner, 1965).

Extension teaching is similar to application teaching with one significant difference. The use activity is *divergent*. Divergent means that there is no preconceived outcome. The teacher provides basic *knowledge activities* to support the divergent activity that follows. Students use the original activities as the basis in their attempt to solve their new problem (Zahorik, 1995).

The last of the four types of teaching is *invention*. Invention requires students to solve a problem that has many possible answers. If students cannot come to a concurrence, the teacher may provide more *divergent activities* to assist in the solution. Similar to the *discovery method*, the sequence of events should support reflection to build a stronger understanding of the activity, which will culminate in *constructed knowledge*. (Zahorik, 1995).

The feature principle of Constructivist Education is that a *sociomoral atmosphere* must be attained in which respect for others is invariably practiced. The network of these *interpersonal relationships* set the stage for all that has come before in this chapter (DeVries & Zan, 1994).

Benefits of Constructivist Education

A fundamental principal in Constructivist Education is understanding a student's point of view. This is an essential part of Constructivist Education. A student's point of view is his or her reasoning. Recognizing a student point of view enables educators to challenge students, establish necessary circumstance, and develop meaningful experiences (Brooks & Brooks, 1993).

The following targets of Constructivist Education paint a picture of the positive effects of a Constructivist environment. Learning results from students establishing connections between new information and prior knowledge. Scaffolding is the teachers' way of supporting and assisting the learning that takes place. The teacher gradually replaces support with observation, as the student becomes more independent and autonomous. Teachers should not misinterpret this type of teaching as free from rigorous requirements, for teaching should be intentional with the students' prior knowledge and experiences in mind. In addition, to develop the best learning situations, by students, teachers organize and select resources to encourage exploration (Vermette, Foote, Bird, Mesibov, Harris-Ewing, and Battaglia, 2001).

Structuring curriculum around the big idea warrants students to make choices and have options connected with their learning (Vermette et al., 2001 and Brooks & Brooks, 1993). Making connections meaningful comes from collaboration. Collaboration requires the students' to be social, interacting, and examining their constructions of knowledge. These constructions of knowledge come to us in the form of student-

centered activities based on the interests of the students. The teacher coaches the students' as active participants in their own learning (Vermette et al., 2001).

Students who belong to a Constructivist environment become self-regulators who do not depend on outside sources to construct knowledge and understanding for them. These students are immersed in curriculum that is interesting to them, providing them with a positive educational experience.

The teacher originates an atmosphere in which children believe that the teacher cares for them, takes pleasure from being with them, and respects them by taking their feelings, interests, and ideas into consideration. For when children realize that the teacher is cooperating with them, they are more inclined to cooperate with the teacher and with their peers (DeVries & Zan, 1994).

Problems With Constructivist Education

Some teachers resist the Constructivist discipline. Three reasons are derived from different aspects of Constructivist Education. It is difficult for many teachers to make a change in their present instructional approach and curriculum. It is difficult for some teachers to give up their control of the learning situation to students. Teachers grow concerned about student learning when it develops from self-regulation. Teachers perceive student autonomy as extreme with the expectations placed on student performance. Finally, classroom management for some teachers may be a concern when they think they are giving too much control to the students. Some teachers were not

taught this way, nor have they used this technique. Letting go of the reins seems as if they are letting go of their control (Brooks & Brooks, 1993).

One major controversy comes in the form of professional development. In training, teachers go through a rigorous systematic model of Constructivist teaching. This method contradicts some teacher expectations. Constructivist Education operates with the philosophy of creating your own experiences. To increase the legitimacy of the Constructivist theory, one would anticipate training to be conducted in a Constructivist manner (Richardson, 2003).

The Constructivist view often speaks of students constructing knowledge that we would like them to acquire. This statement contradicts the entire philosophy of students constructing their own knowledge. A Constructivist teacher cannot choose which knowledge they wish the student to construct. Making absolute claims about what, when, and how something should be taught is objectivist or making arbitrary claims (Carson, 2005).

In Constructivism, each student is his or her own scientist. The Constructivist approach must always be innate and intuitional. This aim ignores the very nature of scientific activity. Science is not simply making sense of experience. It is about producing objective knowledge of the world that others can use (Simpson, 2002).

Constructivist Education appears ideal for early childhood education programming, because it allows children to choose their instructional focus and facilitate enhanced learning. However, Chall (2000) sited research, which suggested that students

do not learn as well when they are permitted to choose. Difficulties would be most prominent with those who lack prior knowledge and language experiences. Constructivist Education, even when accounting for children selecting the content, timing, and rate of learning is inadequate in explaining why some children fall behind.

A final problem with Constructivist Education is that telling students that there are no right or wrong answers or that their interpretation is as correct as anyone else's only encourages students to be careless and to become uncritical readers, writers, and thinkers (Carson, 2005). Chall (2000) observed that teacher-centered teaching methodologies appropriately dominate instruction of skills and scientific facts, which tend to be less amenable to individual interpretation. Conversely, student-centered approaches are preferred in humanities instruction, which theoretically has more fluid subject matter. Chall (2000) also suggested that Constructivist Education and teacher-centered methodologies are not clearly distinguished, given that creative learning is based upon a thorough knowledge of facts and skills. Therefore, teachers practicing Constructivist Education will eventually have to ask themselves whether it is appropriate to use a literal interpretation of Constructivism that sees reality as constructed or simply conceive that students learn best when they are actively engaged in the learning process (Carson, 2005).

CHAPTER III

GUIDELINES FOR INCORPORATING CONSTRUCTIVIST EDUCATION THEORIES WITH NCLB

This chapter will present guidelines for incorporating Constructivist Education theories with NCLB. There are seven general principles, which guide an effective Constructivist classroom. These principles will work collaboratively with the mandates of NCLB to create an effective, Constructivist, kindergarten classroom. It is crucial that these guidelines are adopted when setting up a Constructivist classroom.

Based on NCLB requirements, teachers face mandates and time allocations that do not coincide with the expectations of educators who espouse Constructivist Education. The most significant aspect of kindergarten education, play, is sacrificed because of the lack of time because of time allocations. Reading levels and assessments for early literacy have increased. The NCLB act was introduced for political rather than pedagogical reasons. The program is based on a business model that regards education as akin to a factory turning out products. Students are being coached to perform well on tests without regard to their true knowledge and understanding (Elkind, 2004).

1. Teachers need to establish a *sociomoral atmosphere.*

The first guideline suggests that you initially establish a cooperative *sociomoral atmosphere.* This refers to the entire web of interpersonal relations in the classroom, which begins with *autonomous morality. Autonomous morality* involves the following

rules that are self-constructed and self-regulated. This type of atmosphere stimulates social, moral, intellectual, personality, and emotional development (DeVries et al., 2002).

Children's earliest experiences impact their cognitive constructions of morality and how *moral education* programs can build on children's early moral understandings. Families initially provide experiences necessary for children's early formations of cognitive-moral structures, followed by the expectations of teachers in schools. Through the schools, educators are responsible for nurturing children's moral development (Cummings & Harlow, 2000).

A *sociomoral atmosphere* does not impede any allocations or mandates of NCLB. Children self-regulating rules allow a positive way to create expectations. Teachers are still available to scaffold the choices of the children to model desired behavior.

2. Teachers need to appeal to children's interests.

The second guideline appeals to the children's interest. Observe what children do spontaneously to identify interests. Then propose activities, which are based on observations. Solicit children's ideas about what they would like to learn about and then locate appropriate resources. Finally, provide substantial opportunities for children to make choices. Children should have a variety of options during activity time (DeVries et al., 2002).

Having models developed by administrators for the classroom may diminish the premonitions of play. Providing options of interest capitalizes on keeping children

focused on the task at hand. Inevitably, this should lead to strong constructions of knowledge.

3. Teachers need to direct their teaching to the kind of knowledge involved.

The third guideline is to be able to distinguish between the three kinds of knowledge. These are *physical knowledge*, *logico-mathematical knowledge*, and *arbitrary conventional knowledge*. *Physical knowledge* is constructed when children observe the reactions of objects to their action. *Logico-mathematical knowledge* refers to children's observation of object reactions. Arbitrary conventional knowledge is knowledge that is understood and accepted by the group (DeVries et al., 2002).

Distinguishing among the three types of knowledge helps teachers to prepare for different activities, which are based on each type of knowledge. In this respect, *Physical knowledge* and *logico-mathematical activities* are hands-on student-centered experiences in both math and science, while *arbitrary knowledge* focuses on skill based experiences for learning such as letter names and sounds. All activities are necessary to meet the standards from NCLB.

4. Teachers need to choose content that challenges children.

The fourth guideline is to choose content that challenges the children. Challenging content focuses on big ideas that encourage in depth study. Teachers should create a culture of inquiry and evaluate curriculum based on questions they ask themselves. Several types of questions include the following:

a. Is the activity appropriate versus too abstract or too simple?

b. Does the activity isolate responses or allow for a wide range of constructed knowledge?

c. Would the activity provoke a child's interest and capture their attention or turn them off with boredom? (DeVries et al., 2002).

Teachers should always seek to enhance an educational experience. Students will construct more knowledge based on the following conditions; a thorough preparation of the teacher, more resources provided for exploration, and more possibilities to construct understanding. These ideas will help prepare students for intense standardized assessments required by NCLB.

5. Teachers need to promote children's reasoning.

The fifth guideline promotes children's reasoning by moving the child's thinking forward. Questions and interventions should have purpose. Children should be aware of problems and be able to look for the solutions (DeVries et al., 2002).

Bloom's Taxonomy can provide precedences for questions. The nature of the question influences the quality of thought required for the response. Teachers begin with knowledge or memory questions, then proceed to comprehension, translation with interpretations, and extrapolation, and go on to higher question levels, such as, application, analysis, synthesis, and evaluation. By knowing how to use the taxonomy, teachers can ask higher order questions that go beyond superficial responses (Gagnon & Collay, 2001).

Using questioning effectively will expand children's thinking process. Inquiry challenges students' previous constructions to make sense of what they are trying to

understand. As teachers use the hierarchy of questions, children begin to construct deeper knowledge as they see the big picture.

6. Teachers need to provide adequate time for children's investigations and in-depth engagement.

The sixth guideline states that children need adequate time to explore and construct knowledge. Children require a minimum for 2 hours in a full-day program to pursue freely chosen activities designed by the teacher and engage in in-depth exploration. Children need time over weeks to revisit topics as their understanding intensifies (DeVries et al., 2002).

The time allotted to pursue freely chosen activities conflicts with NCLB. Thoughtfully creating and preparing activities will increase the connections that children make. These activities provide a useful tool for instruction. NCLB does suggest innovative opportunities on the part of the teacher as long as the results of the students meet expectations.

7. Teachers need to link ongoing documentation and assessment with curriculum activities.

The seventh and final guideline incorporates assessment as part of teaching and not separate from it. Assessment of children's knowledge construction is ongoing throughout daily routines and activities (DeVries et al., 2002).

Assessment takes place before, during, and after a learning experience. This authentic assessment, including observation, anecdotal recording, and portfolio presentation, aids the teacher in making decisions about how they can engage and support

student learning. This aspect of learning also allows for teacher modification and accommodations if necessary to ensure standards are met for NCLB.

CHAPTER IV

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The purpose of this study is to examine the literature concerning Constructivist Education and to develop guidelines for and effective Constructivist program in a No Child Left Behind environment. Four questions guided the review.

1. What are the main educational theories or philosophies for Constructivist Education?

The dominant thesis of Constructivist Education is that students construct their own knowledge through experience in a *sociomoral atmosphere.* These constructions of knowledge are often related to prior experiences and present circumstances, which are connected with a common meaning (Richardson, 2003 and DeVries & Zan, 1994).

Constructivist Education focuses on children's interests, which motivate self-exploration, and cultivate the cooperation of adults and children. The environment established by the teacher will either promote student experimentation or deteriorate perseverance (DeVries & Zan, 1994).

There are five basic elements of a Constructivist teaching practice. They are the following: (a) activating prior knowledge, (b) acquiring knowledge, (c) understanding knowledge, (d) using knowledge, and (e) reflecting on knowledge. These five elements assist learners in constructing knowledge, organizing their knowledge, refining their knowledge, and making sense of their knowledge (Zahorik, 1995).

From the five basic elements, four types of Constructivist teaching develop. They include the following: (a) application, (b) discovery, (c) extension, and (d) invention. These four types of Constructivist teaching are not parallel forms. They represent a range of Constructivist teaching based on the goals the students and the teacher wish to achieve (Zahorik. 1995).

2. What are the benefits of Constructivist Education?

Understanding students' point of view is an important principle in Constructivist Education. Teachers challenge students based on their point of view by establishing compelling conditions and substantial encounters with knowledge (Brooks & Brooks, 1993).

The role of the teacher is to use scaffolding to ensure that students become self-regulating. When children become increasingly autonomous in their discoveries and exploration, the teacher may progressively remove the scaffold. (Vermette et al., 2001).

To enhance students' construction of knowledge, the teacher provides them with student-centered activities that focus on their interests. Thus, the teacher allows the children to be in control of their learning (Vermette et al., 2001).

Finally, focusing on students' point of view, the teacher goes to great lengths to establish a *sociomoral atmosphere.* This environment encourages children to become actively involved, providing them with the motivation to cooperate with adults and their peers (DeVries & Zan, 1994).

3. What are some problems with Constructivist Education?

Many teachers withdraw from practicing Constructivist Education for several reasons. Teachers have trouble conforming when they believe there is nothing corrupt to their present approach. Some teachers fear that autonomy and self-regulation is not enough to enhance the knowledge construction, nor enough to keep the class under control (Brooks & Brooks, 1993).

In learning about Constructivist Education, teachers must go through systematic training. This form of professional development is in discord with the major philosophy of students constructing their own knowledge. Training should take on more characteristics of the Constructivist philosophy itself (Richardson, 2003).

4. What are some guidelines for an effective Constructivist program in a NCLB environment?

Seven guidelines were suggested for incorporating Constructivist Education into a NCLB environment. They were: (a) establish a sociomoral atmosphere, (b) appeal to children's interests, (c) teach in terms of the kind of knowledge involved, (d) choose content that challenges children, (e) promote children's reasoning, (f) provide adequate time for children's investigations and in-depth engagement, and (g) link ongoing documentation and assessment with curriculum activities (DeVries & Zan, 1994).

Without a *sociomoral atmosphere*, a Constructivist form of education cannot effectively take place. It is necessary to appeal to the interests of students and challenge them to take risks.

Allowing children to look at the big picture and incorporating ongoing assessment will enhance the depth of experiences. NCLB has handed down time allocations and

mandates that conflict with Constructivist Education. Because of the flexibility of the NCLB act, teachers need to be innovative. Teachers need to educate and to enlighten administrators who oversee mandates and expectations.

Conclusion

The following conclusions were drawn from this study:

1. Constructivist education is a complex reform initiative that presents some quality reflection into developmentally appropriate practices for young children.
2. There is much evidence of what works for children, but little support for how to develop such an environment as a teacher.
3. Throughout this literature review, the Constructivist view kept one major theme as its focus. In Constructivist Education, children construct their own knowledge through experiences by connecting prior knowledge to new experiences.
4. Learning takes place through the child's interactions with nature, experiences, and child to child and child to adult relationships.
5. Constructivist Education is a difficult for educators who have limited professional development, inadequate administrative support, and a plethora of time allocations and assessment mandates conflicting with them. Nevertheless, effort and perseverance makes the connection achievable.

Recommendations

After reviewing the available literature, general classroom principles surfaced in the form of guidelines for a Constructivst classroom in a NCLB environment.

1. Any teacher pursuing the philosophies of Constructivist Education for their classroom must become familiar with theories and principles. Adopting a new teaching philosophy is a process that should occur over time.
2. Professional development is crucial to approaching Constructivist Education effectively. To obtain this, your school and district administration would have to be favorable.
3. Due to time allocations and assessment mandates of NCLB, teachers should modify their classroom to fit what works for them.
4. Because of the flexibility suggested by NCLB, teachers and administrators should team together to create a program that would work pragmatically.
5. Further research of the effectiveness of Constructivist Education and the benefits of NCLB is consequential to developing an affluent educational program based on the philosophies of both programs. Both approaches will have to be flexible to create life long learners.

REFERENCES

Berk, L. E., & Winsler, A. (1995). Scaffolding Children's Learning: Vgotsky and Early Childhood Education. Washington, D.C. National Association for the Education of Young Children.

Brooks, J. C., & Brooks, M. (1993). In Search of Understanding: The Case for Constructivist Classrooms. Alexandria, VA: Association for Supervision and Curriculum Development

Bruner, J. S. (1966). Toward a Theory of Instruction. Cambridge, Mass: The Belknap Press of Harvard University Press.

Bruner, J.S., ((1965). The Process of Education. Cambridge, Mass: Harvard University Press.

Carson, J. (2005). Objectivism and Education: A Response to David Elkind's 'The Problem with Constructivism'. *The Educational Forum, 69,* 232-8.

Chall, J. S. (2000). The Academic Achievement Challenge: What Really Works in the Classroom? New York, N.Y. The Guilford Press.

Cummings, R., & Harlow, S. ((200). The Constructivist Roots of Moral Education. *The Educational Forum, 64*, 300-7.

DeVries, R., & Zan, B. (1994). Moral Classrooms, Moral Children. New York, N.Y. Teachers College Press.

DeVries, R., Zan, B., Hildebrandt, C., Edmiaston, R., & Sales, C. (2002). Developing Constructivist Early Childhood Program: Practical Principles and Activities. New York, N.Y. Teachers College Press.

Elkind, D. (2004). The Problem with Constructivism. *The Educational Forum, 68,* 306 12.

Gagnon, G., & Collay, M. (2001). Designing for Learning: Six Elements in Constructivist Classrooms. Thousand Oaks, CA: Corwin Press Inc.

Matthews, W.J. (2003). Constructivism in the Classroom: Epistemology, History, and Empirical Evidence. *Teacher Education Quarterly, 30,* 51-64.

Null, W.J. (2004). Is Constructivism Traditional? Historical and Practical Perspectives on a Popular Advocacy. *The Educational Forum, 68,* 180-8.

Perkinson, H.J. (1993). Teachers Without Goals, Students Without Purposes. United States of America: McGraw Hill, Inc.

Richardson, V. 92003). Constructivist Pedagogy. *Teachers College Record, 105,* 1623-40.

Simpson, T.L. (2002). Dare I Oppose Constructivist Theory? *The Educational Forum, 66,* 347-54.

Vermette, P., Foote, C., Bird, C., Mesibov, D., Harris-Ewing, S., & Battaglia, C. (2001). Understanding Constructivism: A Primer for Parents and School Board Members. *Education, 122,* 87-93.

Zahorik, J. (1995). Constructivist Teaching. Bloomington, IN: Phi Delta Kappa Educational Foundation.

http://www.ed.gov/index.jhtml