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DIRECTED TEACHING AND CONSTRUCTIVIST TEACHING

AND TECHNOLOGY

by
Brandy Patch

A Thesis

Submitted in partial fulfillment of the requirements of the
Master of Arts Degree
of
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at
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Professor

Date Approved _____

ABSTRACT

Brandy Patch

Directed Teaching and Constructivist Teaching and Technology

2002

Dr. Louis Molinari, Advisor
Master of Arts Elementary School Teaching
With Computer Education Emphasis

The utilization of the computer in the classroom as a tool to provide instruction and aid learning has had a profound impact on how educators deliver instruction. Computers have become such an important instructional tool that many educators have had to rethink and reevaluate their beliefs and ideas about the ways in which they instruct students and how students learn.

Most educators have encouraged and promoted the use of computers in the classroom to assist them in providing students with an efficient and up-to-date means of acquiring the skills and knowledge they need to succeed in learning. Because of its diversity in delivering as well as supporting instructional concepts, many teachers have embraced its use. However, there are those educators who feel insecure in its application in the classroom as a tool of instruction and question its usefulness to adequately provide instruction to their students.

This paper will attempt to determine how the belief systems and opinions of classroom teachers impact their utilization of computers in their teaching practices.

Questionnaires were developed to determine the belief systems and opinions of elementary educators who would be defined as utilizing the directed teaching method or constructivist method in their approach to teaching and learning and how these belief systems impacted their utilization of computers in their classroom practices.

MINI-ABSTRACT

This paper examined how the opinions and belief systems of teachers impact their utilization of technology in their classroom teaching practices. Two hypotheses were formed. The first hypotheses was established to identify the belief systems of the teachers who would be defined as utilizing the directed teaching method or the constructivist teaching method in their approach to instruction and learning. The second hypotheses attempted to discern how these belief systems impact the teachers' use of computers in their approach to learning and classroom instruction. A survey was created and given to elementary educators to determine the connection between the two hypotheses.

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CHAPTER 1

THE PROBLEM

Significance of the Study

The use of the computer as an educational tool, has caused many educators to rethink and reevaluate their beliefs and ideas about the ways in which they provide instruction and how students learn. "No longer is the textbook and the teacher the sole provider of information. Students can learn from others via the Internet; they can learn with their teachers; they can teach their teachers and they can learn from a distance with other students" (Berthiaume, 2001). Most educators have embraced its use as an exciting and positive way to provide students with a new avenue of discovery.

However, others feel apprehensive in utilizing computers as part of the teaching and learning process. They feel ill equipped to use them and question their usefulness as little more than another gimmick to entice students to learn. "Many teachers . . . say that they just don't have the time to use computers with their students. They feel that it is an 'add on' and more work. Most teachers' fears stem from the belief that they must be experts before teaching a subject. If teachers can let go of the need to be the 'expert,' they can certainly achieve the goals of integrating technology into their curricula . . . " (Turville, 1999). The teacher's use of computer technology, as a tool of instruction and their ability to adapt their teaching to embrace its use, will be the impetus for change in attitudes and teaching practices.

Berthiaume (2001) states that, "Today's majority of teachers began their careers before technology was available for use in the classrooms. Now, faced with challenges of working in a technologically advanced society in which the students are more comfortable with video games and computers than they are with pencils and paper, educators must adapt and modify their teaching styles to meet the needs of their students." Teacher attitudes about computer use in classrooms need to reflect the changes already being made by its use in society. Most professionals in the United States utilize computers as part of their job requirement. "But the natural diffusion of computer expertise through the teaching profession is proceeding far too slowly. If it is going to happen, teachers have to make it happen" (Turville, 1999).

The use of the computer to support instruction will not only change the dynamics of the classroom structure but consequently change the methods teachers use to provide instruction. "Computers change the ecology of the classroom because they change the process of teaching and learning. They make many things much easier and introduce new levels of complexity into the instructional process. The classroom and learning environment are dramatically changed as a result of the introduction of technology" (Turville, 1999). Current teaching practices must be modified to incorporate computers into the learning process. Opinions about computer use and their benefits to enhance classroom learning, must find greater support among teachers, if it is to be carried out successfully.

The National Council for Accreditation of Teacher Education (1997) states "Teachers must employ a wide range of technological tools and software as part of their own instructional repertoire. Finally, teachers need an 'attitude' that is fearless in the use of technology, encourages them to take risks, and inspires

them to become lifelong learners." Resistance to its use may be due to the fact that many educators are ill prepared to deal with the infusion of computers into their curriculum. "Computers are a new technology, but they are being introduced into a curriculum originally designed without them. Teachers tend to have problems with technologies that do not assist them in what they already are trying to do" (Berthiaume, 2001). For an innovation such as the computer to become effective, those responsible for implementing it need to feel secure in its use, and knowledgeable in its application. Somekh and Davis (1997) state that "It is always difficult for established professionals to introduce change because it means abandoning some of the 'tried and trusted' strategies built up from years of experience."

Technologies' influences on teacher practices have called directed teaching methods into question. Directed teaching is the method in which the teacher is the primary source of delivering and guiding instruction. It places little or no importance on many factors such as individual student ability, learner interest, and the various ways in which students learn. A more constructivist approach to learning, has within the last few years, gained acceptance as a more valued teaching practice. " Learning isn't a matter of transfer, but of construction. The learning process should not be described with the metaphor of pouring knowledge into empty vessels" (Duffy and Jonassen, 1992). Some of today's educators agree that directed teaching methods of instruction and learning prevent computer use from being incorporated into the learning process.

Constructivist teachers realize the necessity of using computers in the classroom to support the learning environment. "As independence is developed

appropriate to age level, students should become less dependent on the teacher and become more capable of making requests for resources they know will help them learn. Recasting the teacher's role to manager of instruction and changing the focus of teaching is likely to be a threatening transition. All people develop comfort zones around the habits and activities associated with work" (Hertzke and Olsen, 1994). In order to accomplish the goal of creating a classroom in which "teaching/learning environments become more facilitative" states Hertzke and Olsen, "teachers must redirect rather than direct their teaching" and provide a classroom conducive to that environment.

Statement of the Problem

Are traditionally held teaching beliefs and attitudes about the learner and the learning process, preventing or hindering teachers from utilizing computer technology? Does the constructivist approach to teaching and learning, support a more widespread acceptance and use of computer technology as a method of delivering instruction?

Purpose of the Study

It is the purpose of this study to survey the opinions, beliefs and practices of classroom teachers to determine if the directed teaching and learning method or constructivist teaching and learning method are evident in these classrooms and how these practices impact teacher utilization of computer technology.

Statement of the Hypothesis

In order to collect the information needed for this study, pair of null hypotheses were generated. The first null hypothesis (h1) states there will be no discernible difference between the belief systems and opinions held by those teachers who would be defined as utilizing the directed teaching practices of instruction and learning and those contemporary teachers who would be defined as utilizing the constructivist method of instruction and learning as measured by the Teacher Opinion Survey.

A second null hypothesis (h2) was generated which states there will be no discernible difference in the teaching and learning practices of the teachers regarding technology use by the teachers who would be defined as utilizing directed instruction or the constructivist method as measured by the Teacher Computer Survey.

Methods and Procedures

To investigate the beliefs, practices and opinions of the teachers surveyed, the following methods and procedures were used:

1. A review of previous literature pertinent to this study was made. The review includes the following: a) an introduction to the study, b) a definition of teachers' pedagogical roles, c) a presentation of research related to student learning and teaching practices.

2. Specific hypotheses were formulated and included in the Statement of the Problem.

3. Surveys were specifically constructed for this study. They were given to regular and special education classroom teachers in two of the largest elementary school buildings in the Vineland Public School system.

4. On the basis of findings, certain conclusions were made about the teachers surveyed as to those who were identified as utilizing directed instruction or the constructivist method in their approach to instruction and understanding of student learning.

5. On the basis of findings, certain conclusions were made as to the possible link between those identified as belonging to the defined groups, and the teaching practices evidenced in their use of computer technology.

Limitations

1. The number of questionnaries returned were less than the target population surveyed.

Definition of Terms

1. <u>Educational Technology-</u> The vehicle or process by which a variety of technologies are utilized during instruction to accomplish learning objectives. Tools such as computers, videos, CD ROM as well as other multimedia devices are used to carry out this instruction.

2. <u>Directed Teaching-</u> The teacher stresses learner activities that they cannot control or influence. Knowledge is transmitted to and acquired by learners through teacher directed instruction. They view teaching as a systematic plan for achieving predetermined competencies. Memorization and wrote learning is preferred over other methods of instruction (Queen,1999).

3.Constructivist Teaching- Focuses on the notion that individuals are at different levels of understanding and learn in unique ways at differing rates. Teaching strategies in constructivist learning settings include active student and teacher engagement in the learning process that facilitates rather than directs learning (McIntyre and Byrd, 2000).

Organization of the Study

Chapter 1 includes an introduction of the entire study. It presents the significance of the study, the statement of the problem, the purpose of the study, the specific hypotheses to be tested, methods and procedures, limitations, definition of terms, and organization of the study.

Chapter II presents a review of the literature relevant to the study.

Chapter III describes the design or methods used to conduct the study.

Chapter IV presents the data and analysis of the information gained in the study.

Chapter V draws conclusions and makes recommendations based on the study.

Chapter Two

<u>Review of the Literature</u>

The focus of this chapter deals with the three major educational philosophies and their belief systems that have influenced contemporary educational practices in regard to teaching and learning. These philosophical approaches to education are titled Traditional, Progressive and Constructivist. It is necessary to define these philosophies and their belief systems and note how their approach to teaching and learning influence how technology is applied in the classroom. The educator's philosophical approach to teaching and learning may effect their practice in the classroom.

<u>Historical Background</u>

The directed teaching approach to instruction and learning that developed in the 1920's continues to influence contemporary teacher practices (Somekh and Davis, 1997). The roots of traditional philosophical education with which directed teaching is associated, can be traced back to the essentialist and perennialist beliefs that existed in education at that time. Although somewhat different in their philosophical views on education, both held to certain theories about how instruction should be delivered. Both views were similar in that they were conservative in their approach to how teaching and learning should take place in the classroom. Proponents of this philosophy believed schools should focus on the education of the intellect. This education consisted of the study of the "rules of grammar, reading, rhetoric and logic, mathematics and the great books of the Western World" (Queen, 1999). It was only

through these studies they believed, that students could attempt to apply the knowledge gained to "think critically, prepare them for life and its accompanying duties, and enable them to contribute to society" (Queen, 1999).

The directed teaching method is predominately teacher dominated with little regard given to the "interest and needs of the learner" in the educators approach to instruction (Queen, 1999). Educators in support of this philosophy feel that instruction and learning should be primarily teacher directed. It is the student's job to absorb the information without much questioning or probing of concepts or related ideas. It has often been described as a "one size fits all" approach to instruction. Memorization and wrote learning are emphasized as a means of learning concepts. In the directed teaching approach "what is required of education is the transmission of knowledge and proven practices. When questions are asked, the answers are known beforehand, and it is the job of the educator to guide the students to think in such a way that they arrive at appropriate, correct answers" (McIntyre and Byrd, 2000). The goal then is to simply have students 'know' the information not 'how' to apply it.

Although some educators have supported this method of instruction, others have criticized it for its inability to "teach students how to solve problems, to reason or to learn through experiences..."(Queen, 1999). There are educators who feel that traditional philosophical practices do not address the individual needs of the learner nor the ways in which students learn. Educators who question the relevancy of utilizing directed teaching practices in today's classrooms also cite current research findings that support the belief that a variety of factors effect students' learning.

In a 1994 research report done by the Carnegie Corporation of New York on brain development, researchers listed many variables that influence how children

learn. Among the variables cited were "structure of the family unit, culture, geographical location, socio-economic status, etc." (Queen, 1999) The researchers stated that the variables mentioned had some impact on student learning. Educators in support of this research state that these findings prove that all children can not learn in the same way. Therefore, they propose that directed teaching methods and practices are ineffective in their ability to educate all students.

Should teachers use directed teaching methods to instruct students? Whether educators support this method or not, directed teaching methods can be applied to contemporary classroom practices. An example of its use can be found in the design of technology software used for drill and practice of specific concepts. The computer's introduction into the classroom setting was primarily used for its drill and practice software programs. Students who needed repetition of basic skills without direct teacher instruction could benefit from this type of traditional approach to learning. Students could gain mastery of the material on their own while the teacher was able to instruct others. It is the student's ability to utilize this type of software program that allows directed instruction through the use of technology to support the learner and the learning process.

Progressive educational beliefs differ greatly from those of the traditionalists. Progressive educators believed the focus of education should be to develop a more child-centered classroom that takes into account the interest and needs of the learner. "The works of John Dewey and later Jean Piaget were influential among theorists looking for a model that took into account the development of the child" (Queen, 1999). Dewey felt that children learn best and could solve problems by experience through the use of the scientific method. It was through the scientific method that

learners could explore and gain control over their environment enabling them to solve any problems they encountered. Dewey felt the teacher was not the sole purveyor of knowledge but rather a facilitator of that knowledge. The teacher's role was to help motivate students to develop their own needs and interests while guiding them to seek the information needed to solve problems. Dewey viewed education as a "process of social activity" where students could explore their surroundings. Progressivist educators like Dewey felt that "reforming the classroom atmosphere to create a social environment allows students to utilize previous personal and group experiences that they can draw upon to seek new learning and interact with others" (Queen, 1999).

The progressive philosophy of education still influences educational practices today. Contemporary teaching practices utilize a variety of instructional methods to address the needs and interests of the learner. An example of this is the practice of cooperative learning. The cooperative learning method supports the progressive belief that students learn best when working with others within a social setting. Another influence of the progressive philosophy is evident in the changes made to many school curriculums regarding what they teach. Educational curriculums not only consist of the so called "basics" of reading, writing and arithmetic but have expanded to include physical and health education, character education, vocational instruction and technology.

The progressive philosophy of education has had a profound impact on the ways in which technology is used in the classroom. An example of this is in the wide variety of software programs that are designed to address the specific instructional needs of the learner. These software programs allow students to work either independently or in groups at their own pace with minimal teacher direction. Students

who have physical limitations can find programs and hardware that address their specific needs. Students can explore concepts utilizing various programs deemed appropriate to their specific instructional level. "The role of the educator is to manage the process in the learning environment so that the prescribed learning objectives are attained with maximum flexibility" (Serim, 2001). It is this versatility that has enabled technology to move beyond the one-dimensional instructional tool of the past to a more multi-dimensional educational instrument.

The constructivist philosophy of education has often been paralleled to the philosophical beliefs held by progressive educators. "Constructivits assert that from the dynamic interplay between the innate self and the environment a person organizes and reorganizes (or "constructs") his or her view of the world and his or her self " (Queen, 1999). Constructivist philosophers assert that this reorganizing of information allows the learner to make meaning out of new experiences based on previous knowledge and or past experience. They assert that learning and knowledge is not transferable but constructed by individuals based on the "physical and social context in which they live" (Duffy and Jonassen, 1992). Application of the constructivist philosophy in the classroom is based on the belief that the learner and the learning objectives sought can only be achieved when the student can relate what is being taught to "his or her world and own needs" (Queen, 1999).

Constructivist teaching demands that the learner become actively engaged and take part in directing his/her own learning process. "The role of the educator is to place the students at the center of their own learning, as facilitator rather than instructor or manager" (Serim, 2001). By making instruction more student centered Serim states and "by placing the acquisition of skills and concepts within the context of

authentic, challenging tasks," students are encouraged to seek out new knowledge relevant to their own learning objectives.

The ability of technology programs to create authentic learning scenarios through diverse software packages has prompted many constructivist educators to utilize technology in their classrooms. These educators view computer utilization as providing an avenue of instruction that enables students to explore their surroundings in a more meaningful and authentic way. Software programs that can simulate physical settings such an operating room or replicate the process of the human circulatory system without the need of a live patient, allow students to explore and take risks that would be impossible to replicate in a regular classroom setting. Constructivist educators see technology's application to contemporary teaching as "a tool in acquiring new knowledge and making decisions" that enable the learner to authentically create and direct their own learning experiences.

Traditional, Progressive and Constructivist philosophies of education all exist in various contexts in the design, organization and implementation of instructional methods of contemporary education. Educators are often at odds as to which belief is better suited to support the needs of today's diverse student population. The role that technology will play in the classroom will be based on the educator's beliefs about instruction and learning and how best to carry out that instruction. Serim makes that connection by stating "the back-to-basics folks decry the project-based or technology enhanced solutions as distractions. The higher-order-thinking folks want to end memorization and rote learning." Serim acknowledges that one approach is better nor worse than the other. He states that in deciding which application to use "each

approach is best suited to a particular context and can only be evaluated in terms of the context in which it is applied."

In order for instruction to be effective, the teacher must apply the most appropriate instructional method needed in order to achieve the desired learning outcome. As noted in this chapter, research supports the need to utilize a variety of instructional methods in order to meet the needs of the learner. In regard to technology use in the classroom, one philosophical approach to instruction cannot be applied to all learners and all learning situations. Like any other instructional tool, technology use will be based on the educator's ability to correctly evaluate the best method possible to deliver instruction. The appropriate use of technology to achieve the desired outcome, will be the basis from which educators will decide how to utilize technology's diverse resources to achieve learning objectives.

It is the purpose of this study to survey the opinions, beliefs and practices of regular classroom teachers to determine if the directed teaching method or constructivist method of instruction and learning are evident in these classrooms and how these practices impact teacher utilization of computer technology.

Chapter III

DESIGN OF THE STUDY

Introduction

It was the purpose of this study to determine how the belief systems and
teaching practices of teachers impact their utilization of computer technology in their
teaching. The design of this study includes: 1) information on the setting, 2) a
description of the instruments used, 3) the relationship of the instruments used to the
null hypothesis, 4) procedure, and 5) the methods used to analyze the data.

Setting

The Pubic School utilized for this study was the Vineland Public School System,
specifically the elementary schools in that district of Vineland, New Jersey. Vineland is
an urban and rural community located in Cumberland County. It is the largest
municipality in New Jersey with 69.5 square miles. As of the April 2000 census,
information showed a population of 56,271 residents. The total school enrollment for
the 2001-2002 school year for grades pre-kindergarten through twelve totaled 9,365
students. This number is expected to increase next year as programs for children age 6
months to 3 years are introduced. There are seven elementary schools in Vineland.
Elementary schools in the district include grades kindergarten through fourth
including elementary special education classes. Vineland was declared a "special
needs" district by the New Jersey Supreme Court ruling on inadequate school facilities
funding. As an "Abbott" district, Vineland along with 29 other New Jersey school

districts was legislated grants and loans to improve school facilities as well as additional funding to meet other requirements of the Abbott court decision. They recently received a $300,000 grant to update existing technology systems within the district.

The author of this study limited the scope of data collection to two elementary schools in Vineland. The Marie D. Durand and Winslow schools were utilized for this study. Both regular and special education teachers were included in the survey. Questionnaires were given to 120 elementary teachers. Among that count were 70 were returned.

Description of the Instruments Used

Two surveys were designed for this study. The first survey was designed to elicit the opinions and belief systems of the teachers to determine which utilized the directed teaching method or constructivist method in their approach to teaching and learning. The second survey was designed to see how the teachers utilized technology in their teaching practices. The results of these two studies were then compared to determine if there was a relationship between the opinions and belief systems of these educators and their utilization of technology in their teaching practices.

Three colleagues evaluated the initial drafts of the questionnaires all with degrees in computer education. Questions were revised and some were dropped because they were too redundant or non-specific in their wording.

Relationship of the Instruments Used to the Null Hypothesis

The first null hypothesis states that there will be no discernible difference between the belief systems and opinions held by those teachers who would be defined as utilizing directed teaching practices of instruction and learning and those contemporary teachers who would be defined as utilizing the constructivist method of instruction and learning.

Questionnaires were given to kindergarten through fourth grade teachers in the Durand and Winslow Elementary Schools. A total of 20 questions were used to determine which teachers fell into either category. The questions were designed based on the belief systems and teaching practices that are often associated with directed teaching and constructivist philosophies of instruction and learning. Within the 20 questions developed, a total of 10 questions (even numbers 2-20) were designed to specifically target those teachers whose belief system would be defined as utilizing directed teaching practices. The other 10 questions (odd numbers 1-19) were designed to target those teachers whose belief system would be defined as constructivist.

The second null hypothesis states that there will be no discernible difference in the teaching and learning practices of the teachers regarding technology use by the teachers who would be defined as utilizing directed teaching practices or constructivist practices.

A second part of the questionnaire was constructed to measure the second null hypothesis. A total of 20 questions pertaining to technology use in the classroom were constructed. These questions were designed to elicit responses regarding the teaching practices of these educators and their use of computers in their classroom practices.

Ten of the 20 questions (even numbers 2-20) were developed based on the methods and practices associated with directed instruction in regard to computer utilization. The other 10 questions (odd numbers 1-19) were developed based on the methods and practices associated with the philosophy of constructivist teaching in regard to computer utilization.

Were teachers who were defined as utilizing directed instruction less likely to use computers in their teaching and learning practices? Were teachers who were defined as constructivist more likely to use computers in their instruction? The surveys given to the teachers were designed to attempt to answer these questions.

Procedure

The author of this study designed the questionnaires. The surveys were specifically designed to test the stated hypotheses. The questionnaires were distributed to the kindergarten through fourth grade teachers during their computer lab time. No names were sought so those teachers could remain anonymous unless they wished otherwise. This procedure was done in the same manner for both of the schools involved in the survey.

Methods Used to Analyze Data

In order to measure the beliefs and opinions and practices of the teachers, questionnaires were developed using the Likert Scale. This scale assesses attitudes on topics by asking respondents to indicate whether they agree or disagree with each of a series of statements about a topic. They also may indicate that they are

undecided. If they strongly agree or strongly disagree with the statements, they may indicate likewise. The scale is scored by assigning a "weight" to the response categories. For positively stated items, the numerical values 5, 4, 3, 2, and 1 respectively are designated beginning at the favorable end. On the constructivist questionnaire a response of "strongly agree" would receive a 5. A response of "strongly disagree" would receive a 1. On the directed teaching questionnaire the values were reversed. A response of "strongly agree" would receive a 1 and a "strongly disagree" would receive a 5. A t-test was used to determine whether or not the hypothesis should be accepted or rejected.

For this study, the first part of the questionnaire deals with the opinions and belief systems of the teachers as to who would be defined as utilizing directed teaching practices or constructivist teaching practices in their approach to instruction and learning. Twenty questions were designed to attempt to sort the teachers into one of the above groups. Ten questions were designed to indicate a teacher who would be defined utilizing directed instruction in their approach to teaching and learning. The other ten questions were designed to indicate a teacher who would be defined as constructivist in their approach to teaching and learning. Therefore, a favorable response to a question in each specified group would indicate which group the teacher should be placed in.

The second part of the questionnaire, deals with the teaching practices of the educators display in regard to their utilization of computers in their classroom. Twenty questions were designed to indicate whether the teachers were utilizing directed instruction or the constructivist method in their approach to teaching and learning in regard to the use of computers in their classroom instruction. Ten

questions were designed to indicate a directed instruction approach to computer utilization in the classroom. Ten questions were designed to indicate a constructivist approach to computer utilization in the classroom.

A person with a favorable attitude for the specified group of questions, would indicate if the educator utilized the directed instruction method or constructivist method in their teaching practice in regard to their utilization of computers in the classroom.

CHAPTER IV

ANALYSIS OF THE DATA

Test of H1 and Results

The first null hypothesis states that there will be no discernible difference between the belief systems and opinions held by those teachers who would be defined as utilizing the directed teaching practices of instruction and learning and those contemporary teachers who would be defined as utilizing the constructivist practice of instruction and learning. In order to test this hypothesis, a questionnaire was constructed and teachers were asked to indicate their beliefs and opinions about their approach to learning and instruction based on their classroom practices. The questionnaires were designed based on the belief systems and teaching practices that are often associated with directed teaching and constructivist philosophies of instruction and learning.

There were 120 surveys sent out with 70 returned. All of the survey information was confidential with no names sought. For the Teacher Opinion Survey, questions 1-19 (odd) were designed to target those teachers whose belief systems and opinions would be defined as constructivist in regard to their teaching and learning practices A response of 5 (strongly agree) or 4 (agree) would indicate a positive response to that item. Of the 70 teachers surveyed 37 chose "strongly agree" or "agree" with those items. Of the 70 teachers surveyed 22 chose to disagree. There were 11 undecided. Questions 2-20 (even) indicated a belief system or opinion in regard to the teaching practice associated with directed teaching. A response of 1 (strongly agree) or 2 (agree) would indicate a positive response to that item. Of the same 70 teachers surveyed

nearly 12 chose to agree or strongly agree with these statements while 38 disagreed or strongly disagreed. There were 20 undecided

The scores from both surveys were then compared using a t-test for non-independent samples. For p=0.5 and *df*=69 the table value for $\underline{t}$ required for rejection of the null hypothesis is 2.000. The results of the t-test indicate a $\underline{t}$ value of –6.98. Therefore we must reject the null hypothesis. Results indicate there is a significant difference between the belief systems and opinions held by the teachers surveyed as to which utilized directed teaching practices or constructivist methods in their instruction and learning. The results of the t-test are indicated in Table 1. As previously stated in Chapter II contemporary educators often incorporate both the directed teaching method and constructivist method into their instructional practices. Results of the t-test from the Teacher Opinion Survey seem to support this idea. The instructional scenarios created in the survey show how the belief systems and opinions of the educators surveyed can be traced to specific classroom practices.

Table 1
Directed Teaching and Constructivist Teaching Belief and Opinion Survey t-test nonindependent

STATISTIC	VALUES
NUMBER OF PAIRS	70
SUM OF D'S	-568.00
MEAN OF D'S	-8.11
SUM OF D'S SQUARED	11130.00
T-VALUE	-6.98
DEGREES OF FREEDOM *(df)*	69

For α=.05 and *df*=69 the table value for rejection is 2.000

Test of H2 and Results

The second null hypothesis stated that there will be no discernible difference in the teaching and learning practices of the teachers regarding technology use by the teachers would be defined as utilizing directed instruction or the constructivist method. To investigate the hypothesis surveys were given to the same 70 educators. On the teacher Computer Survey questions 1-19 (odd) indicated a constructivist method by the teachers in their utilization of technology in the classroom. A positive response of 5 (strongly agree) or 4 (agree) would indicate a favorable attitude with that item. For those items 14 of the teachers surveyed chose strongly agree or agree while 52 chose disagree. There were 4 undecided. Questions 2-20 (even) indicated a directed teaching approach in utilizing technology in the classroom. A response of 1 (strongly agree) or 2 (agree) would indicate a positive response to that item. Of those teachers surveyed none strongly agreed with any of the statements. There were 22 who agreed with the items. Of the 70 surveyed 36 chose to disagree. There were 12 undecided.

The scores from both surveys were then compared using a t-test for non-independent samples. For p= 0.5 and *df*=69 the table value for t required for rejection of the null hypothesis is 2.000. The results of the test indicated a $\underline{t}$ value of –5.53. Therefore the null hypothesis is rejected. Results indicate a significant difference in the utilization of technology by the teachers who would be defined as utilizing the directed teaching method or constructivist method in their classroom. The results of the t-test are indicated in Table 2. The results of the Teacher Computer Survey indicate that the teaching and learning practices of the educators surveyed could be defined as to whether the directed teaching method or constructivist method was utilized in the use of technology in classroom instruction.

Table 2

<u>Directed Teaching and Constructivist Teaching Computer Survey t-test nonindependent</u>

STATISTIC	VALUES
NUMBER OF PAIRS	70
SUM OF D'S	-462.00
MEAN OF D'S	-6.60
SUM OF D'S SQUARED	9926.00
T-VALUE	-5.53
DEGREES OF FREEDOM *(df)*	69

For α=.05 and *df*=69 the table value for rejection is 2.000

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Summary

The purpose of this study was to investigate the belief systems and opinions of teachers in regard to their instructional methods and how these practices impact their utilization of technology in the classroom. Two main hypotheses were formulated. They include:

1. There will be no discernible difference between the belief systems and opinions held by those teachers who would be defined as utilizing the directed teaching practice of instruction and learning and those contemporary teachers who would be defined as utilizing the constructivist method of instruction and learning as measured by the Teacher Opinion Survey.

2. There will be no discernible difference in the teaching and learning practices of the teachers regarding technology use by the teachers who would be defined as utilizing directed instruction or the constructivist method as measured by the Teacher Computer Survey.

Chapter 1 reviewed previous literature pertinent to the study. A definition of teachers' pedagogical roles as they relate to directed teaching and constructivist teaching was researched and defined.

Chapter II reviewed the historical background and summarized the philosophical perspectives of each practice. The impact of these philosophies on today's instructional methodologies was also noted. The impact of technology on student learning was also cited.

Chapter III outlines the design of the study. The setting for the study was conducted in two of the largest elementary schools in the Vineland Public School system. Survey questions were constructed based on the definitions in Chapter I of the directed teaching and constructivist methods of instruction. Surveys were sent to teachers. From these responses, the two major null hypotheses were tested and eventually accepted or rejected.

Chapter IV is an analysis of the data compiled in the study. Each null hypothesis is separately accepted or rejected according to the results of the questionnaires. Both the first and second null hypotheses were rejected.

<u>Conclusions and Implications</u>

This study rejected the null hypothesis that there will be no discernible difference in the teaching and learning methods of the teachers who would be defined as utilizing the directed teaching method and those educators who utilized the constructivist method. The teacher questionnaires were evaluated and score according to the Likert Scale. There were 120 surveys sent out with 70 returned. Of the 70 teachers surveyed 37 chose to agree with the statements that indicated a constructivist approach to teaching and learning. Of those same teachers 22 disagreed with those items. Of the 70 surveyed 12 chose to agree with the items that indicated a positive response to the questions concerning the directed method of instruction and 38 chose to disagree. Results of the t-test given indicate a difference in the belief systems and opinions of the educators surveyed in regard to the instructional practices of directed teaching and constructivist teaching.

The second null hypothesis of this study was also rejected based upon the data given. It states that their will be no discernible difference in the teaching and learning practices of the teachers regarding technology use by the teachers who would be defined as utilizing directed teaching or the constructivist method as measured by the Teacher Computer Survey. Of the 70 teachers who responded to the questionnaire 14 of the teachers chose to agree with the items regarding utilizing the constructivist approach and 52 chose to disagree. There were 22 teachers who agreed with the items pertaining to utilizing directed instruction in their use of computers in the classroom and 36 who disagreed.

Recommendations for Further Study

1. Educators could be asked to indicate in their daily lesson plans when computers were utilized in their instructional or learning practices. This may make recall of such information more accurate.

2. Educators could be asked to indicate their level of proficiency in using computers or indicate their knowledge of computer skills. This may have a bearing on how and to what extent computers are utilized in planning and instruction.

3. The availability of computers for students and teachers as well as software needs could be provided by the district as to how this availability may influence a teacher's ability to utilize computers in their instruction.

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Teacher Opinion Survey

This survey is attempting to solicit the opinions and beliefs of educators as related to their teaching methods and practices. Please indicate your level of agreement or disagreement with each of the following statements by circling the answer that most closely describes your teaching method and classroom practices. In this survey *directed teaching* is defined as knowledge that is transmitted to and acquired by learners through teacher-directed instruction.

1. Students should always be encouraged to explore ideas or concepts even if they deviate somewhat from the planned objectives.

    Strongly agree   agree   undecided   disagree   strongly disagree

2. Teachers can best address the majority of instructional needs of students by using the method of directed instruction.

    Strongly agree   agree   undecided   disagree   strongly disagree

3. The majority of the student's instructional time should be spent with students working in small groups.

    Strongly agree   agree   undecided   disagree   strongly disagree

4. The best method of assessing student progress can be obtained by using a combination of worksheets and written tests.

    Strongly agree   agree   undecided   disagree   strongly disagree

5. Instruction of lesson objectives should be predominately project based.

    Strongly agree   agree   undecided   disagree   strongly disagree

6. The majority of the teacher's instructional time should be spent in whole group instruction of students.

    Strongly agree   agree   undecided   disagree   strongly disagree

7. The majority of classroom instructional activities should be collaboratively planned by teacher and student allowing both input in the planning process.

    Strongly agree   agree   undecided   disagree   strongly disagree

8. The primary focus of educators should be more on what students learn rather than the manner in which learning is obtained.

    Strongly agree   agree   undecided   disagree   strongly disagree

9. Problem solving skills are best learned by students using actual situational experience.

    Strongly agree   agree   undecided   disagree   strongly disagree

10. The primary function of classroom management should be to achieve control of student behavior in order to create the optimal learning environment.

    Strongly agree   agree   undecided   disagree   strongly disagree

11. Student assessment should be based primarily on actual situational experience rather than based on evidence from worksheets and written tests.

Strongly agree   agree   undecided   disagree   strongly disagree

12. When instructing students the teacher should primarily focus on the recall of factual material.

Strongly agree   agree   undecided   disagree   strongly disagree

13. The majority of instructional time should be spent with students interacting with each other with the teacher as guide.

Strongly agree   agree   undecided   disagree   strongly disagree

14. Proper instruction of students is best achieved when lessons are based on teacher directed activities and follow-up worksheets.

Strongly agree   agree   undecided   disagree   strongly disagree

15. The primary purpose of classroom management should be to create the optimal learning environment for students.

Strongly agree   agree   undecided   disagree   strongly disagree

16. In order to obtain optimal instructional time the teacher should control the learning process throughout the lesson so the students remain on task at all times.

Strongly agree   agree   undecided   disagree   strongly disagree

17. The majority of instructional activities and lesson planning should take into account student interest and need as well as be based on curriculum guidelines.

Strongly agree   agree   undecided   disagree   strongly disagree

18. Learning is best achieved through a systematic, structured method that transmits knowledge to the learner.

Strongly agree   agree   undecided   disagree   strongly disagree

19. The majority of instructional time should focus on teaching students to learn *how* to learn rather than solely emphasizing the learning of specific content.

Strongly agree   agree   undecided   disagree   strongly disagree

20. Lesson planning should be based solely on curriculum guidelines.

Strongly agree   agree   undecided   disagree   strongly disagree

Teacher Technology Survey

This survey is attempting to determine the classroom practices of educators in regard to technology use in their classrooms. Please indicate your level of agreement or disagreement with each of the following statements by circling the answer that most closely describes your utilization of technology in your classroom.

1. Technology is utilized in my classroom as one of the primary forms of assessment for students to demonstrate learning of skills or concepts.

   Strongly agree   agree   undecided   disagree   strongly disagree

2. Students in my classroom utilize the computer primarily for drill and practice of skills such as basic math facts, reading skills, etc.

   Strongly agree   agree   undecided   disagree   strongly disagree

3. Students in my classroom often use technology to create or produce projects that demonstrate a skill or concept that they have learned.

   Strongly agree   agree   undecided   disagree   strongly disagree

4. Students in my classroom primarily use computers to locate and find information for research projects and to type up their findings.

   Strongly agree   agree   undecided   disagree   strongly disagree

5. Technology use in my classroom is primarily used by students to problem solve and seek information related to a skill or concept.

   Strongly agree   agree   undecided   disagree   strongly disagree

6. When teaching concepts or skills to students, the majority of my instructional time does not involve utilizing technology to help deliver instruction.

   Strongly agree   agree   undecided   disagree   strongly disagree

7. Technology use in my classroom is primarily utilized and controlled by my students during the learning process with the teacher acting mostly as a guide throughout the learning process.

   Strongly agree   agree   undecided   disagree   strongly disagree

8. When I integrate technology use in my classroom instruction to teach skills or concepts, the technology is always teacher controlled throughout the instructional process.
   Strongly agree   agree   undecided   disagree   strongly disagree

9. In my classroom technological materials such as computers and software are integrated into the instructional process to support children's learning of skills or concepts.
   Strongly agree   agree   undecided   disagree   strongly disagree

10. In my classroom I primarily use technology to support not replace regular educational materials such as books and worksheets.
   Strongly agree   agree   undecided   disagree   strongly disagree

11. In my classroom relevant hardware and software are utilized to meet the needs of students based on their learning style and student's special needs .

      Strongly agree   agree   undecided   disagree   strongly disagree

12. When students need remediation of a skill or concept I never replace teacher instruction with technology instruction of a skill or concept.

      Strongly agree   agree   undecided   disagree   strongly disagree

13. Technology use in my classroom often involves students working on group activities to solve problems or produce projects related to the instructional objectives I am teaching .

      Strongly agree   agree   undecided   disagree   strongly disagree

14. When assessing student performance of a skill or concept I mostly rely on written tests and worksheets rather than performance and/or project based assessment of students who utilize technology to demonstrate mastery of a skill or concept.

      Strongly agree   agree   undecided   disagree   strongly disagree

15. Students in my classroom are <u>required</u> to utilize technology in some capacity to acquire knowledge or demonstrate learning.

      Strongly agree   agree   undecided   disagree   strongly disagree

16. The majority of my student instructional activities do not involve utilizing technology to practice a skill or concept.

      Strongly agree   agree   undecided   disagree   strongly disagree

17. Technology use in my classroom is often used to create visual learning environments for students to help them transfer problem-solving skills to real life situations.

      Strongly agree   agree   undecided   disagree   strongly disagree

18. The majority of my student instructional activities do not require students to utilize technology in some capacity to produce a project or demonstrate that a skill or concept has been learned.

      Strongly agree   agree   undecided   disagree   strongly disagree

19. I incorporate technology use in some form into my lesson plan to be used by students to practice or demonstrate learning.

      Strongly agree   agree   undecided   disagree   strongly disagree

20. Students in my classroom primarily utilize computers based on individual instructional needs of learning skills or concepts as opposed to using the computer for group instruction of skills or concepts.

      Strongly agree   agree   undecided   disagree   strongly disagree