

Professional Development for New Middle School Teachers to
Use Constructivist Pedagogy in the Block Period

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Abstract

In the 1980s and 1990s, publications like *A Nation at Risk* and *Prisoners of Time* were highly critical of the American public school system. In response, school administrators reviewed their master schedules to evaluate how time was scheduled and the majority of them chose block scheduling to secure longer, uninterrupted periods of instructional time. Upon implementing block scheduling, schools noted a need for a change in pedagogy. Constructivist teaching, shown to be effective with multiple ages, has become a preferred pedagogy for elementary and middle school teachers during a block period. The review of literature includes a description of the forces behind block scheduling and provides a background of constructivist theory and teaching practices based on the writings of Jean Piaget and Lev Vygotsky. Combining constructivist teaching with block scheduling creates an environment conducive to young adolescent learning; however, properly preparing teachers through professional development is key to effective implementation. The purpose of this action research study was to facilitate the professional growth of new teachers by providing job embedded professional development opportunities that were grounded in constructivist practices and demonstrated to be effective with young adolescent learners while teaching in a block period.

Key Words: Block Scheduling, Constructivism, and Professional Development

Dedication

This dissertation is dedicated to my family, friends, and grandmother who made me promise to never settle and told me that I could accomplish anything I put my mind to.

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I wish to thank my committee members for your continued input and corrections. A special thank you to my advisor, Dr. Bill Glenn, for always asking guiding questions and providing feedback to keep this project energized and moving forward.

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CHAPTER 1

Purpose and Overview

The adoption of block scheduling has significant instructional implications, but some teachers may resist changing their classroom practices because they do not fully understand how longer time frames can facilitate learning. Furthermore, without adequate professional development, even supportive and well-intentioned teachers may incorporate ineffective methods.

--Donald Hackmann

This is a study of site based professional development designed to facilitate constructivist pedagogy of new middle school teachers while teaching during a block period. Following the publication of *A Nation At Risk* (1983) and *Prisoners of Time* (1994), coupled with the implementation of No Child Left Behind, many American High Schools and some Middle Schools chose block scheduling to create longer periods of instructional time. The common issue identified among schools that have chosen block scheduling is the need to provide teachers with proper professional development for teaching during lengthened periods of instructional time (Canady & Rettig, 1995; Gullat, 2006; Queen, 2003). Most specifically, the needs of the new teachers are significant because they must learn to juggle the demands of administrative tasks, lesson planning, classroom management, communication, and grading as well as providing meaningful instruction during a block class.

Based on research of best practices for young adolescent learners and professional development for teachers, this study will review the proven aspects of constructivist teaching and the need to provide new teachers with appropriate professional development to use this pedagogy during longer periods of instructional time. The literature review provides a background of constructivist theory and teaching practices based on the writings of Jean Piaget and Lev Vygotsky. Based on recommendations from the literature for use of time in the block schedule

and best practices for young adolescent learners, the principal researcher developed a framework for constructivist teacher professional development for teaching in the block using constructivist pedagogy. This study analyzes the implementation of the new teacher professional development in the public school setting.

Background

In 1983, The National Commission on Excellence in Education (NCEE) published *A Nation At Risk* that claimed that American education was mediocre at best. This report's proclamations gave birth to the standards movement (Mintz, 2002). Close to a decade later, the National Education Commission on Time and Learning (NECTL) published *Prisoners of Time*, which reinforced the beliefs and accusations of *A Nation at Risk*, claiming that nothing had changed in schools in the 20th century. Most recently, Congress reauthorized the national Elementary and Secondary Education Act, or No Child Left Behind Act of 2001 (PL 107-110 / NCLB) that requires proficiency in reading and math for all students. The common theme in these reports and federal mandates is accountability for student learning. Thus, schools entered the era of data driven decision-making with progress being assessed by measures other than the marks a student receives on his/her report card.

This age of accountability requires schools to administer standardized tests and report scores for all subcategories of students. The goal of PL 107-110 is: "to close the achievement gap with accountability, flexibility, and choice so that no child is left behind" (NCLB, 2001). States are required to test students in math and reading each year in grades 3-8 and at least once in high school. By the year 2008, states were also required to test and report in science at three different grade levels. Additionally, by the year 2013-2014, NCLB (2001) requires that all students to be 100% proficient in reading and math. The push toward standardized testing with

no addition of hours in the school day forced schools to examine their master schedules and evaluate the amount of time students were spending in core academic classes. School administrators also evaluated the amount of time students spent in non-academic classes and the extent to which these classes improved academic achievement. A determination of non-academic classes as being unbeneficial has resulted in programs being cut or altered.

Although *A Nation at Risk* and *Prisoners of Time* criticized American public high schools, they brought awareness to middle school students and young adolescent learners. This attention to adolescent learners paved the way for middle school personnel to advocate for school reform to meet the instructional and social emotional needs of the 10-15 year old population. The National Middle School Association (NMSA) was formed in 1973, setting the goal of improving middle grades education. NMSA recognized, much like the NCEE, that the needs of American public school students, most specifically young adolescent learners, were not being met. NMSA appointed committee members, professors, and practitioners to develop a characterization of effective middle schools. The committee was tasked with consolidating the elements of middle school education and creating a definition for what effective middle grades education looked like. After much deliberation, the committee produced *This We Believe* in 1981 (Erb, 2001).

This We Believe (1981) brought attention to the struggling young adolescent learner and defined 14 school practices and cultural characteristics that, when consistently integrated and fully implemented, the committee believed would create successful schools for young adolescents (NMSA, 1982). The Nation Middle School Association endorses these practices that encompass teaching the whole child in a nurturing manner and creating an environment where students feel safe and challenged. They recommend active learning, shared vision, multiple

teaching approaches, child advocacy, courageous collaborative leadership, and an exploratory curriculum. These characteristics continue to be a mainstay for successful middle school programs.

Another significant movement in American public schools is that of the changing student demographics. Wood (2007) notes that the U.S. school populations have grown both culturally and linguistically. Figure 1 represents statistics noted by the U.S. Department of Education in percentage growth of minority enrollment in public schools based on data collected from the “Public Elementary/Secondary School Universe Survey” 1993-94, 2000-01, and 2003-04 (NCES, 2007). In this report, 34% of public school students were considered to be part of the minority group in 1993, increasing to 39% in 2000, and 41.3% in 2003. Each minority group showed an increase in enrollment from 1993 to 2000. From 2000 to 2003 all minority groups, with the exception of American Indian/Alaska Native, showed increased enrollment in public schools.

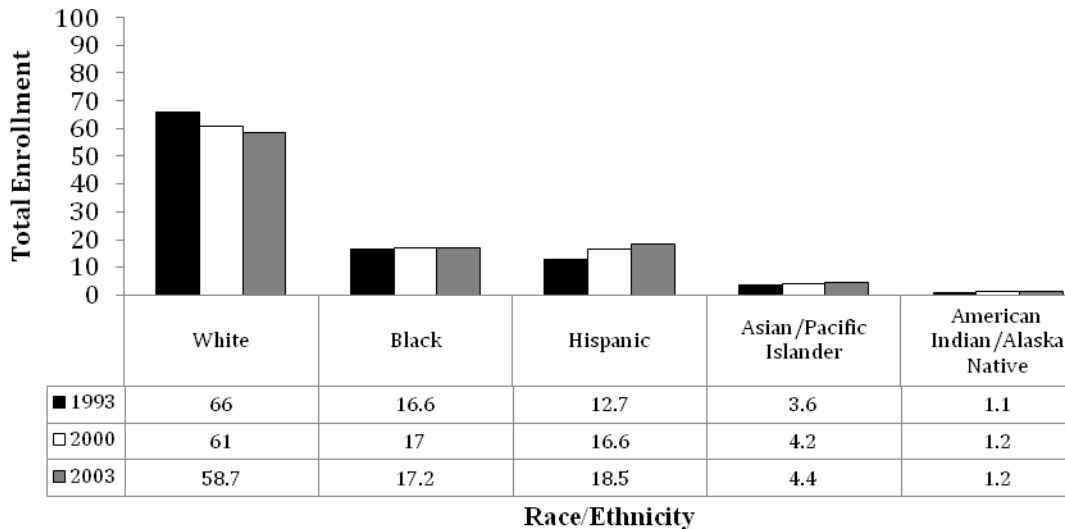


Figure 1. Minority Enrollment Growth from 1993 to 2003.

These statistics demonstrate that our schools are steadily becoming more diverse and educational trends must keep up with this pace to ensure proficiency for all students. As school populations continue to change and student needs increase, schools are faced with the problem of creating appropriate, meaningful, and productive learning opportunities for students.

Because of the standards based movement and increasing diversity of learners in schools, high schools have chosen block scheduling to preserve larger blocks of instructional time. Time previously spent in hallway movement and class exchanges is now devoted to meeting the diverse needs of different learners (Rettig, 2003). A typical block schedule day will have four periods compared to the traditional schedule that consisted of eight. A block schedule consists of three class changes compared to the traditional schedule, which has seven class changes. The reduced class exchanges from traditional to block schedule resulted in less time spent in the halls. The time saved can be anywhere from 20 to 40 minutes per day depending on the physical plant of the school.

While close to 95% of high schools have implemented block scheduling, fewer middle schools have taken this approach (Rettig, 2008). The literature on the success of block scheduling at the high school level is mixed. It suggests that using block scheduling has improved standardized test scores and school climate; however, it has not been proven that it improved student achievement and overall learning and information retention (Gullat, 2006; Maltese, Dexter, Tai & Sadler, 2007). The common theme in the literature about block scheduling is the need for teacher professional development to assist them with effectively using their time and improving pedagogy to engage students during longer periods of instruction. An advocate for block scheduling, Queen (2003) proposed beginning with Piaget's theory of cognitive stages of development as a key component of creating quality instruction to be

delivered during the block. Hackmann (2004) suggested that students could benefit from the increased class time gained from block scheduling to use constructivist learning practices.

Problem Statement

As school populations change, schools must evaluate the practices they use to address the varying learning needs of students. To address the issue of fragmented instructional time and minutes lost in transition, schools have chosen block scheduling. In many cases, block scheduling was implemented without teacher professional development. The expected needs of first year teachers were exacerbated with the expectation of being able to deliver instruction in the block without the appropriate professional development. School leaders now understand that professional development is a key component to ensuring the success of teachers when implementing a block schedule.

X Middle School is a part of a small suburban School District in a mid-Atlantic state that serves middle school grades with enrollment around 500 students. Like many other middle schools, X Middle School changed to an alternating day block schedule post NCLB. This change came from a desire to eliminate the six day rotating schedule that was confusing to staff and parents, as well as maximize instructional minutes across all disciplines. The six-day rotating schedule was a mix of a traditional schedule for core content and various rotations for encore, foreign language, and physical education. Several district wide curriculum studies, a parent survey, a scheduling team, and district planning documents were used to create the schedule to meet the needs of the student population and satisfy external demands. The X Middle School community was pleased with the schedule change; however, teachers noted discomfort with teaching during the longer periods of time.

Purpose Statement

This action research project was conducted to assist X Middle School with facilitating the professional growth of new teachers by providing job embedded professional development opportunities that were grounded in constructivist practices and demonstrated to be effective with young adolescent learners while teaching in a block period. A rich base of literature on child development, young adolescent learners, and professional development provided the foundation for this study, however the individual learners and their needs drove the work.

Rationale

District X has a history of little teacher turnover. Over the past three to five years, District X has seen an increase in its turnover rate for a variety of reasons. Due this increase, X Middle School has experienced a higher number of new staff than in previous years. Typically, the school has hired two to three new teachers each year. For the academic year 2008-2009, eight new teachers were hired. Of these eight teachers, all but one had no previous teaching experience. This statistic was one of great concern for both the administration and community of X Middle School and District X. For this reason, a professional development plan was created to facilitate the professional growth of such a high number of new staff to X Middle School.

Another benefit of this study was to develop a plan that assisted the school with its exploration of the International Baccalaureate Middle Years Programme (MYP). The pedagogical techniques of constructivism that are used for the topics for professional development encompass the MYP framework, beliefs, and areas of interaction. Approaching the MYP feasibility study and exploration phase in this manner, while learning about constructivist teaching, assisted the staff in implementing new pedagogy as well as in exploring the programme.

Lastly, this project provided opportunities for master teachers within the school to facilitate ongoing professional development for the staff through a constructivist lens. One drawback of a small school system is the limited number of leadership positions and opportunities for teacher leadership. However, using this constructivist model to lead professional development sessions will create such occasions that staff at X Middle School can share instructional practices and craft knowledge with colleagues. Encouraging teachers to teach their colleagues in their areas of strength is a key component of this plan. By sharing their knowledge with their peers, the master teacher should become more reflective about their teaching with the intention of improved learning for all.

Theoretical Framework

Using a constructivist approach to teaching and learning, the following four-pillars are brought together to infuse the works of Piaget and Vygotsky. This framework helps to build the understanding of the developmental stages and learning of children. It is also designed to facilitate appropriate social learning to meet the needs of young adolescent students. While the works of Piaget and Vygotsky differ in application, this combined framework will assist teachers with understanding child development, acquisition of learning, setting expectations, and structuring learning opportunities for all students to be successful. The pillars of the Theoretical Framework are:

Genetic Epistemology –Piaget’s (1969) theory of child development is based on his studies of how humans developed knowledge. For application to this study, the theory is identified at “ages and stages” and applied to teacher professional development as knowing the students and where they are/should be academically and socially.

Equilibration – Piaget’s theory of Equilibration is defined as how the learner constructs information given the surroundings and integration. Equilibration supposes that the learner strikes a balance within his/her environment by acquiring new information (assimilation) and forming new constructs to understand the information (accommodation) (Ginn, 2009). When applied to teaching, this theory assists teachers with understanding how to organize learning opportunities to engage students and help them form new schemas, ultimately guiding instruction.

Zone of Proximal Development (ZPD) – Vygotsky (1978) describes ZPD as “the distance between the actual developmental level as determined by independent problem solving and the level of potential developments as determined through problem solving under adult guidance or in collaboration with more capable peers.” For teachers, ZPD is vital to providing instruction that is designed to appropriately challenge students based on their developmental level and prior knowledge.

Scaffolding –Deeply rooted in Vysotsky’s theory of social learning, scaffolding has been attributed to his work and best defined as a framework that assists a child’s growth that will change over time (Fosnot, 2004). When applied to teaching and learning, scaffolding refers to helping students learn and acquire information by structuring appropriate learning experiences through assistance to independence. These concepts will provide the framework for professional development sessions as well as for the skills that teachers are learning to implement in their classroom.

Definition of Terms

In an effort to assist the reader with understanding terminology used in this study, the following definitions are provided below:

1. *Accommodation* is the modification of internal schemes to fit reality (Piaget, 1969, p.6). Accommodation happens when a new stimulus is introduced and the learner creates a new schema or modifies an old schema (Wadsworth, 2004).
2. *Action Research* is defined as an approach to research that works at gathering data in the field by non-traditional methods with the concerns of practitioners who want to improve organizations and communities (Coghlin & Brannick, 2005 p.20).
3. *Action Research Cycle* is defined as a collaborative cyclical process of diagnosing a change situation or a problem, planning, gathering data, taking action, and then fact-finding about the results of the action in order to take more action (Coghlan & Brannick, 2005 p.9).
4. *Administration* applies to the school based administrators, principal and assistant principal, at X middle school.
5. *Assimilation* is the filtering or modification of the input (Piaget, 1969, 2000 p. 6). Assimilation occurs as a cognitive process by which a person integrates new perceptual, motor, or conceptual matter into existing schemata or patterns of behavior (Wadsworth, 2004 p. 17).
6. *Blackboard* is a virtual or electronic learning management system (LMS) that enables faculty and students to communicate and collaborate online through real-time chat forums, discussion boards, Email, and online file exchanges. The

software also features assessment and survey tools to assist with online learning and technology implementation.

7. *Block Scheduling* is a way of organizing the school schedule to extend instructional periods to a minimum of 90 minutes making it different from the tradition day schedule of 50 minutes.
8. A Curriculum Instruction Resource Teacher, or *CIRT*, is a middle level instructional leader appointed and chosen by the Assistant Superintendent for Curriculum, Instruction, and Assessment in conjunction with the building principals. They are considered a curricular resource for the school district and provide a wealth of knowledge for their colleagues for specific subject areas.
9. *Constructivism* is a theoretical approach to pedagogy that “construes learning as an interpretive, recursive, nonlinear building process by active learners interacting with their surroundings – the physical and social world” (Fosnot, 1005 p. 34).
10. *Disequilibrium* is the state between assimilation and accommodation where a learner may have contradictions in their current understanding (Fosnot, 2005).
11. *Early Release* is defined in School District X as designated time in the master calendar for professional development. In X Middle School, this time was one day per month for 3 hours.
12. A *KWL* is a teaching/assessment strategy that promotes student empowerment in the learning process by asking the students the following questions: What I Know, What I Want to learn, and What I did Learn. Teachers guide students through the completion of the KWL chart at the beginning of a lesson and use it as a reference point throughout the lesson. A KWL assists students with “activating background

knowledge, structuring inquiry, and summarizing learned information” (Sippola, 1995 p.542).

13. *Meta learning* in action research is referred to as the reflective practice whereby subjects are learning about their learning and doing more than problem solving (Coghlan & Brannick, 2005).
14. *Professional Development* is a planned experience designed to elicit new behaviors resulting in professional and/or personal growth and improved organizational effectiveness (Merkle & Artman, 1983).
15. *Schema(ta)* are the cognitive or mental structures by which individuals intellectually adapt to and organize the environment. They are the mental counterpart of biological means of adapting. They can easily be thought of as concepts or categories (Wadsworth, 2004 p. 14).
16. *Trend Analysis* is the process of looking for patterns in data over time to identify any relationships between changes in performance and specific actions and events (Sagor, 2005 p. 180).
17. *Triangulation* is the process through which multiple data sources are collected and analyzed to formulate conclusions and answer research questions (Sagor, 2005).
18. *United Streaming* is an online multimedia library that provides electronic resources for K-12 educators (Discovery Education, 2010).
19. A *Web Quest* “is an inquiry-oriented lesson format in which most or all the information that learners work with comes from the web” (Dodge, 2007).

Assumptions

In conducting this study, the researcher assumed certain pedagogical skills that new teachers should possess based on teacher preparation programs and the formal interview process. It was assumed that the teachers possessed a general understanding of lesson planning and classroom management. The teachers studied in this project have middle school certification (grades 6-8) or secondary certification (grades 6-12), so it was assumed that they have an understanding of the “middle school concept” and some experience through student teaching of working with young adolescent learners.

Limitations

This study was limited by sample size and setting. This study includes predominantly qualitative data that was collected from three subjects from the same middle school in one school district. The selection of subjects was based on the need to represent multiple disciplines as well as those who were middle school or secondary endorsed. Due to the configuration of the school, which includes fifth grade, it was important to choose those who were endorsed for teaching middle school or secondary given that the research was based on young adolescent learners. Furthermore, the three teachers who were chosen as subjects taught related or inter-disciplinary subjects that support the MYP framework and embrace the middle school concept of integrated lessons, further reinforcing the NMSA’s 14 characteristics of effective middle schools. The study was further restricted by the skill set brought to the study from the entry-level teachers. Possible differences may be attributed to teacher preparation programs, field, and student teaching experiences.

Additionally, the use of predominantly qualitative data could potentially limit the reliability of this study. Merriam (1998) asserts that when studying human behaviors it is

difficult to replicate a study and achieve the same results thus limiting formalized generalizability. The data in this study were used to describe the unique experience of three subjects, allowing the reader to process the observed outcomes and frame the results in a relevant paradigm to his/her specific conditions present in local school environments. The data can be applied to other school situations through the reader's perceptions, based on each person's interpretation and experience. This process is referred to as naturalistic generalization (Merriam, 1998).

Stake (1986) asserts, "the intention of most educational research is to provide formalistic generalization" (p. 98). He further notes that traditional, or formalistic generalization, uses correlations to identify and compare variables with the end product of knowing one way to understand educational practices. Instead, Stake (1986) and Herr and Anderson (2005) believe that applying naturalistic generalizability provides a more effective means for studying educational practice in that it helps to share understandings of interactions, and allows practitioners to pass on knowledge as part of sharing their craft.

Data from Chapter 4 of this study allow the reader to understand and interpret the unique experience of each subject and gain insight to the perceptions of new teachers. These data can assist practitioners with creating professional development that can assist with accommodating the varying needs and skill sets of those new to the profession. In this study, the reader will experience three different accounts of how professional development, in the social context and from more capable peers, assisted new teachers with their growth and development. A greater understanding of how the subjects respond to this learning context will help administrators with designing growth opportunities conducive to the various styles of adult learning.

A final limitation of the study was the context in which it took place. X Middle School was conducting the feasibility study and exploration period of the International Baccalaureate Middle Years Programme (IBMYP), which had school and district implications for professional development. The preferred pedagogy of the IBMYP is constructivism, which reinforces the components of the study; therefore the framework of the programme helped to create the preliminary professional development calendar (IBO, 2008). A prolonged exploration period of MYP on behalf of the school could lengthen the timeline in which the subjects in the study attend conferences and learn about the programme. Lack of knowledge of the International Baccalaureate Middle Years Programme and the concept behind the learner profile and areas of interaction could further limit this study.

Research Questions

The research questions of this study were designed to gauge the perceived usefulness of professional development for new teachers. This action research study was developed to meet the needs of new teachers. The research questions provided ongoing feedback to the researcher in order to guide professional development sessions and modify as needed based on the needs and input of the learners. The following three questions guided this study for the new teachers:

1. To what extent did the subjects perceive that the professional development prepared them to deliver developmentally appropriate pedagogy for middle school students during a block period?
2. To what extent did the staff perceive that the pedagogy of the subjects improved as a result of the professional development sessions?
3. To what extent did the cohort members implement the Constructivist teaching practices that were learned during the professional development sessions?

These research questions and the action research method were chosen to assist the principal researcher with providing a cohort of new teachers comprehensive professional development to be implemented in a school that utilizes a modified block schedule. Furthermore, this project assisted the principal researcher, in the role as instructional leader, to provide meaningful professional development for new teachers and opportunities for teacher leadership for master teachers. In a small school district, eight new teachers is a significant change in staffing; thus presenting an opportunity for the researcher to discover ways to assist the subjects with the very difficult first year. Unlike larger school districts, District X provides the majority of its professional development at the school level, other than that which is associated with the International Baccalaureate Programme. These two contributing factors led the decision making to complete this action research project, given that the responsibility for fostering and teaching new teachers was defined in the role as instructional leader.

Organization of the Study

The following chapters are sequentially ordered in an effort for the reader to understand the background, implementation, results, and future planning of studies that are similar in nature. Chapter 2 presents a review of current literature and implications for the need for this study. The need for teacher professional development will continue to grow as standards for teacher quality increase.

Chapter 3 is the methodology section of this action research project. It includes an explanation of the specific areas of professional development and the types of data that were collected. This chapter also contains an explanation of validity and reliability as it applies to this study.

Chapter 4 is the results section of this research. It summarizes the data collected, telling the unique experience of each subject as he/she perceived their individual growth. Furthermore, this Chapter describes implementation of pedagogy techniques through the perceptions of observers. An analysis and interpretation of the data are reported in detail to show the growth that the subjects experienced after completing this series of educational opportunities. Data from this section were used to develop ideas for further research presented in the last chapter.

Chapter 5 is the discussion section of this research. In this Chapter, the results from Chapter 4 are summarized, evaluated, and interpreted in an effort to guide future action research projects. The results of the research questions will guide future action research projects in an effort to best meet the educational needs of adult learners. In conjunction with the base of research that is presented in Chapter 2, the results of the study and the applicability to other teaching situations will be discussed in this section. Suggestions for future work are also included in Chapter 5.

CHAPTER 2

Review of the Literature

Block Scheduling

Forces behind block scheduling implementation. In 1981, Secretary of Education T. H. Bell formed the National Commission on Excellence in Education (NCEE), which produced the report *A Nation at Risk*. The Commission was created to examine the quality of education in the American public schools and report its findings. This report shocked educators stating that the “educational foundations of our society are presently being eroded by a rising tide of mediocrity that threatens our very future as a Nation and a people” (ANAR, 1983). *A Nation at Risk* forced our nation to examine its policies, practices, and overall instructional program. American school divisions and colleges were compared to advanced nations, and their academic rigor and admissions requirements were scrutinized. Similarly, questions about social and academic achievement were criticized. The Commission was charged most specifically with evaluating teenage youth, and focused much of its efforts on high schools (ANAR, 1983).

A Nation at Risk noted that in many other industrialized nations courses in math, biology, chemistry, physics, and geography started in grade six and were required of all students. The time spent on these subjects, based on class hours, was about three times that spent by even the most science-oriented U.S. students, i.e., those who select four years of science and mathematics in secondary school (ANAR, 1983). This and other statements regarding the quality of education in the United States entered American Public Schools into a competition that had not previously existed. This competition gave rise to national standards, and standards based education was

born. The race to compete with other countries and set higher goals and standards, required schools, mostly high schools, to examine instructional time.

The Education Council Act of 1991, federal law PL 102-62, was enacted requiring the creation of the National Education Commission on Time and Learning (NECTL). In April 1994 and again in 2005, The National Education Commission on Time and Learning produced its report *Prisoners of Time* (NECTL 1994, 2005). The purpose of the report and its reprint was to confront policy makers with old reports that they felt applied as much at that time as they did when they were first created (NECTL, 2005). In the updated forward, Goldberg & Cross (2005) agreed that little had changed about schools in the 20th century, most notably the length of the school day and amount of school days in an academic year.

Despite changing demographics, economy, and increased standards, American students still spend the same amount of time in school as they did 150 years ago (Goldberg & Cross, 2005). The National Education Commission on Time and Learning believed that schools would not achieve the education goals established by the government and local stakeholders with the current time allocated for learning, asserting that time is the frequently overlooked solution. To date, students spend on average 5.6 hours in the classroom per day (NCES, 2005). Of that time, the Commission found that on average only 41% of that time is required for core academic subjects- Math, Science, History, and English. The Commission estimated that compared to American students, German, French, and Japanese students receive more than twice as much core instruction (NCES, 2005). Rettig (2003) suggested that on average, students spend about 60% of their school day in instructional periods. If one calculated the potential hours and minutes spent in instruction and divided it by the number of learning standards, he/she would quickly realize that there are not enough hours to teach the desired standards and benchmarks

(Marzano, 2003). Statistics like this required school divisions to explore alternative schedules and block schedules to preserve instructional time to meet learning goals.

The beginning of block scheduling. Since the early 1990s, high schools across the United States have explored and implemented block or alternative schedules. Wiley (1996) indicated that block scheduling is the new preferred format for delivery of instruction in the 1990s for secondary schools in the United States. A study completed by the Texas Education Agency Research and Evaluation Division found that between 1992 and 1995 the trend for use of block scheduling rose from 4% of high schools to over 40% respectively (Brasel & Gill, 1999). The National Center for Education Statistics reported increasing trends for high schools using block scheduling with “fewer” schools in 1997 using block scheduling to 42% of all public high schools in 2002. This increasing trend continued in the United States as schools used block scheduling to address the issue of time.

Structure of block scheduling. To focus on instructional time, schools examined and introduced variations of block schedules. Some schools considered this to be flexible or alternative scheduling. Regardless of the name, the result is fewer classes consisting of longer instructional periods for students. This section discusses several of the most popular options that schools are using. Table 1 shows a comparison between the following types of block schedules detailing time, frequency, and possible credits earned.

Traditional 8 period day schedule. The traditional day schedule consists of eight periods all of the same length – usually 45-50 minutes including one period for lunch. These classes meet every day for the entire academic year. The time allotted to specific subjects allows high school students to earn 28 credits over the course of four years.

4 X 4 block. A 4 X 4 Block Schedule is built around four classes averaging 90 minutes. One period is extended to include time for lunch. Students attend these classes every day for a full semester. The 4 X 4 block uses semester classes allotting for 8 classes during one academic year – but only 4 on which to focus during a semester. Many high schools have chosen this option because students can take 32 courses over their four year high school career allotting space for advanced studies diploma requirements without sacrificing electives (Canady & Rettig, 1995).

6 period alternating day. A 6 period alternating day consists of three long periods that meet every other day –referred to as Day 1 or 2 or A and B day. The average class is 110 minutes or longer with one extended period to accommodate lunch. These classes meet all year unless otherwise noted in the schedules as a semester course – usually electives or encore. A high school student in this schedule can have an upwards of 24+ credits over the course of his/her high school career (Canady & Rettig, 1995).

7 period alternating day. A seven period alternating day consists of 3 long periods that meet every other day, also referred to as Day 1 or 2 or A and B day, with the addition of a period that meets everyday. The classes average 90 minutes or longer with one extended period to accommodate lunch. The seventh period or everyday class, commonly known as the singleton, is 45-50 minutes in length. These classes meet all year unless otherwise noted in the schedule as a semester course – usually electives or encore. A high school student in this schedule can have an upwards of 28+ credits over the course of his/her high school career (Canady & Rettig, 1995).

8 period alternating day. The eight period alternating day schedule consists of four, 90-minute classes that meet every other day for the entire academic year. This schedule allows schools to offer up to eight classes providing students with increased opportunities to take

encore/electives or provide periods for tutorial/remediation. This schedule, like the 4 X 4, allows students to gain 32 credits over the course of their 4-year high school career (Canady & Rettig, 1995).

Table 1

Comparison of Time, Frequency, and Credits for Various Block Schedules

Schedule Type	4 X 4	6 Period	7 Period	8 Period	Traditional
Length of Classes	90	125-130	110	90	45-50
Frequency	Every Day for 1 semester	Every other day for 1 year	Every other day for 1 year	Every other day for 1 year	Every day for 1 year
Credits Earned	32	24	28+	32	28
Hallway Pass time	15-20	10-15	15-20	15-20	25-35
Singleton			50 min meets every day		All classes

Note. *Based on Canady & Rettig, 1995

These examples provide the framework for master schedules designed to meet the needs of various school populations. Schedules can be flexible to address specific issues or academic trends relying on the creativity of the person creating the schedule (Canady & Rettig, 1995).

Benefits of block scheduling. Block scheduling allows schools to increase instructional periods to over 90 minutes, compared to the 45-50 minutes in a traditional schedule. Longer periods of instruction provide opportunities for teachers to create learning experiences to best meet the needs of their students. It is noted, that block scheduling allows teachers to implement a variety of instructional approaches and permits students to take more classes over the course of a year (Canady & Rettig, 2003). The semester system developed through 4 X 4 block scheduling creates an additional period for students to take more classes and earn more credits. Queen

(2003) agreed with this, noting that teachers have more time to prepare and engage students by using a variety of instructional strategies. Longer instructional periods also equate to longer periods for planning and collaboration for teachers. Additionally, longer periods of time allow for more cooperative learning and interactive lessons, which increases student interest and performance.

Canady & Rettig (1995) asserted that block scheduling resulted in more effective use of time and resources, improved climate by reducing discipline referrals, improved classroom atmosphere, and assisted with program development and implementation. An instructional model that uses cooperative learning, integrated curriculum, and multi-intelligence instruction will foster a collaborative community environment allowing students and teachers to grow socially and academically (Buckman, 1995). Rettig (1995) also stated that the pace of the schedule slows down, allowing students time to relax and process incoming information. Pedagogical approaches such as cooperative learning and inquiry-based instruction, afforded time and opportunity by block scheduling, promote small learning communities that are designed to boost academic achievement and school climate.

A study completed by Heidelberg College noted that students, in general, are happy with block scheduling stating that they had more total learning time, more time to learn concepts, more time to work in groups, more time to complete work and prepare for tests, and were achieving better grades (Corley, 2003). An interview held with Dennis Williams, Principal of Mecklenberg High School, explained that at the end of the first year of implementing block scheduling over 90% of students, and close to 90% of teachers, liked the block scheduling, and did not want to return to traditional scheduling (Queen, 2003).

Additionally, teachers expressed confidence and pleasure with block scheduling for a variety of reasons. To begin, teachers met with fewer classes and on average, saw fewer students per day— for some close to 25% less (Canady & Rettig, 1995; Imbimbo & Gilkes, 1999). In a traditional eight period day, teachers see an average 100-180 students, while students will see six or seven different teachers (Canady & Rettig, 1995). Because the teacher has more instructional time, administrative tasks such as taking attendance are done at the pace of the teacher and completed fewer times per day (Canady & Rettig, 1995). When compared to traditional scheduling, block scheduling created less instructional preps and classes to teach per semester with fewer students for teachers to see in a day. In any block schedule, teachers have fewer classes to teach, providing the opportunity to focus on in-depth curricular lessons that facilitate higher order thinking and hands on learning.

In addition to creating longer periods of instruction, block scheduling also reduces the amount of time spent in transition and helps prevent discipline problems. Rettig (1995) suggested that fewer class transitions resulted in fewer discipline referrals. After implementing a block schedule, West Mecklenburg High School in North Carolina cited a decrease in both in-school and out-of-school suspensions. Similarly, Wasson High School in Colorado Springs indicated fewer discipline problems and a less stressful environment (Queen, 2003).

In the same way, improved school climate rendered better hallway behavior preventing less carryover into the class that follows a class change. Time spent on discipline took away from time spent on instruction, making discipline a key issue to maximizing instructional time. A 90-minute block allows teachers to develop relationships with students and personalize the teaching and learning process. Relationship building has been effective in cutting down on unwanted behaviors and discipline (BRIM, 2006). Rettig further stated that short instructional

periods caused curricular fragmentation, contributing to negative classroom behavior (Canady & Rettig, 1995).

Drawbacks of block scheduling. Although block scheduling has become the preferred form of scheduling among American public high schools, it is not without its drawbacks and skeptics. After a period of little to no results in improved academic achievement, Matthews (2008) stated that some school systems have returned back to the traditional schedule. He recently noted that faculty support for the block system has declined in many schools, with some schools using hybrid schedules; some using alternating day schedules, and some using part block and part traditional. Schools had various reasons for reverting back to the traditional schedule; however, the most powerful is the lack of proof that block scheduling improved academic achievement as originally promised (Matthews, 2008).

A review of literature surrounding block scheduling noted that academic achievement and attendance improvement were inconsistent between schools (Zepeda, 2006). Additionally, Gullatt(2006) suggested that block scheduling was not geared for advanced placement (AP) students, and preparation for AP courses was negatively impacted. Because of the timing and scheduling of semester classes, AP exams were affected by the 4 X 4 block schedule. Advanced Placement exams are taken in the spring, which is either long after a first semester course, or not completely through a second semester course.

Likewise, Brake (2000) blamed block scheduling for the decline in advanced math scores and tests such as the ACT. He felt that schools that embraced block scheduling to increase achievement by adjusting the learning time were correctly using block scheduling. However, those who used the block schedule to create more opportunities for electives were choosing less academic rigor for students (Brake, 2000). 4 X 4 Block or eight period alternating

day block schedules have been used to create extra periods for electives or foreign language, which has taken away from the time students could spend in core academic classes. Brake (2000) concluded that his data showed a general decline in math test scores, most specifically for students taking college preparatory math.

In the same way, a study completed by Richardson (2000) in the state of Virginia, showed statistical significance ($p < .05$) on 13 of 18 measures indicating schools that used a 4 X 4 block schedule underperformed on state assessments compared to those using alternate day or traditional day scheduling. In his study, the teachers blamed underperformance on the constrictions of instruction during a block – they said they could not teach two concepts or cover two lessons in one block period. The inability to cover the material left the teachers feeling they had compromised the instruction and compressed the courses, thus resulting in lower test scores (Richardson, 2000).

Similarly, skeptics declare that students lose concentration during long classes giving teachers less of a chance to reinforce lessons through every day practice. One study noted that in the first year of implementation, students had difficulty with keeping up with homework and not remembering important information from the previous lesson (Peterson, Schmidt, Flottmeyer, and Weincke, 2000). Gullatt (2006) believed that in a 4 X 4 semester block schedule, the material from fall classes was forgotten before a student took the exam or state mandated test. As previously stated, this aspect of block scheduling has impacted students taking AP exams and other standardized tests.

Another drawback of block scheduling is lack of teacher preparedness to teach in the block. Zepeda and Mayers (2006) reported that many studies showed inconsistencies in changes of teacher practices and professional development, resulting in both negative and positive impact

on student achievement in the block. Gullatt (2006) noted that teacher professional development was a key component of achieving success with teaching in the block. Similarly, Queen (2003) maintained that instructional time can be lost if teachers do not use a variety of teaching techniques. He further stated that 30% of blocked classes used the lecture format, which tends to be less engaging, making them less successful. Multiple sources all stated the professional development is a non-negotiable when considering a block schedule.

Block scheduling has also been accused of decreasing contact time between teachers and students resulting in less instructional time. Maltese, Dexter, Tai, & Sadler (2007) argued that block scheduling reduced total class time because classes meet fewer times per week. However, they did not take the average over a two-week period into consideration. The two-week figure would render equal time as demonstrated by Canady & Rettig (1995). Additionally, Maltese, Dexter, Tai, & Sadler (2007) argued that classes only meet every other day, which does not allow for the reinforcement of skills on a daily basis. Cannady & Rettig (1996) calculated that an average block schedule equals 8,100 minutes of instructional time and a traditional schedule will provide 9,000 minutes. In a block schedule, teachers will lose 900 minutes on administrative tasks and a traditional schedule will lose 1,800 minutes. The result in both cases is 7,200 minutes for instruction. The difference is length of classes.

What we know about middle school block scheduling. The literature on middle school block scheduling is limited; however studies have shown improvement in academic achievement for particular subjects. A study of middle school teachers' perceptions of block scheduling showed that overall student learning was positively influenced by block scheduling with a 33% increase in the number of honor roll students, less discipline referrals, and an increase in grade point average by all students (Brown, 2001). Furthermore, Mattox, Hancock, and Queen (2005),

completed a study of five middle schools, noting that middle school students achieved high scores in math after moving to block scheduling. Glasgow Middle School in Fairfax, VA indicated an increase in interdisciplinary teaming and content integration after choosing the alternating day schedule (Canady & Rettig, 1995). In a qualitative study, middle school teachers responded positively to belief statements, stating that learning improved because they were able to vary activities that addressed different learning styles in a block schedule (Brown, 2001).

Block scheduling at middle school has also shown improvement in school climate and culture. Mattox, Hancock, & Queen (2005), as well as Canady & Rettig (1995) all reported less discipline referrals for schools using block schedules. Less discipline is attributed to less disruptive behavior resulting from focus on academic work and less time spent changing classes. Mattox, Hancock, & Queen (2005) suggested that students involved with block schedules spent on average of 10-20 fewer minutes in class changes when compared to traditional schedules.

To develop programs and lessons that are in line with young adolescent needs, middle schools have taken advantage of the flexibility of time within a blocked schedule. It is important to note that block scheduling at the middle school allows for a flexible time table in which teachers make instructional decisions based on the needs of the students – within the confines of the schedule (Wunderlick, Robertson, & Valentine, 2000). Flexible scheduling, at middle school, is defined as a restructuring of the school day from an equal number of minutes in six to eight periods to an alternative format providing for substantially longer periods and a variety of learning time frames to best meet the academic and social needs of middle school students (Queen, 2003). Canady & Rettig (1995) suggested that middle schools use a modified or alternating day block schedule to accommodate the needs of the middle school student.

In support of *This We Believe* (1981), the National Middle School Association created 5 key characteristics that laid the foundation for the types of block schedules they believed would benefit middle school students.

- Organizational structures that support meaningful relationships and learning;
- Students and teachers engaged in active learning;
- Multiple learning and teaching approaches that respond to their diversity;
- Educators who value working with this age group and are prepared to do so;
- A shared vision that guides decisions.

These characteristics are embedded within the literature presented earlier in this document and reiterated by Canady & Rettig (1995) stating that middle schools can benefit from operating on some form of a block schedule. The literature also tells us that teacher professional development is perhaps the most important part of making a block schedule successful (Queen, 2003). The overriding component for middle schools in these articles is the note for flexibility. Given this knowledge and recommendations for young adolescent learners, it is imperative that middle schools look at scheduling options and provide teacher professional development that incorporates longer chunks of learning time while adhering to the guidelines presented by the National Middle School Association.

Hackman (1995) suggested that the extra instructional time created by block scheduling opens the door to using hands on, inquiry based, and student centered activities, otherwise known as constructivism. When creating a block schedule, Queen (2003) suggested beginning with Piaget's theory of cognitive stages of development as a key component of creating quality instruction to be delivered during the block. Wormeli (1999) stated that constructivist teaching

is a proven approach with young adolescents, but requires extended classes provided through block scheduling in order to be most effective.

Constructivism

Definition of constructivism. To clearly define constructivism, it is important to acknowledge that there are many definitions that describe both its theoretical and philosophical components. Von Glaserferd (1995) held that there are two main components of the constructivist model: (1) learning is a constructive activity that students carry out and (2) the job of the educator is to provide opportunities for students to do so. Similarly, Fosnot (2005) described the constructivist class as “a community of discourse engaged in activity, reflection, and conversation.” Fosnot stressed the importance of the teacher as facilitator and the active role of students as learners. “The learners (rather than the teacher) are responsible for defending, proving, justifying, and communicating their ideas to the classroom community” (Fosnot, 2005 p. 34). Hackmann (2004) suggested that constructivists are socially engaged individuals who actively create knowledge from previous learning and experiences. In the same way, Chaille (2008) defined constructivism as a theory of learning that maintains that children construct knowledge via their interaction between their own ideas and experiences as it relates to their physical and social world.

Constructivist lessons focus on the student as leader and teacher as facilitator. These roles set the stage for learning where students problem solve and construct their own knowledge. Constructivism relies heavily on inquiry-based instruction in which the student recognizes a problem, constructs a model, and then creates a solution (Fosnot, 2005). These definitions exemplify the philosophy of student centered learning facilitated by situation, fostered by individual thought, and problem solving that is applied in the social and classroom settings.

History of constructivism. For purposes of this document, the works of Piaget and Vygotsky are used to develop the history, definition, and meaning of constructivism as it applies to teaching and learning. Piaget and Vygotsky agreed that cognitive growth was affected by societal influences; however disagreed on the importance of the social environment (Hoy, 2001). Piaget (1969) saw the learner as developing in stages as an individual. He worked much of his life to ascertain how children acquire knowledge and emphasized the processes of conceptual change as interactions between existing cognitive structures and new experiences (Piaget, 1969). Contrastingly, Vygotsky did not conceptualize child development in stages, rather that children develop through social contexts assisted by verbal interactions with adults or more capable others (Hoy, 2001). Vygotsky (1978) viewed the learner as part of a community, learning primarily through language and social contexts. He is credited with introducing the social and cultural aspect of learning into constructivism (Pass, 2005).

In 1906, Piaget and Vygotsky began their work as child prodigies at the age of 10. Both were intrigued with how the mind processed information, and both had parents who fostered their natural curiosity for learning (Pass, 2005). Much of Piaget's and Vygotsky's work is attributed to their relationships with their mothers, defining their role of the learner, teacher, and philosophy of constructivism. While living with the strained relationship between him and his mother Piaget had two mental breakdowns in his childhood, both for which he was hospitalized. Because of this, Piaget wanted to study the role of the teacher and its affect on the learner. In the same way, Vygotsky overcame family adversity. Despite this, he maintained a healthy relationship with his mother. Nighttime reading and cultural sharing was obligatory in the Vygostky household, creating a small learning community within the family. Vygotsky saw the importance of social learning and sought to transfer the role of his mother to that of teacher.

Similarly, the relationship Piaget had with his mother is exemplified in the role he created for the teacher (Pass, 2005). Through their work, Piaget developed a passive role for the teacher and Vygotsky created an active role for the teacher.

Differences in Piaget and Vygotsky's theories, when applied to young adolescent learning, are most evident in the sociocultural context. Piaget (1997) indicated that adults would constrain the internal moral development of a child lending itself to heteronomy. He asserted that adults (teachers) would impose their own external rules on the children and inhibit their independent internal development of such products. Piaget believed that student learning occurred when the child acted on its own environment (Hoy, 2001). Furthermore, Piaget believed in little teacher intervention when approaching discovery learning (Hoy, 2001). In the passive role that Piaget created for the teacher, students are given big ideas or questions and expected to hypothesize and problem solve independently.

Contrastingly, Vygotsky (1962) relied heavily on the adult to influence and facilitate the social learning environment and scaffold learning opportunities. He believed that social interactions allow children to develop the cultural values of their society. He also believed in the active role of the adult (teacher) to model, cue, support, and promote problem solving skills through supported activities (Hoy, 2001). Vygotsky (1962) noted that the social environment helps students understand the context and content as well as develop their thought processes. Like Piaget, Vygotsky promoted discovery learning, however heavily involved the teacher to provide intriguing questions and provide support while students form their hypothesis (Hoy, 2001). In the active role that Vygotsky created for the teacher, students are guided through various processes with appropriate support to assist them with learning concepts and skills that are slightly above the developmental ability.

Piaget (1896-1980) - Genetic Epistemology. With a background in Biology and Philosophy, Piaget was prolific with his writing for close to 50 years. However, Fosnot (2005) noted that his biggest contributions to constructivism came in the 10-15 years preceding his death. Piaget's work began with his development of genetic epistemology otherwise known as ages and stages. Genetic epistemology demonstrated, through the study of child development, how concepts and cognitive capacities are developed through human activity and individual growth. This is accomplished by grasping the objectivity of concepts established in the mind through subject-object interactivity (Piaget, 1969). In a lecture given at Columbia University, Piaget simply explained the concept as dealing with "both the formation and the meaning of knowledge." Genetic epistemology as described by Piaget himself:

GENETIC EPISTEMOLOGY attempts to explain knowledge, and in particular scientific knowledge, on the basis of its history, its sociogenesis, and especially the psychological origins of the notions and operations upon which it is based. These notions and operations are drawn in large part from common sense, so that their origins can shed light on their significance as knowledge of a somewhat higher level. But genetic epistemology also takes into account, wherever possible, formalisation - in particular, logical formalisations applied to equilibrated thought structures and in certain cases to transformations from one level to another in the development of thought (Piaget, 1968, p.1).

This theory declared that there are stages of development: (1) sensory motor – ages 0-24 months, (2) preoperational – ages 2-7 years, (3) concrete operations – ages 7-11, (4) formal operations – ages 11-15. The stages are based on chronological ages and assumes that children

develop accordingly. For the purpose of this document, the stages of concrete and formal operations are described in detail.

The stage of concrete operations (applied to those in the elementary and early adolescence phase of their lives) is marked by logical and systematic manipulation of symbols related to concrete objects. Piaget (1969) called this the stage of Concrete Operations of Thought and Interpersonal Relations. He explained that there are three levels into the transition from action to operation. The first of these levels comes between 7 and 8 involving transformation of reality by internalization and grouping coherent, reversible systems. The second of these levels occurs when children can systematically make mental representations of their surroundings and events in their lives in order to assume objective relationships. The third stage, which happens closest to age 11, is the decentralization of thoughts and perceptions. Children become less egocentric in their thinking and begin realizing connections between their interpersonal and social universe (Piaget, 1969). Children at this age are able to solve mathematic equations, understand conservation, and logically sequence concrete ideas and objects.

The stage of formal operations (applied to those who are young adolescents and into adulthood) is marked with logical use of symbols that are related to abstract concepts. Piaget (1969) called this the stage of Preadolescent and the Propositional Operations. He described this as the age of ideas and the beginning of theory making. He further detailed this stage as the beginning ability to adapt to reality. Piaget made a specific point to call the thought process a structure in an effort to not overlook the characteristics over individual differences (Piaget, 1969). It is not uncommon for the egocentric thinking to return during this stage, but it will fade as the child ages and progresses in thought. Piaget (1969) stated that the adolescent is different

from the child in that he/she will not only form theories, but will begin to investigate career choices that will allow him/her to satisfy the need for conservation and social reform. Children at this stage are able to compute algebraic equations, proportions, and other abstract ideas. Thinking is less tied to concrete ideas and children are able to hypothesize and understand the ideas of cause and effect.

Equilibration. Like any great scholar, Piaget's theories evolved over time. In his late career, Piaget focused on the process by which students learned and created new constructs (Fosnot, 2005). His revised theory, known as Equilibration, focused on how the learner constructs information given their surroundings and integration. Piaget's new thinking was not to be a linear progression as before, but rather a framework around which people process information. Fosnot (2005) described equilibration as a "dynamic dance of progressive equilibria, adaptation and organization, growth and change" (Fosnot, 2005 p. 16). Piaget (1948) described this stage as a balance between assimilation, applying previously learned knowledge, and accommodation, changing behavior to account for new knowledge. Piaget (1969) defined assimilation as the filtering or modification of the input and accommodation as the modification of internal schemes to fit reality.

In his theory of Equilibration, Piaget developed three types and ordered them by complexity. The first type is known as Simple Equilibration, in which the object is now a scheme. He defined schemes as organized patterns of thought and action or the cognitive structures and behavior that allow the assimilation of new elements and help the child adapt to the environment (Piaget, 1969). In short, the child takes in new information and rearranges their current information to have it fit or make sense. The second type is Reciprocal Equilibration, during which sub-systems are built. Children use the information they are constructing to invent

new ideas to accommodate for more complex ideas and thoughts. The third type is Equilibrations of Totalities, in which a hierarchy is created for parts of a whole. Equilibrium is established through bigger ideas and placing information into schemas, as well as reconfiguring information to create new themes or systems of information. A child begins to think more holistically and develop structures that are ever changing to accommodate new thoughts and procedures that can affect each other (Piaget, 1969).

Vygotsky (1896-1934) - Zone of Proximal Development (ZPD). Vygotsky was a Russian Psychologist first trained as a lawyer following the Russian Revolution. Due to circumstances of the time, Vygotsky's work was popular mostly in Russia and did not begin influencing the West until the 1960s. Throughout his studies, Vygotsky relied heavily on social interactions to develop his theory of psychological development. Pass (2004) described his theory of educational development as relying on the child's interaction with adults. If such interaction does not exist, then developing will not take place. Different from Piaget, Vygotsky believed that guided language from a "social other" helped children develop their knowledge and internalize information to understand (Pass, 2004). He relied heavily on the acquisition of language to develop his theory of cognitive development. Like Piaget, Vygotsky's work is a large part of constructivist theory, laying the foundation for student as learner and teacher as facilitator.

In 1908, Vygotsky developed his theory of the Zone of Proximal Development-ZPD (Pass, 2004). Vygotsky (1978) believed that learning should be matched in some way with the child's developmental level. He further describes ZPD as "the distance between the actual developmental level as determined by independent problem solving and the level of potential developments as determined through problem solving under adult guidance or in collaboration

with more capable peers” (Vygotsky, 1978 p.86). He further argues “the actual developmental level characterizes mental development retrospectively, while the zone of proximal development characterizes mental development prospectively” (Vygotsky, 1978 p.87). Gallagher (1999) believed that after studying child development and the process by which children solve problems, they could be taken beyond their developmental level reaching the zone of proximal development.

Additionally, Vygotsky held that the ZPD provided educators with a tool through which to understand child development at the present level as well as predict guided learning for the future. “The zone of proximal development permits us to delineate the child’s immediate future and his dynamic developmental state, allowing not only for what already has been achieved developmentally, but also for what is in the course of maturing” (Vygotsky, 1978 p.87). Gallagher (1999) described the ZPD as the child’s ability to accomplish a task that he/she cannot do alone, but can accomplish with a person of a higher skill level. Fosnot (2005) refers to the ZPD as Vygotsky’s argument that tests and tasks that look at children’s individual problem solving are not adequate. Rather, concept formation by the child with the help of an adult is a more practical and viable way to view learning capability.

Scaffolding. A second contribution, not directly created by Vygotsky, but conceptualized by him, is scaffolding (Pass, 2004). Wood, Bruner, & Ross (1976) first coined the term scaffolding; however, its roots were heavily influenced by Vygotsky’s writings and teaching of the zone of proximal development (Holton & Clarke, 2004). Scaffolding is defined as a framework that assists a child’s growth that will change over time (Fosnot, 2004). Holton & Clarke (2004) used an analogous description between building construction scaffolding and learning scaffolding as a tool that is used to assist workers in their building and repairing.

Scaffolding is used on buildings all over the world: upon completion, the scaffolding is removed. Architects and engineers understand that at some point the building will again have to be repaired, rebuilt, or refurbished. Holton & Clarke (2004) suggested that cognitive scaffolding is very similar to the teacher guiding the students through the learning process and enabling the learner to construct more or different learning at another time. Once the student has learned the information, it is possible that the teacher will have to reteach the same information or repair what the student learned. Berk & Winsler (1995) described this process as the child actively constructing knowledge with the adult providing the scaffolding of the social environment. In a study completed by Wood, Bruner, & Ross (1976) observable key functions were developed to assist adults with engaging children in meaningful activities, keeping them on task with manageable components that reduce frustration, and provide proper amounts of modeling. These functions are observed as an adult works with a student within the zone of proximal development to construct new learning and understand concepts.

Constructivism in the classroom. The literature on constructivism tells the story of psychological development and a philosophy of learning. There are common themes among its key developers, and distinct differences in its theoretical perspectives and practical application. Despite these differences, constructivist theory has distinct characteristics that are visible in a classroom. Hackmann (2004) suggested that constructivism creates a methodology for a more collaborative classroom where the process of learning is understood and not completely standards driven. Brooks & Brooks (1999) stated that learning should be personal and teachers should encourage students to contradict, question, seek information, research, and challenge current concepts.

Brooks & Brooks (1999) have developed five guiding principles of constructivism, which are endorsed by the Association for Supervision and Curriculum Development (ASCD). In line with the writings of Piaget (1969), Vygotsky (1978), Fosnot (2004) and Chaille (2008), these principals are used to guide teachers in developing both the theory and practices of constructivist teaching. These five guiding practices encompass the psychological development of the child with the reality of the everyday classroom. The guiding principles are as follows:

1. Posing Problems of Emerging Relevance to Students;
2. Structuring Learning Around Primary Concepts: The Quest for Essence;
3. Seeking and Valuing Students' Points of View;
4. Adapting Curriculum to Address Students' Suppositions;
5. Assessing Student Learning in the Context of Teaching.

In addition to these five guiding principals, Brooks & Brooks (1999) have also developed twelve characteristic traits of constructivist teachers. Constructivist teachers:

- Encourage and accept student autonomy and initiative;
- Use raw data and primary sources, along with manipulative, interactive, and physical materials;
- When framing tasks, use cognitive terminology such as “classify,” “analyze,” “predict,” and “create;”
- Allow student responses to drive lessons, shift instructional strategies, and alter content;
- Inquire about students' understanding of concepts before sharing their own understandings of those concepts;
- Encourage students to engage in dialogue, both with the teacher and with one another;

- Encourage student inquiry by asking thoughtful, open-ended questions and encouraging students to ask questions of each other;
- Seek elaboration of students' initial responses;
- Engage students in experiences that might engender contradictions to their initial hypotheses and then encourage discussion;
- Allow wait time after posing questions;
- Provide time for students to construct relationships and create metaphors;
- Nurture student's natural curiosity through frequent use of the learning cycle model.

The authors noted that these descriptors highlighted teacher practices that helped guide students to their own learning and helped forge relationships with students as they journeyed through the learning process (Brooks & Brooks, 1999).

The constructivist classroom holds different ideals than those of the traditional classroom. A constructivist classroom presents concepts as wholes or thematic units with emphasis on big concepts. Students and their questions are an integral part of the learning that happens in a constructivist classroom. Student theories and questions are fostered and explored rather than pre-determined knowledge and facts (Brooks & Brooks, 1999; Fosnot 2004; Chaille, 2008). In a more traditional classroom, the teacher is the primary source of information, viewing students as information takers rather than information generators (Brooks & Brooks, 1999). Chaille (2008) holds that a child in a constructivist classroom is confident, curious, engaged, and collaborative – something that a constructivist would see as common and part of the routine. Chaille (2008) further states that the constructivist teacher recognizes student individuality and supports each student and his/her unique needs by providing them with meaningful and appropriate learning experiences. Instruction is facilitation in a constructivist's classroom.

Similarly, student assessment looks different in constructivist classrooms. Brooks & Brooks (1999) stated that assessment of student learning is intertwined with the instruction and occurs through teacher observations. Much of the assessment in a constructivist classroom is project based and cooperative. Students frequently work in groups creating visual representations such as portfolios or exhibitions to represent their learning (Fosnot, 2004; Brooks & Brooks, 1999; Chaille, 2008). Fosnot (2004) described the collaboration of students as not being limited to task completion, but allowing students to take the role of facilitator and benefiting from both. In this situation, students with greater expertise would assist peers, with the intention of helping the other students achieve the goal or master the concept. Instructional practices should incorporate authentic assessments that help the teacher know if the students really understood the material (Brooks & Brooks, 1999). Wagner (1998) recommended flexible instruction that followed the inquiry of the students with the understanding that they may be at disparate points in their learning and understanding. Constructivist assessment is authentic and ongoing which may include student projects, portfolios, observation, and/or tests. Its key difference is the emphasis on the process – not just the correct answer.

Accountability in a constructivist classroom is evidenced through student work and demonstration of the learning process. Students demonstrate the skill of applying previously learned knowledge and concepts by hypothesizing about new information with greater global understanding. Constructivism calls on students to demonstrate deeper understanding through real world application and problem solving (Fosnot, 2005).

Constructivist curriculum is built on big ideas and interdisciplinary in nature. Chaille (2008) stated that there is not a specific “constructivist” curriculum, but there are curriculum frameworks that foster and honor children’s ideas making them consistent with constructivist

practices. Stevenson & Carr (1993) stated that too often, teachers believe that curriculum that is of interest to the students is frivolous and that their superficial concerns will not give them the proper skills and knowledge for the future. Brooks & Brooks (1995) believed that the politics of education have turned educators away from constructivist-based educational practices. Their argument continued with the belief of using a systematic approach to standard alignment of curriculum and assessments does not foster deep learning. Brooks and Brooks also believed that using classroom practices that were specifically designed to help students prepare for tests were merely surface activities that could not demonstrate understanding given that they were only relative to specific settings and could not be applied in new settings (Brooks & Brooks, 1999).

Instead, Stevenson & Carr (1993) and Brooks & Brooks (1999), have made the case for the teachers with uncommon courage who are willing to understand that curriculum should engage the students, helping them find answers to powerful questions as they relate to themselves and their worlds. Additionally, the curriculum should provide real life application and raise the value for cooperation, thinking, and acting. Clemons (2004) studied the redesign of a technology Computer Aided Design (CAD) course using constructivist practices and perspectives. She created a computer course that would make the students better technology problem-solvers instead of software experts. In her study, Clemons showed the importance of real world problem solving and cooperative learning, stating that using constructivism does not mean sacrificing content, but structuring it differently. Wiggins & McTighe (2007) have created a wave of new understanding and curriculum mapping that supports constructivist practices with Understanding by Design (UbD). UbD focuses on the use of big ideas (units), backwards mapping, performance assessment, and quality instruction to teach and assess students for understanding based on content. This type of curricular understanding and implementation is a

paradigm shift from traditional teaching to use of constructivist practices and student centered classrooms. Brooks & Brooks (1995) along with the ASCD, noted that although constructivism is theoretical and philosophical by nature, its ideals can be transferred to teaching practices and fostered through ongoing professional development.

In her book *Enhancing Professional Practice*; Danielson (2007) has developed a 4-pronged framework for Enhancing Professional Practice through a constructivist approach. She acknowledged that constructivism has not been universally accepted in twentieth century educational history, but believes it to be the most powerful framework for understanding how children and adults learn. The framework is divided into 4 domains: (1)Planning and Preparation, (2)Classroom Environment, (3)Instruction, and (4)Professional Responsibilities (Danielson, 2007). Her work relies on the learner to do the learning and form his or her own constructs for professional practice. Danielson believes that in order for a framework to be valid and applicable to a wide range of instructional settings it must possess the following qualities:

- The framework must be comprehensive consisting of life both inside and outside of the classroom;
- The framework should be grounded in research seeking to identify effective principles of practice and classroom organization;
- The framework should be public so that teachers are not surprised and can openly discuss situations and components to lead to their own professional development;
- The framework should be generic encompassing teacher best practices that are transferable to all disciplines and different classroom environments;
- The framework should be coherent in structure and centered around the tasks of teaching with verbs that reflect teacher performance.

The four domains of practice should be independent of any particular teaching methodology. Danielson (2007) developed these practices from the most recent theoretical and empirical research about teaching, which is designed for all types of situations. First, by being prepared and carefully planning lessons, teachers can deliver meaningful instruction that is based on student needs. Second, the classroom environment will foster student learning by allowing the student to focus on academic content and feel comfortable. Third, quality instruction delivered to students is designed to engage them and ensure their learning. “Teachers must provide clear directions and explanations; their work is enhanced through the skillful use of questioning and discussion and through the integration of assessment strategies into instruction” (Danielson, 2007, p.77). Fourth, professionalism marks the reflective teacher who assesses his/her own effectiveness and takes steps to improve. Danielson (2007) stated that the framework is a powerful tool for reflection and self-assessment, which ultimately improves teaching.

Bringing block scheduling and constructivism together. Hackmann (2004) suggested that block scheduling be considered as a vehicle to promote constructivist practices. He also believed that block scheduling and constructivism movements have occurred simultaneously yet remained independent. Block scheduling has been adopted by many schools to improve academic achievement by opening the door for hands on, cooperative learning. These approaches are fundamental to a successful constructivist classroom. Brown (2001) noted that changes in pedagogy are critical and have the power to improve learning, academic success, and teacher effectiveness. He suggested that schools provide comprehensive in-service training for improved instruction designed to meet the needs of students engaged in longer periods of

learning. Hackmann (2004) believed that the use of constructivist pedagogy should drive the schedule instead of the block scheduling dictating the pedagogy.

Like block scheduling, use of constructivist pedagogy requires time and practice. Canady & Rettig (1995) noted that changing a school's time schedule did not ensure better instruction, but the heart of creating change rests between the individual teachers and students in the classroom. Regardless of their cause, Hackmann (2004), Brooks & Brooks (1999), Brown (2001), and Canaday & Rettig (1995) all note the need for strong pedagogy when teaching in the block. It is imperative that schools provide its teachers with professional development that fits their learning styles with continual feedback and follow-up.

Professional Development

As previously stated in this document, implementation of any kind of block schedule requires teacher professional development. In its purest form, professional development provides learning opportunities and experiences for practitioners to enhance their skills, practice and learning to grow professionally and personally (Drago-Severson, 2004). Merkle & Artman (1983) defined professional development as a planned experience designed to elicit new behaviors resulting in professional and/or personal growth and improved organizational effectiveness. Darling-Hammond (2005) stressed the importance of professional development and the role it plays in creating teachers to be life long learners. She defined professional development as a process to make teachers "adaptive experts" who continually learn and add to their knowledge and skills. "We will fail, as we have failed many times before, to improve schooling for children until we acknowledge the importance of schools not only as places for teachers to work but also as places for teachers to learn" (Gusky & Huberman, 1995 p. 92).

Professional development is a key component of creating a responsive school that addresses the needs of all of its learners.

Federal mandates for professional development. When considering teacher professional development, writers of The No Child Left Behind Act (NCLB, 2001) created standards designed to help teachers be rich in content knowledge and pedagogy. NCLB has made progress in furthering teacher education levels under its Highly Qualified Teacher and Professional Development clauses. NCLB set forth standards for school divisions and teachers under the umbrella of Preparing, Training, and Recruiting Highly Qualified Teachers.

- Providing professional development for teachers and principals and, in cases in which a State educational agency determines support to be appropriate, supporting the participation of pupil services personnel in the same type of professional development activities as are made available to teachers and principals (NCLB, 2001, Section 2112 #6).
- Developing systems to measure the effectiveness of specific professional development programs and strategies to document gains in student academic achievement or increases in teacher mastery of the academic subjects the teachers teach (NCLB, 2001, Section 2112 #7).

National Staff Development Council Standards. The National Staff Development Council (NSDC), established in 1969, recognized the importance of staff development and its impact on student learning. Their purpose is to ensure that "every educator engages in effective professional learning every day so every student achieves" (www.nsd.org). NSDC (2001) believes that effective professional development is based on theory, research, and proven practice. NSDC created its original standards in 1995 and have since revised them in 2001 based

on what they have learned regarding professional development. Their standards are guided by three reflective questions that provide the foundation for their standards:

- What are all students expected to know and be able to do?
- What must teachers know and do in order to ensure student success?
- Where must staff development focus to meet both goals?

NSDC standards are further divided into the three categories of context standards, process standards, and content standards (NSDC, 2001).

Context standards – staff development that improves the learning of all students:

- Organizes adults into learning communities whose goals are aligned with those of the school and district;
- Requires skillful school and district leaders who guide continuous instructional improvement;
- Requires resources to support adult learning and collaboration.

Process standards – staff development that improves the learning of all students:

- Uses disaggregated student data to determine adult learning propertities, monitor progress, and help sustain continuous improvement;
- Uses multiple sources of information to guide improvement and demonstrate its impact;
- Prepares educators to apply research to decision making;
- Uses learning strategies appropriate to the intended goal;
- Applies knowledge about human learning and change;
- Provides educators with the knowledge and skills to collaborate.

Content standards – staff development that improves the learning of all students:

- Prepares educators to understand and appreciate all students, create safe, orderly and supportive learning environments, and hold high expectations for their academic achievement;
- Deepens educators' content knowledge, provides them with research-based instructional strategies to assist students in meeting rigorous academic standards, and prepares them to use various types of classroom assessments appropriately;
- Provides educators with knowledge and skills to involve families and other stakeholders appropriately.

Professional Development to Improve Middle School Teaching

Despite the efforts of the National Staff Development Council and The National Middle School Association, middle schools were criticized for not providing proper professional development for middle level teachers to help them meet the needs of the changing student population. In 1986, The Carnegie Task Force produced its report warning of the declining state of education at the middle level and developed the Task Force on the Education of Young adolescents. Its goal was to develop strategies to meet the needs of young adolescent learners in a rapidly changing society. Knowles & Brown (2000) stated that the reform movement of the 1980's failed to meet the needs of young adolescent learners. The Carnegie Task Force began to comprehensively look at middle schools and developed a proposal that they felt would meet the needs of young adolescent learners advocating for substantial change at the middle level.

In 1989, The Carnegie Task Force published *Turning Points: Preparing Youth for the 21st Century*. They established eight principles/recommendations for effective middle schools based on a seven-year longitudinal study of implementation that resulted in higher academic and social

growth. These principles had immense implications for teacher professional development. Most notable of these recommendations was the requirement of creating small communities for learning. *Turning Points 2000* suggested that middle grades schools should have expert teachers who learn from job embedded professional development. They suggested teachers learn from each other and continually engage in self-reflection.

Following over a decade of refining and improving the definition for middle level education, the National Middle School Association committee members issued a new version of their timeless publication – *This We Believe: Developmentally Responsible Middle Level Schools* in 1995. This group of authors and advocates continued to create foundational characteristics for responsive middle schools through multiple editions of their publications. *Turning Points 2000* and *This We Believe* continue to provide thoughtful guidance to middle level educators for establishing clear criteria for educating young adolescents, developing programs sensitive to young adolescent needs, and recommendations for teacher professional development designed to meet the needs of young adolescent learners. These publications recommended that professional development at the middle school level be results driven, standards-based, and embedded in the daily workings for teachers. Like the National Staff Development Council (NCSD), the National Middle School Association (NMSA) has developed three very similar guiding questions that are designed to guide professional development at the middle school level.

- What do we expect all middle grades students to know and be able to do?
- What must teachers know and be able to do to support their students' achievement of these expectations?
- How must staff development be designed to support high levels of learning for all staff and students?

Through its advocacy for and knowledge of young adolescents, the NMSA recommends results-driven, standards-based, and job embedded professional development for middle level teachers.

In the same way as *Turning Points* and *This We Believe* was created, the National Staff Development Council (NSDC) initiated the Results-Based Staff Development for the Middle Grades in 1999 that provided direction in the areas of planning, delivery, and evaluation. NSDC (1999) felt that school divisions did not take note of the Carnegie report stating that “statistics show us that the nation has yet to heed fully the Carnegie Council's warning” in creating appropriate experiences for young adolescents at a crucial time in their academic career. NSDC noted that middle school students tended to perform at a lower level than previously, and the gap between high-achieving and low achieving students widens. NSDC (1999) stated that the best way to address these problems is surrounding students with caring and capable teachers. NSDC referred to this gap as the “crack in the middle.” Killion & Hirsh (1998) stated that “the mortar that can fill American education's crack in the middle are competent and caring teachers who understand the needs of young adolescents, who establish a safe nurturing learning environment, and who demand a high level of learning and performance through their own strong content knowledge” (p.44). Their recommendation for creating this type of teacher is comprehensive staff development geared specifically to middle grades instruction. NSDC’s response to the problem of preparing middle school teachers was the creation of resource guides for schools that assisted in creating professional development programs constructed for improving student achievement. *What Works in the Middle: Results –Based Staff Development* (1999) is a research-based guide that encourages staff development that is surrounded by an organizational context that encourages, supports, and maintains teacher learning.

Similarly, the National Association of Secondary School Principals (NASSP) developed its *Breaking Ranks* series for high school and middle school reform. *Breaking Ranks in the Middle (BRIM): Strategies for Leading Middle Level Reform* (2006) outlined nine cornerstone strategies that, if implemented effectively, will form the foundation for improved performance for every student. Coupled with building student relationships and setting rigorous standards for students, *BRIM* recommended alignment of school wide comprehensive, ongoing professional development. This adult learning should match the standards, instructional strategies, and academic rigor set forth by the school organization. Teachers should develop Personal Learning Plans that include reflection, portfolios, observations by supervisors and colleagues, and appraisals by students. *BRIM* (2006) also suggested that ongoing professional development should contain follow-up activities that included practice, performance, reflection, and feedback. NASSP felt that professional development was a critical piece to creating and maintaining a successful middle school.

Other recommendations for professional development

Since the development of the National Staff Development Council in 1969, teachers have been encouraged to explore learning opportunities to increase their knowledge base and advance their pedagogical practices. Associations and organizations have provided standards for teacher professional development at all levels. In addition to these groups, several authors have emerged as the front-runners to teacher professional development. In her book *Preparing Teachers for a Changing World*, Darling-Hammond (2005) stressed the importance of what teachers should learn and be able to do through a collection of chapters designed to inform the curriculum for teacher professional development. This volume stressed the importance of knowing about student and teacher learning. It provided guidance on evaluating current strategies used by

practitioners to inform new teachers and to be used for implementation of teacher professional development programs. The key framework for this volume encompassed a vision of professional practice. Darling-Hammond (2005) believed that there are three general areas of knowledge, skills, and dispositions that are important for any teacher to acquire:

- Knowledge of the learner and how they learn and develop within social contexts;
- Conceptions of curriculum content and goals: an understanding of the subject matter and skills to be taught in light of the social purposes of education;
- An understanding of teaching in light of the content and learners to be taught, as informed by assessment and supported by classroom environments.

Darling-Hammond (2005) stressed the importance of acknowledging both student and teacher learning styles and refers to Piaget's theory of the constructive nature of knowing. She stated that teachers must actively interpret their world based on their previous knowledge, skills, and developmental level. Teacher interests and connection with students in social contexts will improve communication and the teacher's ability to explain things in ways that make sense to students (Darling-Hammond, 2005).

Similarly, Wiggins & McTighe, authors of *Understanding by Design* (2004) and *Schooling by Design* (2007), believed that schools and teachers should share a mission of life-long learning. They contended that teachers should be expected to engage in ongoing professional development geared at expanding their knowledge and skills. They stressed the point that professional development is a process and not an event. Similar to the NSDC and NMSA, Wiggins & McTighe (2007) believed that staff development should be results-driven, standards-based, and job embedded. Additionally, they asserted that the responsibility of professional development rests on both the teacher and the school. Acting in a professional

capacity, a teacher should engage in professional reading and discussions, peer-to-peer coaching, mentoring arrangement, and personalized growth plans (Wiggins & McTighe, 2007). Also suggested was participation in action research and willingness to share their findings with their colleagues.

Professional development is perhaps the most important component of building a successful school. Teachers that reflect on their practice and aspire to grow professionally will be prepared to meet the unique needs of students. Sparks (1997) contended that staff development serves as the best vehicle for improved instruction. Further, he believed that teachers and administrators should engage in professional learning that focuses on the improvement of the teaching and learning process rather than the next educational bandwagon (Sparks, 1997). Sparks & Hirsh (1999) also stated that professional development should focus on student needs and learning outcomes, as well as changes in teaching behaviors. They noted that professional development has changed since the implementation of NCLB; it is now ongoing, job-embedded, and focused on process.

National associations, organizations, and well-respected authors agree that professional development should be results based, data or research driven, contextual to the job, meaningful, and ongoing. Gusky and Huberman (1997) emphasized that meaningful professional development should take place in the context of professional communities and not in the form of bounded convocations and workshops. Adult learning should happen in conjunction with student learning and teachers should be reflective in their practice. As a constructivist, the learner, based on prior knowledge and constructs, drives their own professional development. Teacher learning is social in nature, and designed to assist teachers with trying out new instructional strategies and hypothesizing about their work. By providing meaningful, effective

teacher professional development, building administrators promote lifelong learning for teachers and intense academic engagement for students moving the many “I’s into a collective “we” (Sergiovanni, 2000). Schools should be places for everyone to learn.

Summary

While attending the Region IV workshop about middle school issues and scheduling, Rettig (2008) presented and made note that the school schedule is perhaps the only thing that directly affects everyone in the school building. For this reason, Rettig suggested that anyone who works with middle school students and middle school scheduling should read Wood’s book *Yardsticks* (2007). This book centers around Wood’s (2007) core belief: “Knowing what children at each age are developmentally capable of doing physically, socially, emotionally, and cognitively enables respectful, successful teaching of all children – no matter their life circumstances or cultural background” (p.217).

This review has discussed forces behind and the implementation of block scheduling, most specifically at the high school level. However, Wood (2007), Canady & Rettig (1995), Queen (2003), and the National Middle School Association all agree that middle schools would benefit and should operate under some sort of block schedule designed to meet the unique needs of young adolescent learners. It is imperative for schools that choose block scheduling to provide teachers with appropriate professional development to prepare them for teaching during the longer instructional periods. With the longer instructional periods created by block scheduling, teachers can create student centered activities that encompass the physical, social, emotional, and cognitive abilities of young adolescent learners. Through studying young adolescent learners, it is evident that constructivist teaching practices encompass the unique needs of middle school teaching.

Through the study of constructivism, based on the teachings of Piaget and Vygotsky, insight and understanding is demonstrated in Wood's (2007) book *Yardsticks*. Educators must understand how children learn both socially and academically, and design instruction that engages and supports their learning style. Piaget and Vygotsky contributed roles for students and teachers through Genetic Epistemology, Equilibration, Zone of Proximal Development, and scaffolding. These four attributes of constructivism get to the heart of Wood's charges of knowing students, engaging and challenging students, and making decisions grounded in awareness of child development. Constructivism requires us to be life long learners and to continually question and rebuild our information constructs. To do this, we must be reflective in practice and promote life long learning through constant evaluation and revision of our thinking.

In the same way, professional development is life long learning for educators. Through the development of standards and recommendations, organizations, associations, and authors have developed the key principles of on-going, job embedded, researched based and meaningful professional development for teachers. Educators are expected to reflect in their practice and work to improve their craft. Professional development is the key to helping teachers become masters of their subject and the manner in which they teach. Schools are learning communities that should promote the learning of all students – young and old. Changing a school schedule to create longer instructional periods will only be successful if the teachers know how to use the time to meet the needs of their students through sound practices and pedagogy.

CHAPTER 3

Methodology

It's time for a new conception of the school principal, one based on a skilled, passionate, moral commitment to students' and teachers' learning – and to the leader's own learning. Our nation's schools need nothing less than a new cohort of principals who value and trust learning from experience for themselves and who know how to rigorously and courageously craft school experiences such that those experiences yield important personal learning for adults and students alike. Needed now is the courage – to hear – to think and act “otherwise” in order to create in the schoolhouse a culture hospitable to human learning.

--Roland Barth

When beginning teachers are selected for their first teaching position, they come with enthusiasm for their first job, knowledge of the most current practices provided in teacher preparation programs, and experiences in teaching within a sheltered environment (i.e. student teaching). Upon entering a new school, several essential people contribute to their success, namely school administrators, school district consultants or curriculum coaches, and master teachers. This action research project studied the impact of utilizing these important school organization members to provide comprehensive professional development for new teachers to assist them with delivering developmentally appropriate instruction for young adolescents during longer periods of instructional time using constructivist pedagogy.

Drago-Severson (2004) believes that the principal plays a vital role in providing professional development to support new teachers and ensure their success. Barth (1990) echoed this sentiment when he described how professional development affects the school organization opining, “Probably nothing within a school has more impact on students in terms of skills development, self-confidence, or classroom behavior than the personal and professional growth of teachers” (p.49). Two important components of professional development are (1) to help teachers accomplish the goal of life long learning and (2) foster reflective thinking. Professional

development can then be turned into professional practice, enhancing the vision and mission of the school organization. Sergiovanni (2000) describes professional practice as the “single most important way to improve a school” (p. 139). The critical role that professional development plays in teacher growth provided the relevance for this study.

Action research was chosen for this study because of its methodological capability for studying the phenomenon of teacher professional development in an authentic setting. Action research provided the necessary platform to foster the constructivist nature of the content and professional development delivered. An essential skill for instructional leaders is the ability to diagnose and action plan to ameliorate problems within their organization. Therefore, using the action research cycle helps an instructional leader make decisions with input from stakeholders, and bases the actions on the needs of those involved. Action research also helps reinforce the power of reflection when creating change.

Subjects and Participants

The subjects in this study were part of the new teacher cohort who entered X Middle School in the academic year 2008-2009. The teachers in the cohort came from several different teacher preparation programs in the states of Virginia, Wisconsin, and North Carolina. Participation in this study was offered to all new teachers in the cohort. Consent was obtained prior to the beginning of the academic year (see Appendix A for Informed Consent Form). Cohort members were informed of the purpose of the study and the possible benefits for their professional growth. Permission to conduct this study using human subjects was sought and approved through the Virginia Tech Institutional Review Board (see Appendix B for IRB Approval).

From the new teacher cohort, three subjects were selected to represent a balance across the disciplines to include math, science, language arts, social studies, and career and technical education. Each of the three subjects was new to the profession. Two of the teachers possessed middle school (grades 6-8) licensure and one possessed secondary (grades 6-12) licensure. Additionally, the three subjects taught related or inter-disciplinary subjects, which supported the Middle Years Programme (MYP) framework and middle school concept of integrated lessons and reinforced implementation of the National Middle School's 14 characteristics of effective middle schools. To avoid potential perceived pressure and bias, the principal researcher did not formally evaluate the subjects in this study according to the district Professional Growth System. Rather, the principal researcher completed informal classroom observations and walk throughs to provide feedback to facilitate discussions around professional development topics and growth in pedagogy.

An integral part of this study was the use of master teachers to provide professional development sessions. In this study, experts who were National Board Certified Teachers, acknowledged for outstanding classroom observations, or were serving as Curriculum Instruction Resource Teachers (CIRTs) were chosen to lead the professional development sessions. CIRTs are middle level instructional leaders who are considered a resource for the school district given their knowledge of core content and curriculum. In conjunction with district leaders, they assist and guide teachers through the curriculum writing process and help to ensure the quality of instruction by assisting teachers with pedagogy, research, and materials. CIRTs maintain a partial or full time teaching position making them a valuable asset given they have direct access and knowledge of building issues and accessibility to teachers. CIRTs, along with division leadership, provide ongoing professional development designed to enhance and further the

district goal of quality instruction for all students. The role of the CIRT is authentic application of instruction and professional development through modeling, coaching, and content knowledge.

Lastly, the school administration, school district new teacher consultant, and technology coordinator were an equally important part of this study. By nature of position and responsibility of overseeing the instructional program and academic progress of students, these individuals were also chosen as resources for this project. The success of any school lies in the ability of the administration to effectively lead change and promote teacher learning (Barth, 2004). Those selected to provide professional development for this study led school wide change by teaching and mentoring new teachers. Through ongoing observations and informal meetings, these experts discussed the effectiveness of the professional development delivered and assisted with diagnosing problems, planning action, and taking action to meet the needs of the new teachers.

Research Questions

The research questions of this study were designed to measure the perceived usefulness of professional development for new teachers to assist them with delivering developmentally appropriate instruction for young adolescent learners during block periods of 90-100 minutes using constructivist pedagogy. The research questions provided ongoing feedback to the researcher and guided professional development sessions, which were modified as needed, based on the needs and input of the learners. The following three questions guided this study:

1. To what extent did the subjects perceive that the professional development prepared them to deliver developmentally appropriate pedagogy for middle school students during a block period?

2. To what extent did the staff perceive that the pedagogy of the subjects improved as a result of the professional development sessions?
3. To what extent did the subjects implement the Constructivist teaching practices that were learned during the professional development sessions?

The Action Research Cycle

Using Coghlan and Brannick's (2005) action research cycle and theory of cooperative inquiry, members of this study experienced the constructivist stages of assimilation, disequilibrium, and accommodation. Action research provided an appropriate avenue for sharing local knowledge and fostering the goal of collaborative learning while reinforcing the constructivist foundation of social learning (Herr & Anderson, 2004). The overarching theme of reflection provided members with constant feedback, fostered Meta learning, and facilitated the cyclical nature of the project. The steps of the action research cycle described by Coghlan & Brannick (2005) are:

1. Diagnosing – naming the issues that provide the basis for the research;
2. Planning action – analyzing the process and context of the project and determining what steps will need to be taken;
3. Taking action – implementing the plans and interventions that were previously established;
4. Evaluating action – examining both the intended and unintended outcomes. During this step it is important to establish if the original diagnosis was correct and if the action that was taken was appropriate. This step will determine the next iteration of the research project (p.22-23).

It is imperative that researchers implement and reflect on all steps of the cycle to properly assess the quality and effectiveness of the research and meet the needs of the organization while creating change-

In a parallel process, Coghlan and Brannick (2005) define cooperative inquiry as involving two or more people researching a topic through their own experience to:

- Understand their world to make sense of their life and develop new and creative ways of looking at things;
- Learn how to act to change things they might want to change and find out how to do things better (p.17).

The process of cooperative inquiry involves four key stages (Coghlan & Brannick, 2005):

1. The group talks about the groups' interests and concerns, agrees on the focus of inquiry, and develops together a set of questions or proposals its member wish to explore;
2. The group applies actions in the everyday work of the members, who initiate the actions and observe and record the outcomes of their own and each other's behavior;
3. The group members as co-researchers become fully immersed in their experience. They may deepen into the experience or they may be lead away from the original ideas and proposals into new fields, unpredicted action and creative insights;
4. After an agreed period engaged in phases two and three, the co-researchers reassemble to consider their original question in the light of their experience (p. 17).

Using the action research cycle and the theory of cooperative inquiry, the principal researcher in collaboration with other school leaders developed a tentative, fluid professional development plan that taught entry-level teachers constructivist pedagogy techniques that encompassed the MYP framework and beliefs. The plan was changed as needed to meet the

needs of cohort members. During the first professional development session, teachers received Blackboard training to assist with use and purpose.

Throughout the study, teachers were provided with one on one assistance from the technology coordinator as needed. A “New Teacher Professional Development” course was created in Blackboard that housed all documents and data pertinent to the study. After each training session, subjects were asked to provide feedback through a variety of sources: reflective questionnaires, surveys, discussion boards, short assessments, or individual interviews to assess their perceived effectiveness of the sessions.

Diagnosing the Problem

To begin this action research study, it was important to diagnose the problem. In 2008, X Middle School hired a large cohort of entry-level teachers who were expected to deliver quality instruction for middle school students during block classes within the context of exploring the International Baccalaureate Middle Years Programme (IB MYP). While entry-level teachers bring a new set of skills and fresh ideas, they lack the experience and knowledge that veteran teachers possess and new program exploration can be overwhelming. For these reasons, and based on the block scheduling research of Rettig and Canady (1995), Queen (2003) et al, it was imperative that X Middle School develop an appropriate plan of professional development to assist new teachers with accommodating to block pedagogy designed to meet the needs of young adolescent learners and explore MYP. It is also important to note that the International Baccalaureate Middle Years Programme promotes constructivism as their choice of pedagogy (IBO, 2008).

A professional development plan that assisted new teachers with developing their pedagogical skills, and supported the MYP exploration goal, guided the choices for professional

development topics. Based on previous experience, input from school and district leaders, and knowledge of typical needs of new teachers, the topics of Technology Integration, Scaffolding, Formative Assessment, and Questioning Technique were chosen to begin the school year with the realization that flexibility was a key component and topics were subject to change based on the needs of the new teachers. Other topics considered and preliminarily planned were: Project Based Assessment, Authentic Assessment, Inquiry Based Instruction, and Cross-Curricular Planning.

To better understand the MYP framework, the professional development plan encompassed the areas of interaction while teaching constructivist pedagogy to assist with delivering developmentally appropriate instruction during the block period. The areas of interaction are “common to all disciplines and require all teachers to teach their subject content in a way that encourages students to become increasingly aware of the connections between their learning and the real world. The areas of interaction can also be described as five broad areas of student inquiry” (IBO, 2008, p. 14). The areas of interaction provide IB with the programme framework, promote constructivism, and align with the National Middle School’s 14 characteristics of effective middle schools. The International Baccalaureate Middle Years Programme Areas of Interaction (IBO, 2008) are:

- Approaches to learning (ATL) represents general and subject-specific learning skills that the students will develop and apply during the programme and beyond. The focus of this area is on teaching students how to learn and on helping students find out about themselves as learners so that they can develop learning skills;
- Community and service considers how a student engages with his or her immediate family, classmates and friends in the outside world as a member of these communities.

Through effective planning and teaching, students can learn about their place within communities and be motivated to act in a new context;

- Health and social education delves into the range of human issues that exists in human societies, such as social structures, relationships and health. The area can be used by students to find out how these issues affect societies, communities and individuals, including students themselves. Through the area of health and social education, students can identify and develop skills that will enable them to function as effective members of societies, as well as learning about how they are changing and how to make informed decisions that may relate to their welfare;
- Environments considers how humans interact with the world at large and the parts we play in our environments. It extends into areas beyond human issues and asks students to examine the interrelationships of different environments. This can lead students to consider both their immediate classroom environments and global environments;
- Human ingenuity deals with the way in which human minds have influenced the world, for example, the way we are, think, interact with each other, create, find solutions to and cause problems, transform ideas and rationalize thought. It also considers the consequences of human thought and action (p. 20).

Planning Action

To begin this study, it was important to consider the needs of the new teachers in conjunction with the needs of the school organization. To do so, the principal researcher evaluated the master schedule, background knowledge and experiences of new and veteran teachers, demands of the entry-level teachers, knowledge of constructivist pedagogy, and

implications created by the exploration of the Middle Years Programme. To ensure the integrity of the instructional program, the principal researcher established how and when professional development would occur, and who should provide the instruction (Drago-Severson, 2004; Gusky and Huberman, 1994). After considering these factors, it was important to then align the needs of everyone in the organization to foster the growth of the new teachers.

Through an in-depth review of current literature pertaining to block scheduling, young adolescent learners, constructivism, and professional development, it was deemed most appropriate to create a model that took into account the schedule and demands of new teachers as well the instructional goals of the school. Using the four constructivist pillars of genetic epistemology, equilibration, scaffolding, and zone of proximal development, appropriate learning goals were created for each session to facilitate social learning, keep subjects in a state of disequilibrium, and promote constructivist teaching (Piaget, 1969; Vygotsky 1978). These important characteristics of constructivism allowed the researcher to choose more capable peers to provide social learning experiences in which subjects could form new schemata regarding teaching practices, ultimately rendering them to feel more prepared to provide quality instruction for their students and formulate their teaching in the very early stages of their careers.

Professional development calendar. A preliminary professional development calendar was created and themed by month based on the time available to deliver sessions for teachers (see Appendix C for Preliminary Professional Development Calendar). Built into the school schedule is one Early Release per month specifically designated for professional development. Additionally, it was established that bi-monthly meetings would be held after school to discuss practices and provide further training if necessary. During the after school meetings, the cohort was asked to share ideas and opinions that assisted the principal researcher in adjusting the

calendar to meet their specific needs. These discussions provided real time feedback and served as an ongoing needs assessment to facilitate further professional development sessions.

Additional time required was completed during team/individual planning time. Based on the research, it was important to ensure that the professional development be timely, relevant, ongoing, and within the school day to the maximum extent possible.

Establish learning goals. Using the Understanding by Design framework, learning goals were created for each professional development session. Those delivering the professional development worked with the principal researcher to discuss goals and plan for instructional sessions. Because presenters were chosen based on their demonstrated skills in particular areas, they were permitted to facilitate the learning sessions in the format of their choice.

Sharing and feedback. Throughout the study, group members were encouraged to observe each other and share ideas as the study progressed. Blackboard discussion groups provided a platform to share and provide feedback to each other and the principal researcher. As the study progressed and the cohort began to disequilibrate, emerging needs were established, and the professional development plan was changed as needed. At the end of the academic year, the principal researcher reviewed learned concepts and pedagogy techniques and discussed the progress made with the cohort. The group articulated further needs that were to be carried out through the summer and into the next academic year.

Reflective practice. This study encouraged individuals to participate in reflective practice. Drago-Severson (2004) articulates the importance of reflective practice as she contends that it allows teachers to think about what they are doing, gain perspective, and share what they have learned. School organizations strive to create meaningful reflective practice because its potential benefits are too great to sacrifice (Collay, 1998). Reflective practice encouraged

individuals to engage in critical reflection on their practices and implementation. Reflective questioning from the principal researcher also led teachers to form new schemata and invoke their creative insights. As part of the action research cycle and theory of cooperative inquiry, reflection for individuals, as well as the process itself, assisted the principal researcher with appropriate data to guide the project and assess its effectiveness.

Taking and Evaluating Action

During the allocated time of Early Release, presenters trained new teachers on the chosen topics from the professional development calendar. Following these trainings, new teachers attended school wide department meetings where the same concept was shared by the CIRT through specific content areas. By creating a scaffolded approach of direct instruction for new teachers during the first part of Early Release, and guided practice during department meetings in the second half, participants received the information in several different ways presented by more capable peers. Similar to constructivist teaching, each experience was relative to the prior knowledge and experiences that each CIRT brought to the department meeting.

Data collection methods. Throughout the course of this study, data were collected and analyzed informally to assist with implementation and planning. Through constant forms of feedback, subjects articulated their immediate needs and effectiveness of the learning opportunities that were presented. The instruments used during this study were created to assess teacher understanding of the skills taught and answer the research questions.

This study was conducted through the district learning management system Blackboard because of its technological application and capabilities. Blackboard provided the principal researcher and cohort members an avenue of interface that could be completed at any time from any location. Clemons (2004) noted that computer interfaces make students better technology

problem solvers and helps them with real world problem solving and cooperative learning. For these reasons, choosing a computer interface helped the new teachers learn the technology and reinforce constructivist pedagogy. The capabilities of content sharing, discussion board, assessments, and surveys made it both an educational and reflective tool.

As a part of taking and evaluating action, the following data sources were collected and reviewed to guide the study and provide the principal researcher with ongoing assessment of the effectiveness of the program. Blackboard provided the principal researcher with a secure place to store data, which could be referenced easily at any time.

Entrance Ticket. To begin this study, the principal researcher asked the subjects to complete an Entrance Ticket that provided baseline data for understanding of constructivism and block scheduling (see Appendix D for Entrance Ticket). The Entrance Ticket contained information that guided the theory of the study, relevant vocabulary, and excerpts of personal teaching experiences from new teachers. The Entrance Ticket asked questions relative to the theoretical framework, topics of professional development, vocabulary, and pedagogical techniques that would be taught throughout the year. In the Entrance Ticket, new teachers were asked to rate their comfort level on 11 statements directly related to providing developmentally appropriate instruction to middle school students during a 90-100 minute block period. At the end of the study, the subjects were again asked to rate themselves on the same 11 statements to ascertain perceived growth over the course of the study. This data collection served as the Exit Ticket.

After subjects completed the Entrance Ticket, the principal researcher reviewed the data to ascertain the level of preparedness and understanding of participants. This data source provided the principal researcher with information with regard to what new teachers knew and

could articulate through writing and answering questions. This means of collecting data provided a baseline of understanding and allowed the principal researcher to gauge the appropriateness of the preliminary professional development plan, and assisted with implementing the action research cycle. Data gathered from the Entrance Ticket were continually evaluated to measure perceived growth of pedagogy skills and understanding of constructivist pedagogy.

Reflective questionnaire. Following some of the professional development sessions, participants completed a reflective questionnaire that was stored in District X's Blackboard system (see Appendix E for sample Reflective Questionnaire). The questionnaires assessed understanding and formation of new schemata, while providing insight and immediate feedback to the principal researcher. The questions administered after each learning opportunity encompassed the main research questions and were used to gauge teacher perceptions of effectiveness, usefulness, plans for implementation and application, and identifying needs for future professional development sessions. Furthermore, the reflective questionnaire provided a unique portion of data to this study given that the questions were open ended and allowed the subjects to share in their own words. Data from the reflective questionnaires were evaluated throughout the study and guided the action research cycle.

Discussion boards. Upon completion of training sessions, the principal researcher provided the subjects with open-ended questions designed to invoke reflection and promote Meta learning (see Appendix F for sample discussion board prompts). Electronic discussion boards in Blackboard provided an open forum for the cohort to answer questions, share electronically, and promote reflective thinking and practice. The open environment of the discussion board allowed teachers to respond in their own words and generate ideas among themselves. Teachers

demonstrated their learning by explaining their perceptions of the pedagogy taught and its importance in delivering instruction. Furthermore, teachers gave specific examples of the skill implementation and potential impact on the learning process of themselves and their students.

The pure nature of the electronic shared discussion board reinforced constructivist social learning by allowing teachers to answer questions, comment, inquire, share, and reflect with each other. The discussion board also provided a platform for the principal researcher to follow up with further questions, provide direct feedback, or generate new ideas for the participants. Discussion boards remained open throughout the study to facilitate ongoing discussions permitting the cohort to review past material and share as they learned to implement strategies and improve pedagogy. The data gathered from discussion boards were evaluated and used to guide group discussions both on the computer and in person.

Observations and interviews. The principal researcher completed classroom walk throughs and observations to assess teacher growth, understanding, and application of the skills learned during professional development sessions. Through observations, the principal researcher gathered and evaluated data based on successful or unsuccessful implementation of strategies and concepts taught during the training sessions. The observations were followed up with informal interviews and/or discussions that allowed the principal researcher to provide feedback and assistance as needed. The ultimate goal of the interview was to provide data for feedback and reflection as well as rich descriptions of the unique experience of each subject as it related to personal growth and perceived effectiveness of the professional development. It was important to have these data sources because perceptions of application of techniques were different between observers.

Assessments and follow up surveys. New teachers were asked to take short assessments or complete follow up surveys in Blackboard to assess understanding of topics presented and also function as a teaching tool (see Appendix G for sample Assessments and Surveys). Follow up surveys provided a means for feedback and opinions through rating scales and open-ended questions. Blackboard has the capabilities to create both quantitative and qualitative assessments, which helped the principal researcher measure understanding and application of technology and concepts taught. The assessments and surveys included true/false statements, multiple-choice questions, short answer fill-ins, open-ended essay questions, and rating scales. Through these data sources, the principal researcher quickly identified the level of understanding and perceptions of usefulness within the written context. The use of these particular tools helped the principal researcher assess concepts and obtain opinions about the professional development sessions.

Document review. In District X, new teachers participated in the Professional Growth System (PGS), which prescribed the method and process for teacher evaluations (see Appendix H for sample observation documents). A valuable data source for this study was the combination of teacher evaluation documents and discussions with the evaluator and new teacher consultant. Teacher lesson plans and teacher plan books were also used to provide evaluative data of application and planning for meaningful instruction. The principal researcher took notes (field notes) during informal classroom observations, discussions, and interviews that also added to the data sources for document review. These important documents provided the principal researcher with longitudinal data to evaluate understanding and implementation of learned concepts, measure growth and understanding of the educational process over the course of the study, and provided a reflection source for new teachers. Moreover, these documents allowed the principal

researcher to assist new teachers with quality lesson planning designed to facilitate meaningful instruction during the block period.

Cohort informal interview sessions. To evaluate the ongoing professional development, the cohort held discussions to review concepts, share ideas, raise concerns, and highlight successes. The goal of these meetings was to provide relevant, ongoing feedback, in a comfortable setting where subjects were free to express their opinions, questions, and needs. The sessions gave the cohort an open forum to talk about their first year of teaching, and share frustrations they were encountering in the classroom. From these discussions, the principal researcher was able to facilitate collaborative discussions, assess understanding, and provide instructional support. Information gathered from discussions guided preparations for upcoming professional development sessions. The conversations also encouraged individuals to approach master teachers to seek assistance for further understanding and clarification as needed. The discussions gave the principal researcher real feedback on the effectiveness of the professional development and insight as to how the teachers were actually handling their first year.

Discussions and interviews– others. The principal researcher held discussions with CIRTs, master teachers, mentor teachers, administration, technology coordinator, and new teacher consultant to determine needs of the new teachers and evaluate the effectiveness of the professional development. These discussions led to coaching, observations, or advice being given by the more capable peer to assist the new teachers. When needed, experts or master teachers were asked to assist new teachers who were having difficulty with pedagogy or administrative tasks. Discussions from those interventions provided valuable data to the principal researcher to better support cohort members.

Much like the cohort informal interview sessions, this data source was invaluable as it gave feedback from a different perspective than that of the principal researcher and facilitated the implementation of the action research cycle based on the observed needs of the new teachers. The ongoing nature of these discussions gave the principal researcher feedback on the cohort and individual teachers. In addition to the discussions, interviews were held with administration, CIRTs, technology coordinator, and new teacher consultant to assess program effectiveness and observed growth of each subject.

Data Analysis

Upon completion of data collection, data were analyzed by research question and professional growth themes were developed. This allowed the principal researcher to determine the perceived effectiveness of the professional development program delivered to the new teachers and answer the research questions. Professional development themes and practice implications that were developed outside of the research questions, through data analysis, are noted in Chapter 5 of this dissertation.

To properly triangulate data, Sagor recommends that action researchers apply the following three questions to each research question as they begin to “fish through the sea of data that is collected during a project” (Sagor, 2005):

1. What did we actually do?
2. What changes occurred with our priority achievement targets?
3. What was the relationship between the actions taken and changes in performance on the achievement targets? (p. 94)

These three questions provided the framework for triangulating the data and answering the research questions. Sagor (2005) recommends using a matrix or worksheet to properly

triangulate data. Using Sagor’s method, the principal researcher applied the above three questions to each of the three main research questions to triangulate the data from various sources. Table 2 depicts the process that was used with the first research question proposed in this study and possible data sources. After these processes were finished, data was then organized to answer the research questions in descriptive narrative form.

Table 2

Data Triangulation Matrix/Worksheet adopted from Sagor (2005, p. 98)

	<i>Questionnaire</i>	<i>Discussion Board</i>	<i>Interview</i>
To what extent did the staff perceive that the professional development prepared them to deliver developmentally appropriate pedagogy for middle school students during a block period?			
What did we actually do?			
What changes occurred with our priority achievement targets?			
What was the relationship between the actions taken and changes in performance on the achievement targets?			

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Sagor (2005) also states that creating a data collection plan is key to answering the research questions. The data collection plan provided the researcher with a way to organize the various data sources that were gathered and evaluated throughout this study along with a time line that corresponded with the monthly plan. Tracking the various data sources afforded the principal researcher a systematic way to ascertain participation and completion of tools for data assessment. By properly evaluating all data sources, the principal researcher was better equipped to report and share the data with members of the action research project.

In this study, subjects were coded and identified by specific colors. This study tells the unique experience of Mr. Blue, Mr. Green, and Ms. Orange. Using a similar matrix as above, the researcher utilized the available data by subject to answer the above questions. Throughout the process, the principal researcher evaluated the data to look for patterns of growth and change, and identified relationships between performance and specific actions and events (Sagor, 2005). Themes and patterns of growth that developed provided feedback and further assistance to the principal researcher to diagnose, plan, implement, and reflect on the study.

Validity and Reliability

Validity in action research is often referred to as transferability within the context that the study took place. The knowledge gained from educational organizations through action research is most often shared with the immediate learning community because it is used to address particular needs of the people in specific settings, which is a significant strength of action research (Herr & Anderson, 2005). This action research study took place in one school setting to address the emerging needs of first year teachers. Its results were used to inform the progression of the study as well as to address the needs of the greater organization.

Internal Validity. Internal validity relies heavily on the concept of reality (Merriam, 1998). The results of a study must take into consideration the observers, measurements, and how data are assessed to provide validity. Merriam (1998) suggests several strategies for researchers to enhance internal validity:

1. Triangulation – using multiple investigators, multiple sources of data, or multiple methods to confirm the emerging findings;
2. Member checks – taking data and tentative interpretations back to the people from whom they were derived and asking them if the results are plausible;

3. Long-term observation – at the research site or repeated observations of the same phenomenon-gathering data over a period of time in order to increase the validity of the findings;
4. Peer examination – asking colleagues to comment on the findings as they emerge;
5. Participatory of collaborative- involving participants in all phases of research from conceptualizing the study to writing up the findings;
6. Researcher’s biases – clarifying the researcher’s assumptions, worldview, and theoretical orientation at the outset of the study (p. 204).

To the maximum extent permitted and appropriate, each of these six steps was involved in the creation and carry out of this study. Primary observers and key personnel helped to conceptualize this study and create the preliminary professional development calendar. As the study progressed, the needs of the teacher and perspectives of all involved guided the remainder of professional development. Ongoing observations, discussions, and interviews provided opportunities for member checks, peer examination, and collaboration. The use of Blackboard to house all data documents allowed study participants to access and evaluate data and instruments throughout the course of the study. To avoid bias in observation, the principal researcher did not formally evaluate the subjects in accordance with District X’s Professional Growth System.

External Validity. External validity refers to the extent to which a study can be applied in a larger context or other situations (Merriam, 1998). Herr and Anderson (2005) refer to external validity as generalizability, or how results of action research can be applied in other settings. The results of this study did not contain formalistic generalization, but can be used for other schools that are faced with an influx of beginning teachers for whom they must meet their professional growth needs. As discussed in Chapter 1, the results of this study are limited to one

school; however implications drawn from the study can assist other schools with the growth and development of first year teachers.

Reliability. “Reliability refers to the extent to which the research findings can be replicated. Reliability is problematic in the social sciences simply because human behavior is never static” (Merriam, 1998, p. 205). Instead, reliability in action research and qualitative studies, seeks to richly describe the unique experience of individuals and world of those who experienced it. To ensure the reliability of this study, observations, discussions, and data collection were completed throughout the duration of the study from multiple sources. Merriam (1998) explains that a study based on human experience, when replicated, will more than likely not yield the same results; however, “the results should make sense” making them consistent and dependable (p. 206).

To ensure reliability, the principal researcher stated the position for choosing action research, participants, and subjects in this study. The data collected during the study, were continually reviewed and shared with key participants to guide the study and assist with eliminating bias. The principal researcher held discussions and reviewed and triangulated data to develop professional growth themes throughout all steps of the action research cycle. The action research cycle facilitated an “audit trail” that described how data were collected, how themes were developed, and how decisions were made (Merriam, 1998). Furthermore, Blackboard provided open access to all participants with regard to data, instruments, and materials used to facilitate the professional development sessions.

Summary

The purpose of this study was to assist X Middle School with the goal of providing new teachers with a comprehensive system of professional development based on the needs of young

adolescent learners, grounded in constructivist practices, and proven to be effective while teaching during the block period. The topics for professional development were based on the needs of the learning organization and chosen to encompass the belief in constructivist pedagogy fostered by the Middle Years Programme, which was chosen for exploration through district wide strategic planning. The use of Blackboard throughout this project provided a technology tool unfamiliar to all subjects that required a steep learning curve. However, once teachers became comfortable through training and professional development, they were able to use the program with ease and saw the benefit, which translated directly to use in the classroom.

This chapter provided an overview of the research methodology and described the various stages of the action research cycle. This chapter also provided information about the data sources that were used in this study and how they were evaluated to answer the research questions.

CHAPTER 4

Analysis and Interpretation

This chapter summarizes the data collected during this study detailing the unique experiences and perceptions of three cohort members. The data are presented in predominantly narrative, descriptive form to answer the research questions. The data also justify the implications discussed in the final chapter to assist other school organizations with tackling the needs of adult learners and providing appropriate professional development opportunities for new teachers. Some charts are included to demonstrate growth perceptions and implementation of techniques. This chapter begins with a review of the baseline data that was collected at the beginning of the study through the use of an Entrance Ticket. In conjunction with interview questions and initial cohort discussions, the Entrance Ticket provided valuable data to help assess the readiness and comfort level of the three subjects on various concepts and vocabulary relative to entering the classroom end encompassed in the study. These data provided the principal researcher with important insight to the direction of the first phase of this action research project.

The remainder of this chapter reports the findings and perceptions of the subjects and other key members of the study as the professional development sessions progressed throughout the year. They are presented to systematically answer the research questions and justify conclusions made in the final chapter.

Baseline Data

Preparedness

In addition to answering open-ended response questions and defining vocabulary in the Entrance Ticket, the subjects were also asked to rate their comfort level, on a scale of 1-10 (10

being extremely comfortable), of their readiness to begin the school year. They rated themselves on the following statements beginning with: As a first year teacher how prepared do you feel to...

- Teach in a 90-100 minute block
- Embrace middle school philosophy
- Teach unknown content
- Navigate new instructional approaches
- Implement multiple styles of
 - Use data to guide my instruction
 - Differentiate instruction
 - Use technology to enhance my instruction
 - Use technology to enhance my own learning
 - Teach lessons through Understanding by Design

Figure 2 shows initial perceptions of new teachers at the beginning of the study. These data serve as baseline data that helped to guide the professional development plan and facilitate cohort discussions.

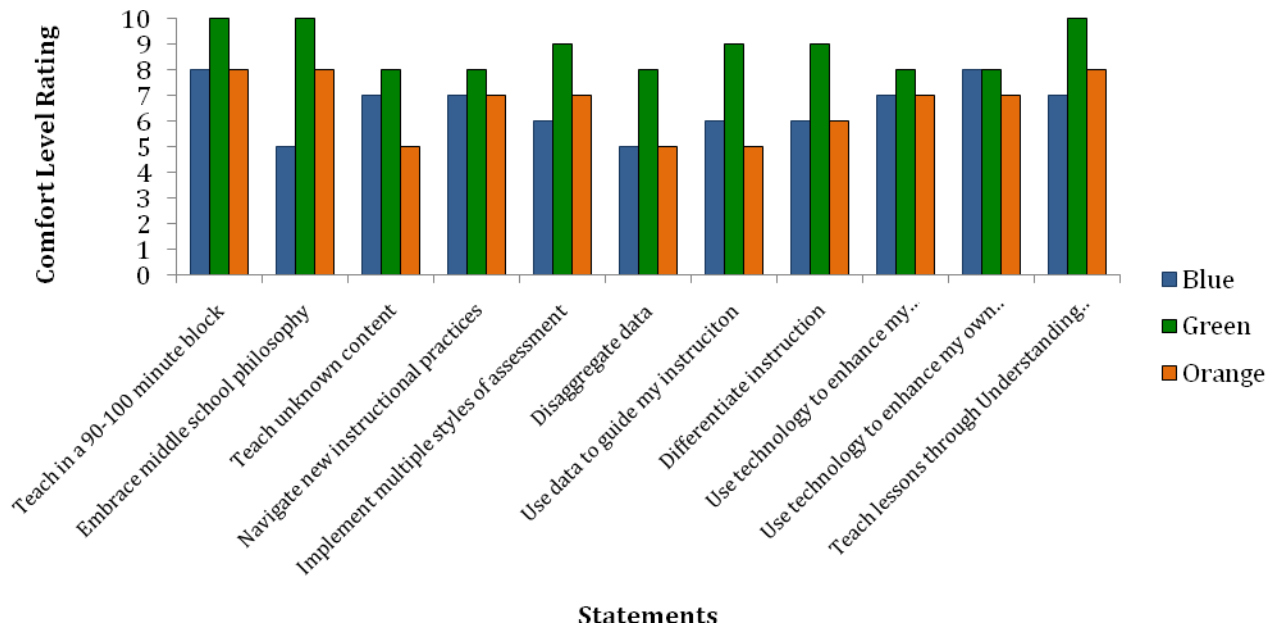


Figure 2. Base Line Perceptions- Entrance Ticket.

These data provided a baseline of theoretical understanding and perception of readiness to both begin this study and assist with the early stages of diagnosis within the action research cycle. As shown in Figure 2, Mr. Green rated himself an eight or above in all categories, indicating a strong feeling of readiness to enter the classroom. Mr. Blue rated himself lowest, with a five, in readiness to embrace middle school philosophy and knowledge of data disaggregation. On the contrary, Mr. Blue rated himself an eight in the categories of technology integration and teaching in a 90-100 minute block class, implying a higher comfort level with longer periods of instructional time. Ms. Orange rated herself lowest, with a five, in the areas of teaching unknown content, knowledge of data disaggregation, and readiness to use data to guide instructional decisions. Ms. Orange rated herself an eight in the categories of teaching in a 90-100 minute block class, embracing middle school philosophy, and teaching through Understanding by Design.

Block Scheduling

The Entrance Ticket provided baseline data that demonstrated a general understanding of block scheduling, middle school philosophy, constructivism, and appropriate pedagogy for young adolescent learners. Each subject defined and described his/her philosophies and understanding of vocabulary associated with constructivism, pertinent writings that helped shape middle school philosophy and the block scheduling movement, and knowledge of pedagogical techniques that would be taught throughout the study. Entrance Ticket data showed that teachers had some experience with block scheduling during their student teaching experiences and could identify the benefits and articulate the possible drawbacks of longer periods of instructional time.

Cohort discussions and Entrance Ticket data indicated that the teachers possessed a good understanding of block scheduling and its implications for pedagogy. Each teacher had

experience with teaching in the block, and reflected positively on the longer periods of instructional time it allocated. In discussions, cohort members were able to articulate the use of hands on activities and demonstrated a general knowledge of pacing and pedagogy for teaching during the block.

In his Entrance Ticket, Mr. Blue described exposure to several different types of block scheduling, some of which he felt were “byzantine and arcane scheduling methods mastered only by administration and counselors.” He acknowledged “lengthy instructional periods allow students to immerse themselves in a topic of interest for long periods of time.” Another benefit he saw was that “teachers can use the block to introduce and build on concepts in one chunk of time, and can use a wider variety of methods (some of which may be more time consuming).” When identifying drawbacks, Mr. Blue asserted that absenteeism or time between classes during a block schedule could affect a student’s ability to retain concepts and remain focused.

In his Entrance Ticket, Mr. Green indicated that his experience with block scheduling existed in several settings as observer and teacher. He felt that longer periods of instructional time allowed him to “incorporate projects, labs, and in-depth activities” in the areas of math and science. He indicated that a benefit of block scheduling is the lessened pressure of rushing through lesson plans giving the teacher more time to “focus on the main objective of each lesson and spend more time delivering the material in different ways.” He also felt that the lengthened instructional periods allowed him to “spend more time on students’ questions and use formative assessment to check for student understanding.” Mr. Green acknowledged lack of focus and difficulty for teachers to keep students engaged as a potential drawback of the block schedule. However, he noted that teachers could “think of creative tasks for students to participate in to keep interested in the lesson.”

In her Entrance Ticket, Ms. Orange indicated that during her student teaching experience she taught in a block schedule. She felt that the longer periods of instructional time allow the teacher to provide “hands-on activities, use cooperative learning groups, and that time, in general, allows for more active learning rather than lecture style learning.” She identified the role of the teacher as the person who would “facilitate activities instead of dictate.” Ms. Orange expressed “more preparation in aspect of using the time wisely, efficiently, and effectively” as a drawback of block scheduling.

Given that the subjects had experience with and understanding of block scheduling, beginning the professional development sessions with Technology Integration, Scaffolding, and short lessons on middle school philosophy from *This We Believe* was a natural starting point to begin helping the teachers embrace and implement constructivist teaching practices.

To utilize instructional leaders in the organization, professional development presenters were chosen from the X Middle School faculty. Those who demonstrated a high level of expertise in the area of professional development, based on administrative and district level evaluations, were chosen to lead the training sessions. Each presenter, or more capable peer, worked with the principal researcher to establish the professional development goals that guided the session; however, each was asked to use their own knowledge, pedagogy, and expertise to deliver the training sessions. Using the Understanding by Design framework, the following learning goals were established for the professional development sessions.

- Technology Integration Goal(s): new teachers will learn tools to assist them with moving their instruction forward using technology. New teachers will learn and implement different approaches for teaching and learning though the use of technology.

- Scaffolding Goal(s): new teachers will be able to define scaffolding as it applies to classroom instruction and be able to use scaffolding when creating lessons. New teachers will understand the need for scaffolding when addressing heterogeneous and homogeneous classrooms.
- Formative Assessment Goal: new teachers will be able to use formative assessment as a tool to gather information to guide instruction and plan for future lessons.
- Questioning Goal(s): New teachers will learn about varying levels of questioning and be able to apply different types of questioning based on Bloom's taxonomy in their classrooms. New Teachers will be able to understand the continuum of questioning as a form of assessment to gather data and apply it to lesson planning and delivering developmentally appropriate instruction.
- Lesson Planning Goal: New teachers will be able to understand key components to designing a lesson plan to engage students and promote academic achievement during longer periods of instructional time.

Organization of Professional Development Data

The following data are presented in descriptive narrative form to answer the research questions beginning with each subject's perceptions of effectiveness followed by observations from school administrators, new teacher consultant, CIRTs, and technology coordinator. The narratives will follow the order of professional development as it was provided chronologically telling the stories of Mr. Blue, Mr. Green, and Ms. Orange. These narrative data will answer the first two research questions.

1. To what extent did the subjects perceive that the professional development prepared them to deliver developmentally appropriate pedagogy for middle school students during a block period?
2. To what extent did the staff perceive that the pedagogy of the subjects improved as a result of the professional development sessions?

Technology Integration

Technology has long been considered to be a motivator for both teachers and students in an effort to keep up with best practices and help teachers transform their teaching (Henson, 2004). Becker (1998) contends that technology facilitates constructivist teaching by providing students unlimited access to information to test and research their theories, facilitate communication, and present their ideas to a broad community – all of which he believes creates ideal conditions for constructivist learning. With the creation of Learning Management Systems (LMS), teachers find themselves using technology in ways that meet both the demands of teaching and the needs of individualization in instruction.

X Middle School is a relatively new school with current technology. Classrooms are outfitted with multimedia equipment and some with smart boards. A district wide technology plan was created to facilitate the use of this technology at each school. One of the technology expectations for District X was the use of the district LMS to enhance instruction and facilitate communication. To meet this expectation and assist the cohort members, the subjects were trained to use the Learning Management System. Additionally, they were trained to use several technology integration tools from which they could choose to help them deliver developmentally appropriate instruction.

Understanding and Schooling by Design provides educators with tools to guide them through the backward curriculum design process. Such tools include but are not limited to: school improvement efforts, how to create rigorous and appropriate lessons and assessments, using big ideas and essential questions, and a framework for consistent, and differentiated instruction across content areas (Wiggins & McTighe, 2004, 2007). Using the *Understanding by Design* (UbD) framework, each professional development session was designed with the end goal in mind while reinforcing concepts from *This We Believe* and aspects of constructivism (Wiggins & McTighe, 2004).

The Technology Integration learning goal was designed for cohort members to learn tools to assist them with moving instruction forward and provide different approaches for teaching and learning through the use of technology. To facilitate this goal, cohort members were trained to use the learning management system to create classes, post material from various computer programs, and create announcements for students and parents. Cohort members learned to: use the digital camera to document the learning process, use a web based program (Vimeo) to compile and present digital images, use electronic book marking for continuous reference and access, use the multimedia classrooms, use Microsoft Word for more than word processing, and create a blog. Assessment evidence for this training was a follow up survey in the LMS, a reflective questionnaire, and a discussion board that asked subjects to share their favorite tool that they learned.

In the follow up survey the subjects were asked to respond to the following:

- Please rate the professional development activities related to technology integration based on the influence it will have on your teaching. 1 - Very little to no impact 10 - this is what I needed to transform my teaching.

- Would you attend another session on this topic?
- What aspect of technology integration did you find the most helpful?
 - Learning how to share electronically
 - Learn how to document the learning process using technology
 - Learning a variety of tools from which I can choose

In the follow up survey, all three subjects indicated that they would attend another session on the topic of technology integration, but rated themselves differently with the level of influence that the professional development would have on their teaching. Figure 3 represents answers from each of the subjects to the first statement in the survey.

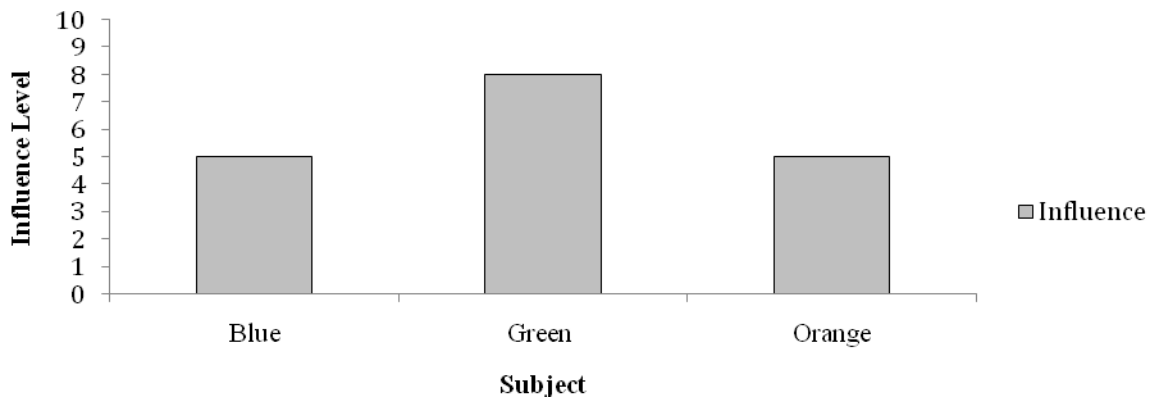


Figure 3. Perceived Influence on Instruction – Technology Integration.

Mr. Blue. In his follow up survey on Technology Integration, Mr. Blue rated the session a five indicating a moderate impact on how he felt it would impact his instruction. When questioned through a reflective survey, Mr. Blue indicated that the professional development session did not change his thinking about teaching and learning, but that he did learn some new tools which he felt would help provide access for students. Mr. Blue stated that learning more about technology integration would allow him to provide varied access for students for

delivering developmentally appropriate instruction. “Having more tools allows for greater flexibility and the ability to provide more and better access points for students. So, it should improve my teaching to have more delivery methods ready at hand.” To translate to student learning, Mr. Blue noted that marrying the technology tools with the content “should allow most students to more readily pick up content by allowing for greater interactivity.” Mr. Blue did not respond to the discussion board.

Data relative to use of technology by Mr. Blue is mixed. Observations made by school administration, the new teacher consultant, and the technology coordinator noted minimal use of technology in Mr. Blue’s classroom with very little impact on instruction. Contrastingly, the CIRT, commended Mr. Blue for his use of technology to facilitate cooperative learning in student groups.

Early administrative and new teacher observation documents indicate that Mr. Blue used little to no technology to facilitate predominantly lecture-like lessons. After working with the technology coordinator and administration, Mr. Blue began using PowerPoint to guide and structure instruction through lecture format, but not specifically as an interface to increase student understanding. A later observation from school administration noted that Mr. Blue “began providing students with visual cues through the use of PowerPoint that allowed his students greater access to the information provided orally and through discussions” noting growth in this area of integrating technology.

An interview with the CIRT provided a different picture of Mr. Blue’s use of technology to provide instruction for students. The CIRT complimented Mr. Blue’s use of United Streaming videos to enhance visuals for students during curricular units. The CIRT also complimented Mr. Blue on having students “interpret the Rockefeller Era and develop their own understandings of

its impact on the greater society through the use of Web Quests.” A conversation between Mr. Blue and the CIRT revealed that Mr. Blue indicated that he was “excited about using the technology ideas provided through professional development.” The CIRT noted ongoing use of technology by Mr. Blue throughout the year, with increasing frequency as the year progressed.

Figure 4 represents a comparison of perceptions of growth between Mr. Blue, administration, new teacher consultant, and technology coordinator based on the Entrance/Exit ticket data from beginning and end of this study as it relates to using technology to enhance instruction. While ratings are different, each observer noted some progress in Mr. Blue’s use of technology to provide appropriate instruction to students during the block period.

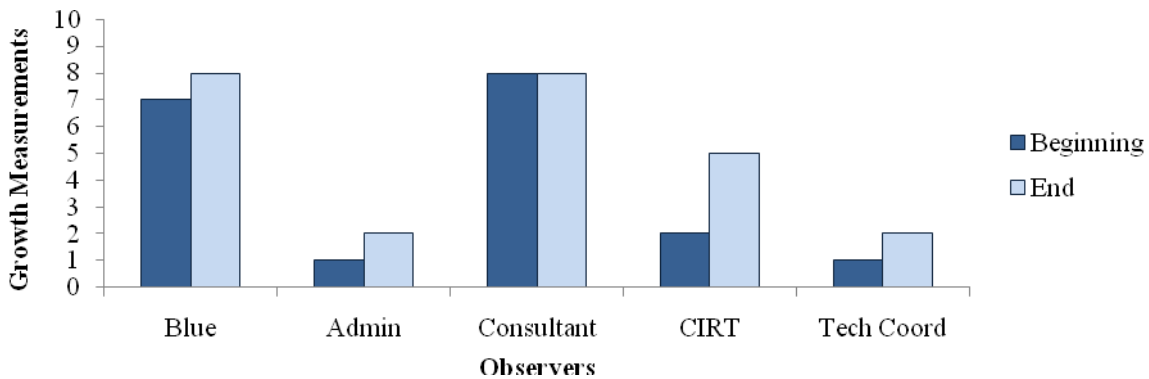


Figure 4. Comparisons of Perceived Growth in Technology Integration – Mr. Blue

Mr. Green. In his follow up survey on Technology Integration, Mr. Green rated the session an eight indicating that he felt the professional development would have a significant impact on his ability to transform teaching. In his reflective questionnaire, he stated the “session really broadened my horizon on the use of technology to enhance student learning.” Mr. Green noted that the use of technology would allow him to differentiate for diverse learning styles with the goal of increasing student understanding and delivering developmentally appropriate instruction to students. “I have learned that there are so many more creative ways to use

instruction using technology to enhance both the teaching and learning process. After experiencing these new technology tools, I am excited to explore and apply these ideas to my own classroom instruction.” He acknowledged that being able to use different instructional tools to increase teacher, student, and parent communication, would allow him to continually engage students and facilitate communication between school and home.

When asked which tool was their favorite in a discussion board, Mr. Green chose an Internet based book marking tool because it would serve as a great communication device for professional sharing and idea creation. “Teachers can use these ideas for their own classroom, or can “bounce” or “piggy back” off of those ideas to create something similar, but new.” He viewed the 24/7 access as useful, and saw it as a valuable tool to facilitate his own learning.

The school administration, new teacher consultant, and the technology coordinator observed that Mr. Green’s use of technology in the classroom was strong throughout the year and frequently used to deliver appropriate instruction, facilitate cooperative learning activities, and interface with students. Observation documents show that Mr. Green used the technology tools that were taught during the professional development session on a consistent basis to enhance instruction and increase student understanding. An administrative observation noted that Mr. Green “seamlessly integrates technology into his classroom, and his use of it in both science and math class is impressive.” The technology coordinator noted that Mr. Green continually used the digital camera in his classroom to document the learning process and have students generate Vimeos to facilitate cooperative learning and display their work. The technology coordinator praised Mr. Green for his continued interest in learning about and implementing new technology to create summative assessments and enhance instruction. For example, Mr. Green learned how

to use PowerPoint to create a jeopardy game, which he regularly used to help students review for upcoming assessments.

Figure 5 represents a comparison of perceptions of growth between Mr. Green, administration, new teacher consultant, CIRT, and technology coordinator based on the Entrance/Exit ticket data from beginning and end of this study as it relates to using technology to enhance instruction.

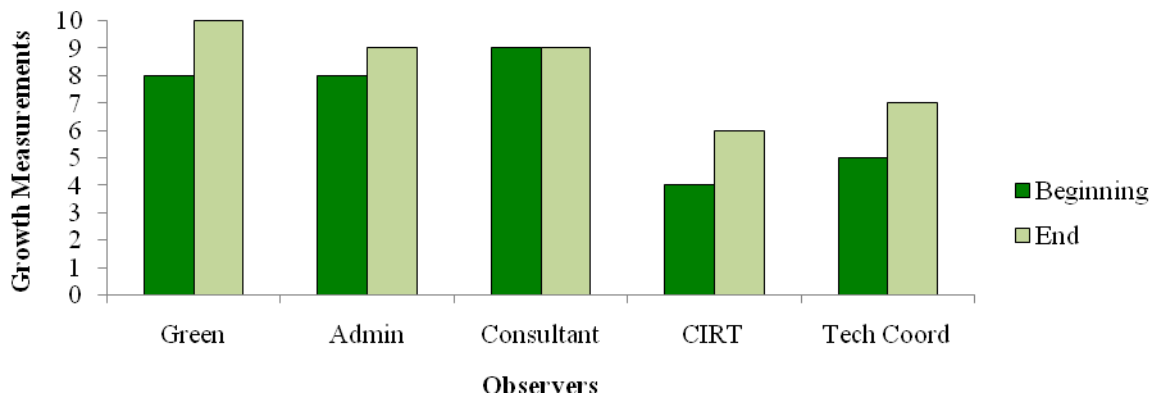


Figure 5. Comparisons of Perceived Growth in Technology Integration – Mr. Green

Ms. Orange. In her follow up survey on Technology Integration, Ms. Orange rated her learning opportunity as a five indicating that it would have a moderate impact on her instruction. Through the reflective questionnaire, Ms. Orange stated that the professional development made her “more aware of the different tools I can use via internet for communication.” Ms. Orange assimilated a different understanding of technology as more than Internet and computers, but as a problem-solving tool. Ms. Orange indicated that the use of technology integration would help her to “enhance her instruction and allow her to take on the role of facilitator and provide her students with authentic situations through real world problem solving, as well as support their learning experiences through the use of technology” reinforcing her use of constructivism in the classroom.

When asked to share which tool was their favorite in a discussion board, Ms. Orange chose the discussion board in the LMS because she valued how it provided a way to assess students as well as reinforce their typing skills. “I am having my students take a quiz and submitting it though a discussion forum on the LMS – LOVE IT!” Additionally, Ms. Orange stated, “I just started using a digital camera today to take some picture of some o-so yummy pancakes that my top chefs made!” to document the learning process and to be shared with students and parents in the LMS.

From the beginning, observations made by school administration, the new teacher consultant, CIRT, and the technology coordinator showed that Ms. Orange’s use of technology in the classroom was very strong. Observations noted that she used technology to deliver appropriate instruction, enhance lessons with visual presentations, facilitate cooperative learning, and increase communication with students and parents. The technology coordinator noted a specific creativity for using technology to solve problems, provide students with meaningful learning opportunities, and differentiate instruction. School administrators observed the ongoing use of technology to enhance instruction, facilitate cooperative learning, and strengthen student presentations. The CIRT described Ms. Orange’s classroom as “technology rich.”

Though already an asset for her, the technology coordinator praised Ms. Orange’s willingness to learn and try new technology stating, “she is constantly looking for new ways to use technology and does a great job enhancing her lessons with it.” Administrative observations show that after receiving a smart board through a state grant, Ms. Orange designed almost every lesson to use this technology to provide developmentally appropriate instruction during her block classes. Because use of technology was already a strength, it is possible that Ms. Orange did not anticipate a significant impact of technology integration on her instruction. However, observers

indicated that they felt her learning and growth in the area of technology integration continued throughout the year, resulting in technology rich instruction for all students. Ms. Orange began the year using the initial tools provided in the training; however continued to confer with the technology coordinator to learn new ways to integrate technology into her classroom. Her continued willingness to learn and implement new technology assisted Ms. Orange with complimenting an indentified relative strength.

Figure 6 represents a comparison of perceptions of growth between Ms. Orange, administration, new teacher consultant, CIRT, and technology coordinator based on the Entrance/Exit ticket data from beginning and end of this study as it relates to using technology to enhance instruction.

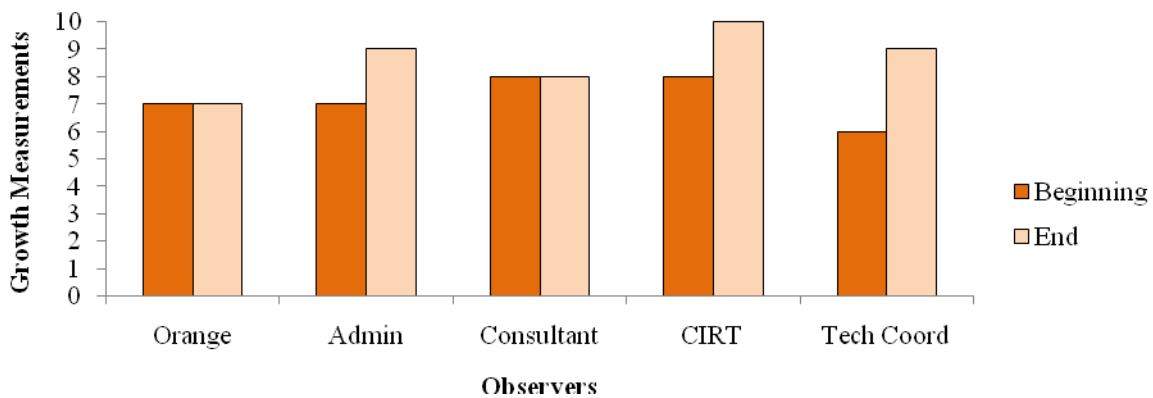


Figure 6. Comparisons of Perceived Growth in Technology Integration – Ms. Orange

Scaffolding

The proliferation of technology in classrooms has helped teachers facilitate and transform instruction while preparing students with the necessary skills of the future. A key component to ensuring the successful use of technology is proper scaffolding during instruction. When delivering developmentally appropriate instruction for middle school students during a block period, scaffolding should be provided to the extent that students need it to prepare them to

structure information in order to retrieve it at a later time (Wormeli, 2006). To assist cohort members with the task of meeting the needs of their students and using technology to enhance their instruction, the next phase of this project was teaching them how to scaffold a lesson and learning groups during a block period.

In discussion groups and Entrance Ticket answers, cohort members indicated a basic understanding of how to scaffold a lesson but had a difficult time articulating how they would utilize it in the classroom. The subjects identified the key ideas of providing temporary support to help students arrive at answers on their own; however erred when stating that the support should be “limited” or “asking leading questions” or simply “reviewing” material. A discussion between administration revealed this thought, “As a trend, I do not think that the teachers really understood what it (scaffolding) meant at the beginning of the year.” Given the data drawn from these discussions, the professional development session was specifically designed to create a clear definition of scaffolding and model a classroom example of implementation based on the teachings of Piaget and Vygotsky.

The Scaffolding learning goal was designed for cohort members to be able to define scaffolding as it applied to classroom instruction. Cohort members would also be able to use scaffolding when creating lessons and learning activities for students and understand how it could be used when addressing heterogeneous and homogeneous classroom groupings. To facilitate this goal, cohort members were taught to define scaffolding using a model that compared teaching and learning from a One-sided model vs. a Sociocultural model incorporating Vygotsky’s social learning theory and zone of proximal development. The sequence of the professional development session simulated a classroom lesson, which was modeled for the cohort members: (a) The teacher does it, (b) The class does it, (c) The group does it, (d) The

individual does it, and the teacher assesses as the lesson progresses. Key concepts for differentiation in groups taught to the cohort members were: models-graphic organizers, visual cues, prompts, hints, partial solutions, think-alouds, various learning strategies, and levels of questioning based on Bloom's Taxonomy. After attending the training on Scaffolding, cohort members were asked to respond to the following open-ended questions as part of a follow up survey in the LMS:

- In your own words, describe what it means to scaffold a lesson.
- In your own words, describe how you would scaffold groups in order to facilitate a lesson.
- Describe what you would see as the benefit of using scaffolding in your lessons.

Mr. Blue. In his response to opened ended questions on Scaffolding, Mr. Blue described it as “providing support to each student as necessary to ensure that they find themselves snugly within the zone of proximal development.” To scaffold groups during a lesson, Mr. Blue indicated that he would use “peer scaffolding, in which heterogeneous groups are formed and students who have stronger background would help coach their peers as necessary. Another way is to provide reading guides to students that are individually contoured to their development.” When asked to describe the benefit of scaffolding during lessons Mr. Blue stated “It allows for greater differentiation so that lessons are tailored to individual students even in a group or larger classroom setting.” Mr. Blue indicated that the presentation of this concept was not a new way of looking at scaffolding and rated his level as intermediate.

Observations made by school administration, new teacher consultant, and CIRT indicate very little scaffolding was observed in Mr. Blue's classroom throughout the year. One observer noted Mr. Blue said that he “assigned the lower students the easier content” and that Mr. Blue felt that

he used scaffolding. The observations indicate, however, that there was no observable scaffolding of strategies during Mr. Blue's lessons for reading materials, answering questions, and giving directions. In a lesson observation about types of verbs, the administration asserted, "You presented the idea of using powerful language but did not provide the students with resources to access verbs and nouns. It is essential to design activities that help students to connect abstract concepts, for example, action verbs or imagery, to texts that they read and pieces that they write."

Observations from both administration and the new teacher consultant also noted the need for visual pairings with directions and instruction in order to assist students with following along during discussions and with completing learning activities. Another observer indicated that "Mr. Blue struggled with the middle school students and providing them with differentiated material." The new teacher consultant stated "I did not see Mr. Blue scaffold instruction on a regular basis." Despite showing an understanding of scaffolding in the survey, Mr. Blue was not observed applying this knowledge in his instruction. When asked to rate Mr. Blue's skill at scaffolding after the training sessions as beginning, intermediate or advanced, both administration and new teacher consultant rated Mr. Blue as beginner.

Mr. Green. In his response to the open-ended questionnaire about Scaffolding, Mr. Green described scaffolding a lesson as using the knowledge and capabilities of his students as a baseline for planning and formative assessment. Using data gathered from assessments, he stated, "I would ask questions or have students complete activities on an appropriate Bloom's Taxonomy level. After the students can answer the questions or complete the activities, I would begin to build on the lesson by asking higher level Bloom's questions to answer questions with

more depth and deeper understanding.” He noted the importance for students to be guided through the lesson working toward the lesson objective.

To scaffold learning groups during a lesson, Mr. Green places himself as facilitator: “I would arrange my student groups based on a pre-assessment or an on-going formative assessment. I would scaffold my groups differently based on their prior knowledge and background information. I would ask the group with the least amount of prior knowledge questions that would focus on the knowledge and understanding of the topic. I would ask the middle group questions that focus more on application and analysis of the topic. Finally, I would ask the higher-level groups questions that focus on synthesis and evaluation of the topic.” As facilitator, Mr. Green stated that he would circulate the room to assist students and use varying levels of questioning to check for understanding and to create rigor within the lesson and provide scaffolding as needed.

Benefits that Mr. Green notes for using scaffolding in a lesson are that “teachers are able to help meet the individual academic needs of the students. Scaffolding allows for students to answer questions to build the confidence to take on more challenging questions.” He further described that scaffolding is a “way of giving students rungs on a ladder in order for them to climb to the top. This provides a more fluid learning experience for students, without as many gaps or misconceptions.” Mr. Green stated that the presentation of the concept was a new way of looking at scaffolding and rated his level as advanced.

Observations by school administration and new teacher consultant note that Mr. Green grew in his use of scaffolding when delivering lessons to students; however, with a greater use in the area of Math. The administration noted that in Math, Mr. Green “allowed students to answer the questions that they chose, through word problems etc.” Mr. Green provided his students with

hands on activities and effectively used cooperative learning groups as were taught during the professional development session. One administrative observation stated, “the learning activity was differentiated and allowed the students to choose the medium that they felt the most comfortable with to present it to the class. The block and activity that was observed demonstrated best practices, differentiated material, and a strong awareness of the needs of the students in the class.” The new teacher consultant commented that Mr. Green did an excellent job of clarifying misconceptions of students while circulating the room and praised him for using the modeled approach for scaffolding that was learned in the training session. “Mr. Green would have an entrance pass for students to complete on the topic of the day as a warm up. After going over that information, he would review the homework on the same topic, then do some direct instruction followed by guided practice.”

Review of observation documents show that Mr. Green continually scaffolded his learning activities for different groups based on their needs to provide them with appropriately challenging instruction during the block period. Throughout the course of the study, Mr. Green was able to refine his skill of scaffolding by implementing new techniques such as color-coding materials for groups and differentiating through process, product, and content. Administration noted that Mr. Green was effectively using cooperative learning to scaffold learning experiences for students. When asked to rate Mr. Green’s skill in scaffolding after the training session as beginning, intermediate or advanced, administration rated him as intermediate and the new teacher consultant rated Mr. Green as advanced.

Ms. Orange. In her response to the open-ended questionnaire on Scaffolding, Ms. Orange described scaffolding a lesson as “guiding students in what they know then placing them into groups based on what they understand and what they need more help with understanding.”

To scaffold groups during a lesson, Ms. Orange indicated that she would collect data during instruction with the use of an exit pass either the day before or during a lesson and then split them into heterogeneous or homogeneous groups, depending on the activity, accordingly. “After giving instruction, splitting up into groups and then from there working with the individual groups.” Ms. Orange acknowledged that scaffolding a lesson “assures that everyone is meeting the expectations” as a benefit to instruction. After attending this lesson, Ms. Orange stated the presentation of the concept was a new way of looking at scaffolding and rated her level as intermediate.

Observations by administration, new teacher consultant, technology coordinator, and CIRT, all show that Ms. Orange grew in her use of scaffolding in her instruction and consistently implemented it throughout the year. One observation prior to the training noted that Ms. Orange gave a Power Point presentation that was very rich in information for which students were asked to answer questions and take notes on a separate piece of paper. To scaffold this type of learning activity, the suggestion was made to give students hard copies to provide them access to the information at a later date. An observation conducted after the training commended Ms. Orange for her implementation of the suggestion, as well as preparedness and differentiation of materials. Additionally, Ms. Orange was praised for her ability to quickly assess and guide the students to an understanding and then work with each group to clarify information, demonstrating her growth in the ability to scaffold a lesson.

Further observations by administration and new teacher consultant over the course of the year evidenced Ms. Orange’s growing skill at scaffolding instruction. The new teacher consultant noted that during her lessons, Ms. Orange would incorporate the concepts learned during training. “Ms Orange would model a skill on the board, have the students practice with a

partner, and then do independent practice.” Other observations by school administration noted that in Family and Consumer Science (FACS), Ms. Orange frequently used scaffolding with her groups and presentation. In science, Ms. Orange worked extensively with content vocabulary and scaffolded articles and reading materials for the students. “Lessons were broken into parts with each building on the other.” In an interview, the CIRT stated that Ms. Orange “builds her lessons so that students understand from concrete to abstract.” Additionally, the CIRT indicated that Ms. Orange consistently used group work to facilitate her lessons showing that her definition was applied in her practice. The technology coordinator praised Ms. Orange for using technology to facilitate group work, giving all students access to the material while meeting the unique needs of the individual students in her class. When asked to rate Ms. Orange’s skill in scaffolding after the training session as beginning, intermediate or advanced, both administration and new teacher consultant rated Ms. Orange as intermediate.

Formative Assessment

Many studies have attempted to define the main contributing factor to student success in the classroom. Numerous answers have been proposed; however, an effective teacher continues to be the most powerful variable (Marzano, 2006). However, the assessment tools that the teacher uses contribute greatly to the success of both the teacher and the students. “Major reviews of the research on the effects of classroom assessment indicate that it might be one of the most powerful weapons in a teacher’s arsenal” (Marzano, 2006, p.2). In *This We Believe*, the National Middle School Association notes the need for varied assessments and the importance of continuous, authentic, and appropriate assessment measures, that provide evidence of student learning (Erb, 2001). NMSA further believes that ongoing assessment both advances and measures learning. “Formative assessment is the most useful assessment teachers can provide for

students and for their own teaching decisions” (Wormeli, 2006, p.200). An important part of delivering developmentally appropriate instruction, and effectively using the block period, is incorporating assessment techniques that provide the teacher with information and data to guide the lesson. To help the cohort members develop these important skills, they attended a professional development session focused on assessment, with specific attention paid to formative assessment.

The Formative Assessment learning goal was designed for cohort members to be able to use formative assessment as a tool to gather information to guide instruction and plan for future lessons. Throughout the session, the presenter modeled various types of formative assessment to help the cohort members see and understand the concepts presented: entrance ticket, use of thumbs up and thumbs down when questioning, use a finger rating scale of 1-10 to check for understanding, and exit ticket. This provided the cohort members with several strategies, which they could quickly and easily incorporate into their classrooms. The session began with an Entrance Ticket that asked teachers to define formative assessment, which was then used to guide the presentation. To assess this learning goal, cohort members were given a six point formative assessment using the learning management system. The first four questions of the assessment were true/false and multiple-choice questions directly related to the information that was presented in the professional development session. The questions were as follows:

1. True/False - Formative and Summative assessment are essentially the same thing.
2. True/False - Formative assessment involves lengthy extended responses through which the teacher can give immediate feedback to the students.
3. True/False - Formative assessment should always be used when calculating a student’s grade.

4. Which of the following is not a form of formative assessment?
- a. Questioning during a lesson
 - b. Short quizzes
 - c. Hands raised to check for understanding
 - d. Unit test from book
 - e. Entrance Ticket

The last two questions of the assessment were extended response questions designed to assess understanding of material presented and have teachers explain how they would apply what they learned in their classrooms.

- In your own words, please describe the difference between Formative and Summative Assessment
- In your own words, please describe the process you use in order to determine what type of assessment you will use in order to gauge student learning.

Mr. Blue. When responding to the first part of the questions on Formative Assessment, Mr. Blue correctly answered four out of four questions. When describing formative assessment in his own words, Mr. Blue asserted that it “is designed to test development of understanding and to measure progress toward an end goal.” To gauge student learning in his classroom, Mr. Blue cited examples of questioning, quizzes and revisions, and short free writing as examples of formative assessments that he uses in his classroom. Furthermore, Mr. Blue noted that formative assessment should not be used to calculate a grade. Rather, that the grade should be based on the attainment of the end goal.

Early observations made by school administration note that Mr. Blue did not consistently assess learning activities. An observation conducted prior to the training noted that Mr. Blue

was conducting a grammar lesson on verbs but “there was no assessment demonstrated for this activity.” In the same observation, students were given a worksheet to assess verbs; however it was observed that students were conversing with each other, leading the observer to feel that this was not an accurate assessment that Mr. Blue could use to assess understanding of the concept. School administration noted that Mr. Blue frequently had students use “a scrap sheet of paper” to respond to questions that were asked during a lesson that did not assess any particular objective or learning activity that was being observed.

Observations made by school administration after this training, note an improvement in assessment techniques. “Mr. Blue used a variety of formative assessments throughout this lesson to assess student understanding and progress.” For example, Mr. Blue used thumbs up if you agree, or raise your hand if you agree, to assess students’ understanding when asking questions as was modeled in the training. Mr. Blue also had students complete class work, which he would review during the lesson to check for understanding. One observation noted that Mr. Blue “used a pre-test to assess for understanding of a concept.” This pre-test was then used to focus instruction throughout the lesson. An observation conducted by the principal researcher in late spring noted the use of an Entrance Ticket during a Social Studies lesson to gather information and understanding of the concept presented from the previous lesson, and to assist with the agenda for the day’s lesson.

Figure 7 represents a comparison of perceptions of growth between Mr. Blue, administration, new teacher consultant, and CIRT, based on the Entrance/Exit ticket data from beginning and end of this study as it relates to learning and implementing multiple styles of assessment to gather data, plan lessons, and enhance instruction.

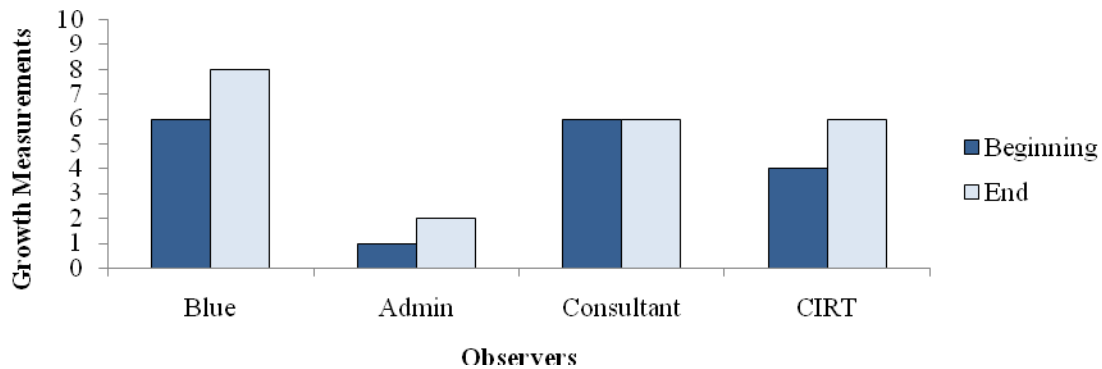


Figure 7. Comparisons of Perceived Growth in Assessment Practices – Mr. Blue

Mr. Green. When responding to the first part of the questions on Formative Assessment, Mr. Green correctly answered four out of four questions. When describing formative assessment in his own words, Mr. Green stated that formative assessments “serve as an ongoing process of data collection in the classroom. Formative assessments are used to gather information very quickly so that teachers can modify their current or future lesson plan to accommodate to their students’ needs. Some examples of formative assessments that teachers use to check for understanding are exit passes, warm-up questions, questioning during a lesson and feedback questions from students after learning concepts.” When referring to his instruction practices, Mr. Green stated, “In my classroom, I use several types of assessment. Regardless of my subject or lesson, I always use at least three different formative assessments every day when I teach. I start each day with a warm-up question to either check for understanding from the previous day, or to introduce a new topic or concept to my students. I usually end each class with an exit pass that will check for learning and understanding of the lesson for that day.” To further indicate how he uses assessment to provide developmentally appropriate instruction, Mr. Green described a tiered process for assessments based on the needs of his students. Mr. Green explained that student ability levels determine how he differentiates his assessments. He

considers “giving a test or quiz to some students in the form of short answer or essay questions, but may give an assessment to others in the form of multiple choice questions.” Mr. Green concluded his reflection by saying that “the ultimate goal of an assessment is to gather data to analyze student learning and understanding. To ensure learning, I like to assign my assessments based on the academic needs of my students.”

Observations by school administration and new teacher consultant noted a high level of varied instructional practices guided by formative assessment practices that were taught during the training. Review of all observation documents show that Mr. Green “continually monitors for understanding and progress” through assessment. In his classroom, Mr. Green “uses formative assessments such as exit surveys, questioning techniques, projects, writing, and pre-testing. He also conferences frequently with students.” When facilitating learning activities in his classroom, Mr. Green “draws on prior knowledge and individually asks students to explain their strategies, allowing him to see which students need more individual support.” One math class observation completed by school administration illustrated how Mr. Green used “prompting techniques to facilitate connections and predictions. He provided students with guided discovery activities for them to use to find pi.” In interviews, school administration, new teacher consultant, and technology coordinator all praised Mr. Green for his use of varied types of formative assessment to gather data and guide his lessons to provide his students with developmentally appropriate instruction.

As Mr. Green become more comfortable with assessment, he began allowing students, most specifically English Language Learners, to use alternative assessments like drawing or acting out, to respond to questions and assess understanding of content. Mr. Green also began modifying tests to eliminate abstract concepts to accommodate students with various

instructional needs. Mr. Green used games to assess students and create a fun learning atmosphere. An unsolicited parent email praised Mr. Green’s efforts to keep middle school students motivated stating, “Mr. Green constantly creates games – sometimes with clever sports themes – that keep students involved and having fun in class.” Those who observed Mr. Green throughout the year described thoughtful assessment practices that expanded and grew throughout the year, allowing him to assess various skills from different students in multiple ways.

Figure 8 represents a comparison of perceptions of growth between Mr. Green, administration, new teacher consultant, and CIRT, based on the Entrance/Exit ticket data from beginning and end of this study as it relates to learning and implementing multiple styles of assessment to gather data, plan lessons, and enhance instruction.

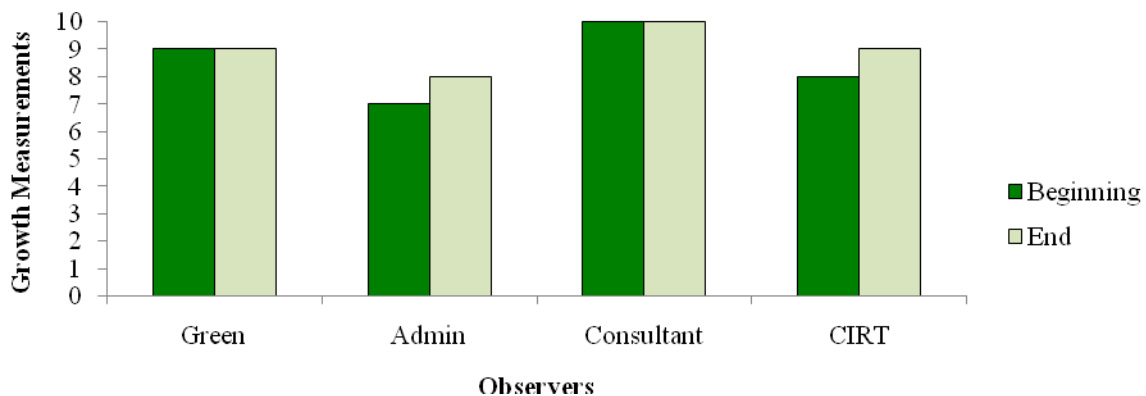


Figure 8. Comparisons of Perceived Growth in Assessment Practices – Mr. Green

Ms. Orange. When responding to the first part of the questions on Formative Assessment, Ms. Orange correctly answered three out of four questions. In her own words, Ms. Orange articulated that formative assessment occurs “during learning” and is used to “guide and redirect student learning and help clear up misconceptions.” She further defined formative assessment as a “checkpoint for student understanding to gather data for lesson planning.” Ms.

Orange noted that formative assessments help her with knowing whether to move forward with the lesson or revisit a given topic. In her classroom, Ms. Orange detailed the use of Bloom's Taxonomy to guide her decisions for assessment. "If it is a skill they are learning then the assessment is performance based. Mainly looking at what objectives we are covering and looking at the assessments that best fit that understanding. If it's a quick knowledge check, then assessment is going to be a couple of questions either as a checkpoint in a lesson or as an exit pass. However, if it is higher on Bloom's then I'm going for labs, hands-on learning that is coupled with analysis questions and conclusions. Checking for can they do it and do they understand the reasoning behind it and seeing if they themselves can make the connections to what we are learning in class."

Observations from school administration, new teacher consultant, and CIRT indicate growth in assessment, with a consistent and strong use of formative assessment in Ms. Orange's classroom. An interview with the CIRT revealed that at the beginning of the year, Ms. Orange had difficulty with assessing the learning objectives because she was attempting "to cover too many concepts," and didn't allocate time to assess. After the training session and meeting with the CIRT and administrator, Ms. Orange was able to effectively incorporate the formative assessment tools learned during the training, as well as other suggestions from observers.

Observation documents demonstrate that Ms. Orange used a variety of formative assessments to "monitor understanding and progress." One observation from school administration complimented Ms. Orange for involving students in their own assessment noting that "asking students to self evaluate is a powerful tool to not only assess participation and product, but also as a way at the beginning of the activity to clearly state expectations and give the students responsibility for their own learning." Additionally, observations also note that Ms.

Orange displayed “the ability to quickly assess understanding and provide immediate reinforcement of concepts when necessary.” The CIRT described that over the course of the first quarter, Ms. Orange expanded her assessment techniques by “prioritizing the skills the students needed and using KWL’s to involve students and implementing pre-assessments.” The new teacher consultant noted that Ms. Orange would use exit passes to gather data and “refer to information learned from previous lessons as a starting point for what they were going to learn in the day’s lesson.” Administration, CIRT, and new teacher consultant all note that Ms. Orange grew in her use of assessment techniques and appropriately used formative assessment to activate prior knowledge and assess understanding throughout her lessons.

Figure 9 represents a comparison of perceptions of growth between Ms. Orange, administration, new teacher consultant, and CIRT, based on the Entrance/Exit ticket data from beginning and end of this study as it relates to learning and implementing multiple styles of assessment to gather data, plan lessons, and enhance instruction.

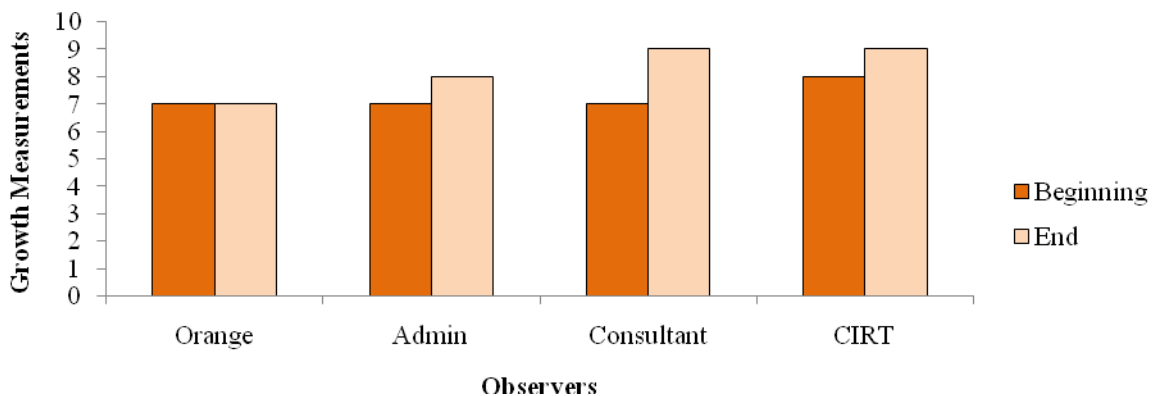


Figure 9. Comparisons of Perceived Growth in Assessment Practices – Ms. Orange

Questioning Technique

The National Middle School Association, International Baccalaureate Organization, and authors of *Understanding by Design* acknowledge that questions are essential to quality instruction. Through their various frameworks, each provides educators with a foundation that promotes inquiry based learning and assessment through various levels of questioning. “There must be those who can point out what is not yet noticed, not yet heard, people who can provoke the young to reach beyond where they are. To reach beyond is to realize that there exist a tradition and a community of knowers, of seekers, none of whom has the final answer to any questions, all of whom are engaged in a communal construction of knowledge” (Fosnot et al. 2005 p. 116). Walsh and Sattes (2005) attribute questioning to increased rigor, student engagement, student empowerment, advanced thinking, achievement, and scaffolding in the classroom. Given the importance of questioning in providing students with appropriate learning experiences, cohort members attended separate professional development sessions that taught the art of questioning and the use of Bloom’s Taxonomy to increase rigor through varying levels of questioning.

The Questioning Techniques learning goal was designed for cohort members to learn about varying levels of questioning and be able to apply different types of questioning based on Bloom’s taxonomy. Cohort members would also be able to understand the continuum of questioning as a form of assessment to gather data and apply it to lesson planning and delivering instruction that meets the needs of individual students.

During the first professional development session, cohort members participated in a discussion that encompassed their thoughts of “why ask questions?” Cohort members were then taught different types of questions: inference, interpretation, transfer, questions about

hypotheses, and reflective questions. Additionally, cohort members participated in an exercise that taught them to differentiate between effective and ineffective questions using specific words that close or open the questions. Examples were given and participants were asked to practice these questions with each other.

In the second training session, cohort members were taught how to use Bloom's Taxonomy to ask questions to check for understanding, create rigor, and refocus instruction. Using the "Quick Flip Questions for Critical Thinking" by Edupress, cohort members were asked to create questions based on content topics and simulated student responses. Cohort members practiced assessing background knowledge and refocusing student attention to the learning objective through questioning. During this training session, cohort members also read "Cues, Questions, and Advance Organizers" (Marzano, 2001) and participated in a group discussion on their current practices and how to implement the recommendations from this research. This learning goal was assessed through a discussion board question. After the professional development sessions, cohort members were asked to reflect on their questioning technique, and respond to the following question: Given what you learned about questions, please highlight how this will help you in your planning and assessment? This section of data reflects perceptions, observations, and growth following both professional development sessions.

Mr. Blue. When replying to the discussion board on how Questioning Technique would help in planning and assessment, Mr. Blue felt that the professional development helped him to better "observe the questions students ask to get a bead on their development level." While not the intent of the professional development, Mr. Blue noted that learning more about questions would assist him with observing the types of questions students ask and help him answer these questions: "Do students ask concrete questions when they read a book? Are they stumbling on

basic ideas when thinking about a historical moment? Or are they asking questions in class that attempt to synthesize the new with what has come before?” He asserted that using this type of “observational formative assessment would help ensure that he is able to provide each student with the scaffolding they need to develop and grow.” Additionally, Mr. Blue expressed that knowing what students ask would effect how he asked questions and of whom “to ensure that everyone has a chance to succeed publicly in the classroom.”

Initial observations made by school administration and new teacher consultant indicated that Mr. Blue used questioning as a form of assessment in his classroom; however, observed that students were most frequently asked to “explain and defend” their answers during whole group discussion. One observer noted that, “assessment of understanding is difficult when students are asked to write down things that strike them” from a story rather than providing students with a specific task for demonstrating understanding of concepts taught during the lesson. Another observation described a lecture/discussion where pictures were presented and students were asked to “tell me about the walls,” indicating the use of comprehension questions. Early observation documents detail the use of discussion questions as the primary format for instructional delivery. In reviewing documents, concerns were mentioned that “discussion style, without rules, could damage the classroom environment because, at this developmental stage, it is crucial for students to feel that their classrooms are safe, structured environments that encourage positive behaviors and allow them to safely take risks with their learning.”

In a classroom observation of Mr. Blue, the principal researcher recorded question types and wait time during a lesson activity on interpreting symbols from a novel they were currently reading in class to assess implementation of techniques learned during the professional development sessions. Throughout the duration of this activity, Mr. Blue asked comprehension,

analysis, and evaluation questions with no knowledge questions asked to check for background knowledge. When asking evaluation questions, it was observed that no wait time was given for students and the questions appeared to be rhetorical in nature. In a discussion that followed this observation, Mr. Blue was presented with the information. He indicated that he likes to ask “big questions to get the students thinking about the topic at hand.” Mr. Blue also described the use of “big questions” in his classroom to provoke student thought and preferred to post them in the room to keep the students thinking. Mr. Blue was encouraged to increase wait time and allow students to answer the questions he was asking. A later observation conducted by the principal researcher showed that after the training and discussions, Mr. Blue increased his wait time and amount of concrete questions that were asked during the lesson, allowing students to fully participate and access the class discussion and material. Over the course of this study, observations from administration noted that Mr. Blue began asking more purposeful and targeted questions to assess learning and gauge student understanding; however he was encouraged to continue working on varying the levels of Bloom’s used in his classroom.

Mr. Green. After attending the sessions on Questioning Techniques, Mr. Green responded to the discussion board titling his entry “Questioning is Critical.” In his response, Mr. Green noted that attending the professional development session helped him to realize that he needed to “become more aware of the different types of questions that he asks in his classroom.” He indicated that he felt his level of questioning was appropriate to meet the needs of his students, but that he “didn’t actually know how many different types of Bloom’s level questions he asked on a daily basis.” Additionally, Mr. Green recognized the importance of asking varying levels of questions throughout lessons and made it a goal to be more conscious of the questions he asks during lessons.

Mr. Green was observed on two separate occasions, after the training sessions, to record the types of questions he used during instructional activities, which provided data for reflection and discussion as well as demonstrating growth in questioning technique. Table 3 details the question distribution from the first observation of Mr. Green’s science class conducted in the fall of 2008, over the course of 30 instructional minutes.

Table 3 Mr. Green Observation #1

Memory	Translation	Interpretation	Application	Analysis	Synthesis	Evaluation	Connections to Real Life	Curricular Connections
15	0	0	4	1	1	2	7	0

Table 4 details the question distribution from the second observation of Mr. Green’s science class conducted in the late spring of 2009, over the course of 30 instructional minutes.

Table 4 Mr. Green Observation #2

Memory	Translation	Interpretation	Application	Analysis	Synthesis	Evaluation	Connections to Real Life	Curricular Connections
8	7	8	2	4	1	1	5	2

Following these observations, the data from Table(s) 3 and 4 were presented to Mr. Green as recorded during the observations. Mr. Green was asked to review the data and share his perceptions/observations. Mr. Green noted the change in distribution from one observation to the next indicating his perceived growth in questioning technique. Mr. Green and the principal researcher discussed the difference in memory questions and the increase of translation, application, and analysis questions. Mr. Green expressed that the exercises completed in the training sessions helped him be more cognizant of the questions he was asking, and to which students, so that he could use questioning to engage all students in the lesson. “I really tried to

ask more questions of all students and make sure that what I was asking was related to the learning objective.” The principal researcher complimented Mr. Green on his growth and the ability to ask less memory questions and make more curricular connections. Mr. Green noted his growth in this area, but wanted to continue to “find places to implement higher order thinking questions into my lessons to improve instruction for all students.” This thoughtful and reflective approach continued to permeate Mr. Green’s classroom, and improvement throughout the year was noted in other classroom observations.

Furthermore, during these observations, it was noticed that Mr. Green provided students with appropriate wait time, however, typically called on students who raised their hands and were ready to answer. Through discussion, Mr. Green revealed that he “didn’t like to call on students who didn’t have their hands up, because he thought they didn’t know the answer.” Mr. Green was asked to think about why he called on students with hands up or down and how it related to student achievement. Mr. Green responded that, “it was a scaffolding technique that I use to help students be more successful in the classroom and build their self confidence.” The principal researcher and Mr. Green discussed the relationship between self-confidence and student achievement, noting the need for purposeful questioning to increase achievement for all students. Mr. Green was encouraged to create a system where calling on students would not be relative to their hands raised, but could still preserve the safe environment he created.

Observations made by school administration and new teacher consultant show that Mr. Green used a high level of questioning while demonstrating growth over the course of the professional development sessions. Early observations noted that questioning was used; however, the pacing left some students “confused as the questions for review went very quickly.” Later classroom observations indicated growth, revealing that Mr. Green “utilized questioning

both whole class and individually to assess for understanding of concepts.” Additionally, Mr. Green is praised for his questioning techniques and the variety of assessments he uses in this classroom to monitor understanding and progress.

Ms. Orange. After attending the sessions on Questioning Techniques, Ms. Orange responded to the discussion board describing that learning more about questions would help her with planning and assessment by asserting that her “questions need to be aligned with what is taught and match up with the main idea.” Ms. Orange indicated that the professional development reminded her to “always bring students back to the main ideas and get them thinking beyond just the surface.” Additionally, Ms. Orange highlighted that thinking about questioning technique helps her to “ensure that the questions she is delivering to her students gives room for thought and are open ended.” Ultimately, Ms. Orange felt that being cognizant of questioning would allow her to “help guide a learning environment that is effective and leaves room for students to bounce off understandings from each other and gain understanding from peer answers that they might not have received through the lesson.”

Classroom observations made by school administration, new teacher consultant, and CIRT all indicate a high level of questioning in Ms. Orange’s classroom throughout the course of this study, with continued growth and strength in presentation. The CIRT described Ms. Orange’s questioning as, “developmentally appropriate and strong. She really helps the students understand the material.” In her first classroom observation, during which Ms. Orange conducted a comparison between brand and store name items, she was provided with positive feedback, but presented with this reflection: In this lesson, “you did not elaborate on the difference in definitions/perceptions between store and name brands. These were important concepts that the entire taste test activity was based on. How could you have activated prior

knowledge about store/name brand?” An interview with the observer showed that Ms. Orange was receptive to the feedback and willing to implement new questioning strategies to activate prior knowledge and assess understanding. During the training sessions, Ms. Orange was an active participant, continually contributing her knowledge of questioning, and volunteering to give her input. During the redirection activity, Mr. Orange was able to take off the wall student comments, and turn them into meaningful questions that related back to the learning objective.

Observation documents, after the training sessions, include multiple references to the use of questioning of individual students and questions to facilitate group work. Furthermore, Ms. Orange is praised for her ability to “probe students and quickly assess their understanding and provide immediate reinforcement of concepts when necessary.” The new teacher consultant characterized Ms. Orange’s questioning technique as “continually activating prior knowledge for her students and helping them make connections to their learning.” Her growth and strength in questioning technique is best described by school administration during an unscheduled observation: “Ms. Orange demonstrated strong questioning skills that allowed students to take risks when answering her questions, for instance, “let’s build off this answer.”

At the conclusion of this study, exit interviews were held with observing staff. Each observer was asked to rate the subjects on their strength in questioning techniques and the use of Bloom’s taxonomy. Observers were asked to use a scale of one to ten, with ten indicating great strength in this area of professional practice. Figure 10 shows how each observer perceived each subject’s strength in the area of questioning after attending the professional development sessions and working with observing staff to implement strategies to effectively use questions to gather data and inform instruction.

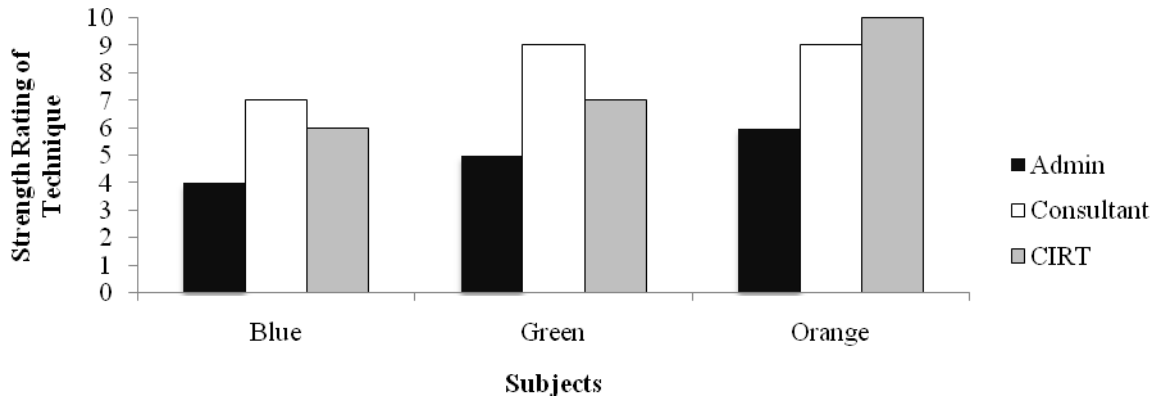


Figure 10. Bloom's Taxonomy Questioning Technique Ratings of Subjects from Observers

Action Research Cycle – Evaluating Action and Diagnosing the Problem

During cohort discussion groups, lesson planning was discussed in terms of utilizing newly acquired skills, but not as a subject for professional development because it was an assumed skill set. Cohort members seemed comfortable with the new pedagogical techniques, and were able to discuss how they were using them in their classrooms. However, after several professional development sessions and administrative observations, it was clear that the new teacher cohort needed to learn more about lesson planning. The action research cycle led this study to diagnose the problem of subjects not possessing the requisite skills needed to properly plan lessons for the block period.

Observers noted problems with sequencing of lessons, lack of instructional objectives, disorganized learning spaces, and difficulties with pacing of instruction. Observing staff also felt that key components of effective lesson planning, such as clearly stated and posted learning objectives, instructional activities that are connected to the learning objective and effective use of the block period, were not evident in the classroom necessitating a change in the professional development plan. Discussions held with new teacher consultant, administration, CIRTs, and the new teacher cohort, indicated that state of disequilibrium for the new teachers was very high, and

the overwhelming nature of the first year had taken over. Diagnosing this problem led the professional development plan to provide in-depth training on effective lesson planning for block periods in order to deliver developmentally appropriate instruction for middle school students.

Lesson Planning

To deliver developmentally appropriate instruction during block periods, teachers must carefully plan lessons that utilize time effectively and meet the needs of their students. The longer instructional periods allow teachers to use innovative teaching practices, and build better relationships with students while having fewer disruptions to the period (Wormeli, 2001, Hackmann, 2004). “Effective planning is essential for effective block schedule instruction” (Wormeli, 2001 p. 103). Regardless of the tools and resources available, teachers must begin by investing the necessary time to create lessons that will be meaningful to student learning and accessible for all students. This type of planning requires a deep knowledge of content mixed with a range of pedagogical techniques (Danielson, 2007). Based on the work of Danielson (2007) and Wiggins & McTighe (2004) Lesson Planning sessions were facilitated by school administrators, modeling both direct instruction and constructivist teaching through the Understanding by Design framework.

Using the UbD framework, the learning goal for Lesson Planning was designed for new teachers to be able to understand the key components to designing a lesson plan to engage students and promote academic achievement. Cohort members participated in three separate sessions that addressed Danielson’s (2007) first domain of professional practice “Planning and Preparation.” Components taught over these sessions were:

1. Demonstrating Knowledge of Content and Pedagogy
2. Demonstrating Knowledge of Students

3. Setting Instructional Outcomes
4. Demonstrating Knowledge of Resources
5. Designing Coherent Instruction
6. Designing Student Assessments.

To facilitate these sessions, school administration provided each cohort member with a Cornell Notes sheet that helped organize the information, modeled writing a learning objective, taught a note taking technique, and provided space for summary, reflection, and analysis.

Throughout these training sessions, administration modeled techniques for introducing and writing learning objectives, how to gather data during instruction through questioning and formative assessment, and how to connect activities to each other while being tied back to the learning objective. Cohort members discussed effective use of time with administration, and provided insight and opinions about how to design coherent instruction. Administrators provided cohort members with recommendations on how to structure the block period to help them deliver developmentally appropriate instruction while keeping students engaged in the lesson.

In the same way, Administration stressed the need to scaffold the lesson through the use of warm up, direct instruction, guided practice, hands on application, independent practice, and assessment of the objective. The fluid nature of lesson pacing was stressed, with special attention paid to ensuring the activities were related to each other, built off of one another, and all tied to the instructional objective. To assess this learning goal, cohort members were asked to complete a reflective questionnaire and participate in a discussion board responding to the following prompt: As you reflect on lesson planning, think about the processes you use when planning lessons, and describe how you achieve your end result.

Mr. Blue. After attending the sessions on Lesson Planning, Mr. Blue responded to the discussion board stating “I have worked this year to do a better job of being less spontaneous in the classroom, and planning more deliberately. I usually have a pretty good roadmap of what I'm trying to do in class, and how I want to get there, but in the past I've had a habit of getting off into tangents. These are usually worthwhile and interesting, and they can work in a high school classroom, but I have had to plan to avoid them in the 6th grade classroom setting (especially during the first half of the year), since they often confused my more concrete thinkers and ended up creating chaos the way butterflies make hurricanes.” Mr. Blue felt that learning more about lesson planning helped him “to take time to think about probable individual student reactions to various elements of a lesson plan. Doing this explicitly for a time has helped me to be able to better intuit these factors on the fly and keep from sabotaging my lesson with an interesting but confounding metaphor or comparison.” Mr. Blue did not complete the reflective questionnaire.

Early observations made by school administration and new teacher consultant, indicated that Mr. Blue had creative lessons, however the necessary structure and connection to the learning objective did not always seem apparent. “I observed 60 minutes of a 90 minute language arts block. During this time, students were not observed doing any in-depth reading or extended writing. The class was structured in a discussion style with Mr. Blue leading during the grammar activity, 25 minutes was spent acting out verbs in front of the class, and it ended with an oral comprehension activity with an abstract objective that the students clearly struggled to grasp. During this language arts block, there was very minimal visual instruction, few opportunities for application of knowledge, and limited assessment of understanding.” A meeting conducted with Mr. Blue after this observation, and between lesson planning professional development sessions, showed that his lesson planning style was made up of

questions that would guide discussions in the class. Observations through the first semester show that Mr. Blue frequently used a whole group discussion model with little to no visuals for the students to have access to and objectives were not always clear.

Given these circumstances, school administrators and new teacher consultant, worked specifically with Mr. Blue to structure the learning environment and implement more careful planning to provide more appropriate pedagogy for middle school students during the block period. To organize the learning space, Mr. Blue was taught how to use the classroom space to post objectives, homework, agenda, and upcoming assessments to provide students with visual reminders of the day's lesson. For lesson planning, Mr. Blue was guided through creating a comprehensive written lesson plan, based on Danielson's (2007) "Planning and Preparation" domain, that included objective writing, warm-up, learning activities, guided practice, assessment, and reflection. An observation following the professional development sessions and meetings with administration showed that Mr. Blue began implementing strategies that were taught during the sessions. "Mr. Blue had the front board sectioned off to provide a space to write the objectives, agenda, and homework/ongoing assignments. This is a significant improvement from the beginning of the year."

Over the course of this study, noted through the discussion board, Mr. Blue perceived growth in this area with the goal of "providing his students with the necessary concrete instruction to aid their understanding of material." Observations and interviews also showed growth in the area of providing a more structured lesson with clear learning objectives in order to provide students with appropriate instruction at their level. "There have been significant improvements in your instruction and classroom management. You appear to be more comfortable with the increased structure in your class. Your students have connected with the

text and you have fostered some very productive discussions.” Mr. Blue continued to grow in lesson planning, using Danielson’s (2007) domain to guide the lesson planning process to include objectives, learning activities, assessments, and reflection. Mr. Blue’s lesson planning format went from a string of questions to a thoughtful set of learning activities that were related to each other guided by the learning objective.

Mr. Green. In the reflective questionnaire about Lesson Planning, Mr. Green indicated that the professional development sessions “made him more aware of his pedagogy and how it can be used to differentiate lessons in order to meet the needs of the students.” He indicated a heightened awareness of putting students’ needs first and continually connecting assessments, objectives, and curriculum while planning lessons. “After participating in this activity, I have tried to remind myself to look at lesson planning from different angles. Not only do I try to think about how my lessons relate to the Standards of Learning and the curriculum, but I also try to think of how they relate to my summative assessments and my students’ learning styles. If anything, I am more aware of my pedagogy and how I can use my pedagogy to differentiate my lessons to meet my students’ needs.”

The greatest impact of this portion of the professional development for Mr. Green was the collaborative effort of the cohort to discuss lesson planning and brainstorm ideas of assessment. “My favorite part of the activity is when we all collaborated and thought of as many types of assessments as possible. Having everyone share their ideas on assessing student knowledge and understanding really opened my eyes to how many different types of assessments there are to measure student learning. In the future, I will try to implement as many different types of assessments as I can in my classes.” As an adult learner, he enjoyed the cooperative nature of the lesson and learning from his peers. He acknowledged a large benefit to sharing

ideas with colleagues and learning about different types of assessments. “I wrote down my ideas, I shared them with the group to get other perspectives and ideas on how to improve our lesson planning. When we were finished we were all able to reflect on our ideas and think of how we can implement what we learned into our own classrooms.”

When asked to respond about the lesson planning process in a discussion board, Mr. Green indicated using the Understanding by Design model to sequence his lesson planning by starting with the objectives and end in mind. “Whenever I plan a lesson I start by looking at the Standards of Learning (SOLs). By looking at the SOLs I can make appropriate objectives that I want my students to know and be able to do. After making my objectives, I make sure that they align with our school curriculum in our UbD format. After I have all of that information, I try to differentiate my lesson based on my students’ needs in the classroom.”

The next step of lesson planning for Mr. Green is to brainstorm ways to engage students. “I will also try to make my lesson interesting so that I will grab the students’ attention and keep them engaged. I really like to try and think of new ways to get my students to care about the topic or concept that the students are learning about.” Mr. Green also noted the need to “consider student learning styles and interests when planning lessons.” He discussed differentiation through process and product in order to provide students with developmentally appropriate instruction that would keep their interest during the block periods, and help them be able to apply information learned in new contexts.

Observations made by school administration and new teacher consultant show that Mr. Green consistently provided his students with carefully planned and creative lessons. In his first observation, Mr. Green created a Best Buy scenario where students were computing discounts and adding sales tax. The observer praised Mr. Green for the authentic lesson, however noted

some pacing and planning problems. “I recognize the need for a quick review of the problem because of the time constraints involved for the next activity, however, some students appeared confused during your review as you went very quickly. What could you have done differently to ensure that every student was following along during your review especially because it covered the skills involved for the following part of the lesson?” Mr. Green was given suggestions to improve this type of lesson to assist with pacing and effective use of time. “Time management was crucial for success in this activity, although students were able to do the task with varying quickness depending on their math skills.” The observer recommended breaking the activity into two parts allowing the students to strategize their shopping then having “them assess the sales tax, perhaps use calculators as “cash registers” to check their work, and then do a reflective activity (writing) to explain if their strategy was successful.”

Observations completed after the training sessions complimented Mr. Green’s efforts to plan and prepare lessons for his students that were thoughtful and authentic. “It is clearly evident that Mr. Green works very hard to provide his students with opportunities to engage in activities that help them explore and utilize the advanced math concepts they are studying this year. Mr. Green’s classroom is organized and stimulating. The objectives, agenda, and homework are posted. The students are familiar with the structure and routines in the class and this helps them to be self sufficient through the time.” Other observations note that Mr. Green “uses a variety of teaching styles throughout the class period to engage his students and guide them through discovery activities in which they can reflect on their learning and apply new concepts.” The new teacher consultant described Mr. Green’s lesson planning as appropriate and thoughtful. “I always felt (his) pedagogy and instructional methods were appropriate for middle school students. Mr. Green understood the minds and perspectives of middle school students and

tailored his lesson planning and interactions to meet their needs.” While lesson planning was a relative strength beginning the year, growth in planning, sequencing, and use of time during the block periods was noted in all observations. “Mr. Green has worked very hard this year to implement sound educational practices into his Science and math classroom. Mr. Green provides his students with meaningful and reflective activities that empower them to take charge of their learning. He has worked to develop a classroom routine and structure which helps to make transition periods less distracting and maximizes instruction.”

Ms. Orange. After attending the Lesson Planning sessions, Ms. Orange noted in the reflective questionnaire that the training helped her learn about “structuring your lesson plan to best teach students and allow for understanding and assessment for understanding (beyond just knowing.)” She felt the professional development activities would strengthen and enhance her lesson planning by helping her realize how essential questioning was to quality planning. “This helped me realize how important questioning is in your lessons that you plan. To really maximize the time you have with the students by engaging them in purposeful activities that are essentially your assessment.” She acknowledged the need to check for understanding during the lesson and continually refer back to the learning objective. “Having constant checks for understanding will allow students to stop and think about what they have been learning and check for their own understanding. If anything, this will help students clear up misconceptions through the constant guidance and facilitation of questioning what they are learning.”

When asked to reflect on and describe the lesson planning process through discussion board, Ms. Orange indicated, “For Science, I look at where they are heading and the big idea at hand. When creating a lesson plan for a new topic I plan what the main ideas the students will need to know at the end (SOLs). Then I plan for what hands-on labs will help reinforce the

understandings and where do I need to add in teacher led discussions.” When discussing Family Consumer Science (FACS) lesson plans, Ms. Orange described a similar process. “FACS-the skills, pretty much look at what skills need to be mastered. Look at the national standards and then going from there to plan how they are going to demonstrate these skills and at the same time are they going to demonstrate understanding of these skills.” Lessons would be wrapped up with exit tickets or some other form of assessment that would tie the activities back to the objective and provide Ms. Orange with data for the next lesson.

Observations made by school administration and new teacher consultant show that Ms. Orange was “always open to feedback about lesson planning and worked to implement new strategies.” Noted in observations was her “careful planning and ability to provide students with opportunities to be active participants in their learning.” In early observations, need for improvement was mentioned in regard to sequencing and transitioning between learning activities. “This part of the lesson seemed out of order with the students receiving directions for the taste test activity, but then being instructed to switch back to the PowerPoint. Time management is a struggle for most beginning teachers and you are certainly not alone. What can you implement into your classroom and lessons to regulate time for both yourself and your students especially during very involved group activities such as this one. I would suggest mapping out your lesson to ensure that the concepts and their presentations are sequential.” In another observation in Science, suggestions for lesson planning were also made to help keep students on task. “I would strongly suggest that you write down or script your lesson ahead of time, especially with activities that the students actively participate, to order and sequence it. It will help you to be clear about the objectives of the activity as you appeared to change your mind several times during it.”

After meeting with administration, new teacher consultant, and attending the training sessions, observation showed that she was willing to implement strategies learned in the training. “Ms. Orange is open to feedback and implements suggestions into her classroom wholeheartedly. She has worked hard to improve transition time between activities and has worked with individual students to support them.” Administration suggested scripting the lesson to keep track of sequencing and pacing. “Ms. Orange implemented this strategy and continues to use it.” A later observation stated, “Timing and pacing continue to be a minor issue” however, the observer noted that it was a significant improvement from previous observations.

Additionally, Ms. Orange was praised for the ability to “refine skills, implement strategies, and show growth in the area of lesson planning and delivery.” An interview with the CIRT indicated that while Ms. Orange struggled with the content at the beginning of the year, she was able to “quickly grasp onto the content, navigate the new material, and plan appropriately for instruction.” Ms. Orange demonstrated throughout the year that she understood the content and the learning of middle school students. Her pedagogy and instructional methods were appropriate for middle school students. A desire to continually grow and refine her teaching was a relative strength for Ms. Orange that “enabled her to receive feedback and implement strategies that would make her a stronger teacher.”

At the conclusion of this study, exit interviews were held with observing staff. Each observer was asked to rate the subjects on their strength in lesson planning. Observers were asked to use a scale of one to ten, with ten indicating very strong in this area of professional practice. Figure 11 shows how each observer perceived each subject’s strength in the area of lesson planning after attending the professional development sessions and working with

observing staff to implement strategies to effectively plan lessons for the block period and deliver developmentally appropriate instruction for middle school students.

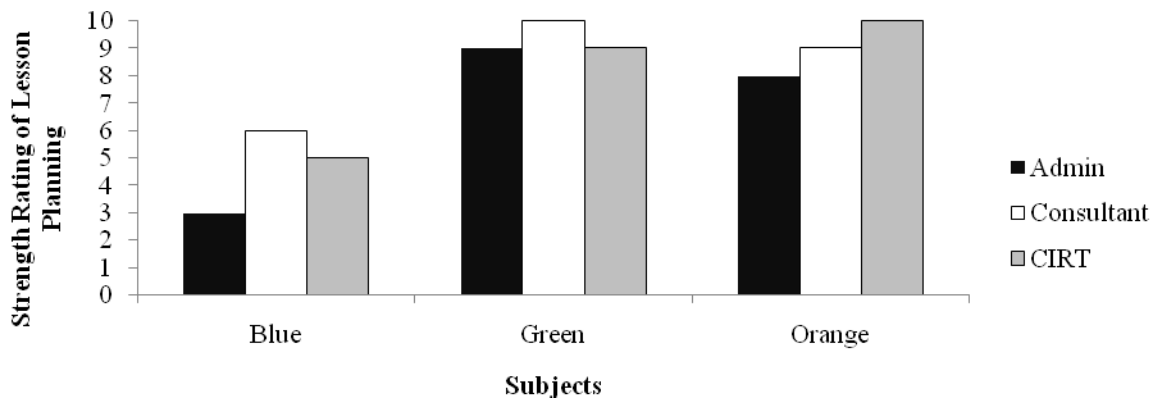


Figure 11. Lesson Planning Ratings of Subjects from Observers

Summary of Exit Ticket Perceptions

Piaget’s and Vygotsky’s writings and theories not only educate us about student learning, they can help guide us through adult learning as well. Piaget (1969,2000) theorized that children develop through the epistemological stages of sensorimotor through formal operations or abstract thinking. The ages and stages of Piaget’s theory of cognitive development also teach us that equilibration happens internally and externally as a person assimilates and accommodates. Vygotsky stressed the importance of culture and social learning, while scaffolding learning experiences to work within the zone of proximal development (Vygotsky,1978).

For adult learners this equates to learning new information, internalizing, reflecting, discussing, experimenting, and creating change based on their own experiences and new schema(ta). At the conclusion of this study, cohort members were asked to rate themselves on the same categories as they did in the Entrance Ticket to compare their perceptions of growth

over the course of the study. Figure 12 depicts the perceived growth and/or changes that each subject encountered throughout the duration of the study.

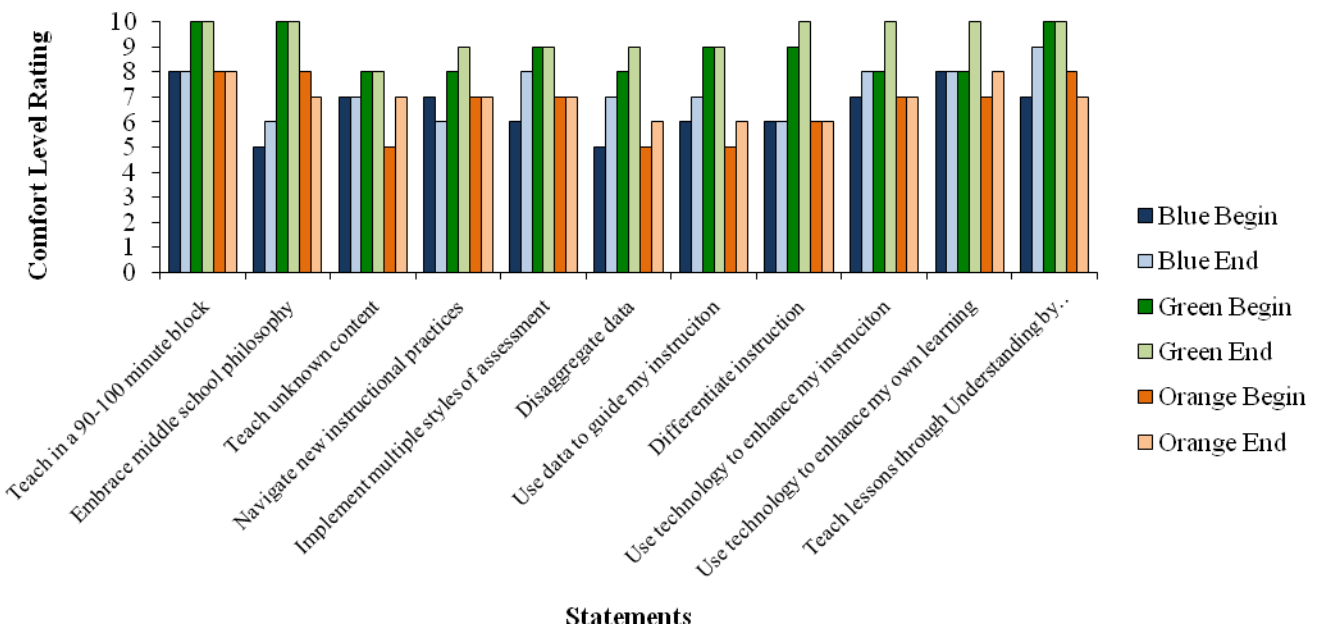


Figure 12. Subjects Perceptions of Individual Growth – Entrance Ticket to Exit Ticket

In the Exit Ticket survey each new teacher indicated a greater comfort level in at least four of the categories, with Mr. Blue showing the greatest amount of perceived growth on six out of eleven statements. Both Mr. Blue and Ms. Orange rated themselves lower in one and two categories respectively, indicating a lack of growth or a state of assimilation. Mr. Green indicated growth in five of the eleven areas and the other six remaining the same. The statement(s) the cohort members had in common of perceived growth were those that identified with using technology to enhance instruction and their own learning, and the disaggregation and use of data to guide instruction.

Mr. Blue. In his Exit Ticket, Mr. Blue perceived growth in 54% of the categories. While Mr. Blue felt that he grew in many areas, he indicated a decreased comfort level with the ability to navigate new instructional approaches. Mr. Blue did not indicate perceived growth in

teaching in the 90-100 minute block, teaching unknown content, differentiating instruction, and using technology to enhance his own learning. Review of summative evaluation reports and exit interviews with observing staff indicate that Mr. Blue made progress over the course of the year and at times was open to receiving feedback, but still had difficulty with understanding the young adolescent learner, effectively using the longer periods of instruction time, and scaffolding instruction.

Mr. Green. In his Exit Ticket, Mr. Green perceived growth in 45% of the categories with no areas of decreased comfort. At the beginning, Mr. Green rated himself above eight in all categories and indicated growth in five out of the eleven categories, showing the highest comfort with teaching in the 90-100 minute block, embracing middle school philosophy, differentiating instruction, and using technology to enhance instruction and his own learning. Observations made by school administration and new teacher consultant concur with Mr. Green's perceptions and note continued growth throughout the year and a willingness to receive feedback and implement new strategies.

Ms. Orange. In her Exit Ticket, Ms. Orange perceived growth in 36% of the categories with decreased comfort in embracing middle school philosophy and teaching lesson through Understanding by Design. Ms. Orange did not perceive growth in the areas of teaching in a 90-100 minute block, navigating new instructional approaches, implementing multiple styles of assessment, differentiating instruction, and using technology to enhance her instruction. Teaching unknown content was Ms. Orange's highest perception of growth going from a five to a seven at the end of the year. The initial discomfort is attributed to changing areas of concentration from Math and Science to Family and Consumer Science. An interview with the CIRT indicated that while Ms. Orange struggled with the content at the beginning of the year,

she was able to “quickly grasp onto the content, navigate the new material, and plan appropriately for instruction.”

Despite a statement of decline in comfort with embracing middle school philosophy, Ms. Orange is praised with “understanding minds and perspectives of middle school students and tailoring her lesson plans and interactions with the students to meet their needs.” Although Ms. Orange did not perceive a high level of growth, observers felt that she made tremendous growth over the course of this study and is commended because of her openness to “feedback and implements suggestions into her classroom wholeheartedly.” In their interviews, observers all noted a desire to improve, which ultimately rendered a significant amount of professional growth for Ms. Orange during this study.

Constructivism in the Classroom

This section of data is presented in descriptive narrative form to answer the remaining research question, beginning with each subject’s reflection of his/her use of constructivism in the classroom followed by observations from school administrators. These data helped not only answer the third research question, but also provided subjects with a tool to reflect on professional practice, completing the action research cycle. This activity reinforced the constructivist nature of this study by allowing subjects to share cooperatively through the discussion board, and promote metacognition. The remaining research question is:

3. To what extent did the cohort members implement the Constructivist teaching practices that were learned during the professional development sessions?

Constructivist Practices

As a concluding reflection on the professional development sessions in which cohort members participated, they were asked to reflect on, and write about, the constructivist practices

they learned and how they were being implemented in their classrooms. This reflection was completed through cohort discussion group and discussion board to promote social learning and group reflection. Cohort members were asked to respond to the following prompt: Of the constructivist practices you have learned, speak about how you are using them in your classroom.

Mr. Blue. In his response on the discussion board about constructivism in the classroom, Mr. Blue titled his response “I am a legitimate businessman, I’m in construction.” When describing how he was using the practices in his classroom, Mr. Blue used a metaphor to detail his pedagogy: “One thing I’ve tried to do all year is find a variety of approaches to each topic we’ve studied in my classroom, so that students can see the subject from a variety of angles. I try to get them to see each part of the elephant, and then describe the whole thing by synthesizing those parts to form an idea of the elephant. Rather than telling my students how each piece works, I want them to fit the pieces together for themselves. This sometimes works pretty well.”

Observations from administration described Mr. Blue’s use of the constructivist practices learned throughout the course of this study in a variety of ways. “The United Streaming activity that you provided to introduce the students to WWII was very interactive. The video was informative and interesting and the students were observed to be very involved in watching and answering questions. Asking the students to answer questions while watching video is a great strategy for keeping students engaged.” The CIRT noted, “Mr. Blue always did a good job activating prior knowledge through the use of open ended questions. He used a lot of cooperative learning groups and often asked students to interpret information to help them develop an understanding of impact on the greater society.” The principal researcher frequently observed Mr. Blue helping students make connections from their own life to curriculum content

and using authentic assessments. For example, Mr. Blue had the students complete a research project where they became muckrakers in current day society and had to present their topic to expose a current problem or scandal in today's society.

A summative evaluation report stated, "Mr. Blue has studied and utilized practices in his classroom such as project based learning, technology integration, and smaller grouping for cooperative learning. Mr. Blue has been receiving professional development this year and I encourage him to continue to apply the strategies and practices that he has been studying into his classroom." Lastly, Mr. Blue was applauded for his attention to empowering and engaging his students as learners. "You are clearly enthusiastic about providing your students with opportunities to express themselves as individuals and that has had a wonderful effect on many of your students."

Mr. Green. In his response to the discussion board about using constructivism in the classroom, Mr. Green stated, "As an advocate of constructivism in the classroom, I use constructivist practices every day in both my math and science classes. In both of my classes I have my tables arranged in groups of four students. I use these groups to encourage the sharing of ideas, cooperative learning and collaborative learning. In my math class I often do "Think-Pair-Share" activities where I have students first work on a problem set individually, pair with a partner to compare answers and finally share with their group and the rest of the class. This allows for students to share their different methods of solving problems and also to explain to other students how they got their answer. This involves students teaching students, which is a constructivist activity."

Additionally, Mr. Green illustrated his use of differentiation of product and process while encouraging cooperative learning: "I also assign my groups of students tasks to complete using

different roles. For example, I may assign a project that requires my groups of students to sell a product as a team of a sales rep, graphic designer, community advisor and manufacturer. These students could choose to either make a brochure, a PowerPoint presentation, a children's book or make a model or diagram within their group. Each student would have a different role in his/her team to work together to try to sell the product. A possible product could be measuring instruments such as a compass or a protractor, etc.” Lastly, Mr. Green illustrated his use of constructivism when he described his role: “In a student-centered approach to constructivist practice, the ultimate goal is for me to be a facilitator in the classroom. This will allow the students to learn from each other and use inquiry to problem solve in a collaborative environment.”

Observations by school administration described Mr. Green’s class as interactive, creative, and cooperative. “Mr. Green effectively used a variety of assessments in his classroom while I was observing him. He created real world activities that students could easily apply to their own lives. He continually encouraged them to draw on prior knowledge and individually asked them to explain their strategies.” In a lesson observation where Mr. Green used scaffolding to group students for a math activity, the administration remarked, “This activity was a great use of cooperative learning. This was a very strong activity and the students appeared to really enjoy it. The activity was differentiated and allowed the students to choose the medium that they felt the most comfortable with to present it to the class. Moreover, the students were given the option of working individually or with pairs. This was an effective way of providing students the opportunity to work alone if they felt more comfortable.”

A summative evaluation report noted, “Mr. Green has worked very hard this year to implement sound educational practices into his science and math classroom. He has utilized best

practices in his classroom such as project based learning, technology , and small groupings. Mr. Green provides his students with meaningful and reflective activities that empower them to take charge of their learning. His students are observed to be excited about the activities that he plans for them.”

Ms. Orange. In her response to the discussion board about constructivism in the classroom titled “Engaging, Exploring and Explaining,” Ms. Orange described how she was using constructivist practices in her classroom to facilitate student learning and exploration. “I find that a lot of times having my students go and explore a new topic helps, because then I am aware of what they already know and what they don't. This helps for grouping or getting peer teachers circulating through the class. Also, having the student engaged in an activity where they have not learned the scientific terms or the "right way" of doing it, helps because they are able to relate their understanding back to activity or lab they just did. This helps me as a teacher go back and remind them of what they just did and then connect that to a new term or new information. When wrapping up a lesson it always helps, for me, to have my students describe to me what the main purpose was or what they felt they learned from the whole topic.” In addition to facilitating social learning, Ms. Orange described how she helps students create new schema(ta) through disequilibrium: “Pretty much: I find that students learn best when they are thrown into something that's new to them and have to do hands-on learning to figure out what they are learning on their own.” Ms. Orange concluded her statement with the acknowledgement that this happens with “teacher guidance and explanations at the end.”

Observations made by school administration note that Ms. Orange consistently used cooperative learning facilitated by technology. Ms. Orange created authentic assessments that appealed to middle school students such as the “Iron Chef” cook off and a unit of multicultural

recipe making. Administration noted that while providing interactive lessons, Ms. Orange also empowered her students and promoted social learning. “Ms. Orange’s first activity involved the groups of students grading themselves on a previous project using a rubric. The students were analyzing their participation and end product (a slider). The conversations from each group were meaningful, and the students took the task seriously.” Other observation reports note “Ms. Orange prepares student centered activities for her students and acts in the role of facilitator, making the students responsible for their learning. The students respect her as their leader and feel safe to take risks with their learning in her classroom.”

In her summative evaluation report, Ms. Orange is praised for maintaining a classroom that is “chaotic in a controlled, appealing way where technology is seamlessly integrated and available in the room.” Furthermore, Ms. Orange is credited for implementing sound educational practices, such as technology integration, hands on learning, project based assessment, and multicultural lessons into her FACS and science classrooms.

Summary

Chapter 4 presented the results in a descriptive narrative format to detail the unique experience of each subject as they participated in a constructivist professional development program designed to assist them with professional growth and pedagogy. Data were gathered from questionnaires, surveys, assessments and quizzes, discussion groups, interviews, field notes, and documents. Through these data, the principal researcher was able to develop growth themes and areas in need of improvement for each subject. Furthermore, the data presented demonstrated how different subjects responded to the social learning environment. Using an Entrance Ticket and Exit Ticket gave specific measure to each subject’s perceived growth over the course of the study.

These data provided the principal researcher with valuable insight to teacher perceptions and laid the foundation for future professional development within the organization.

Additionally, these data presented the unique thoughts of each new teacher to their comfort level with professional growth and elements of instruction. Perceptions are an important part of adult learning and helping cohort members create different schema(ta) to improve their professional practice was a key to helping them be successful with effectively utilizing the block period to deliver developmentally appropriate instruction for middle school students.

CHAPTER 5

Discussion

The purpose of this action research study was to facilitate the professional growth of new teachers by providing job embedded professional development opportunities that were grounded in constructivist practices and demonstrated to be effective with young adolescent learners while teaching in a block period. The theoretical framework for this action research study, based on Piaget and Vygotsky, conceptualized how to assist new teachers with understanding child development, acquisition of learning, setting expectations, and structuring learning opportunities for all students to be successful.

Figure 13 represents the conceptualized idea of the constructivist model that was used to facilitate the growth of the new teachers.

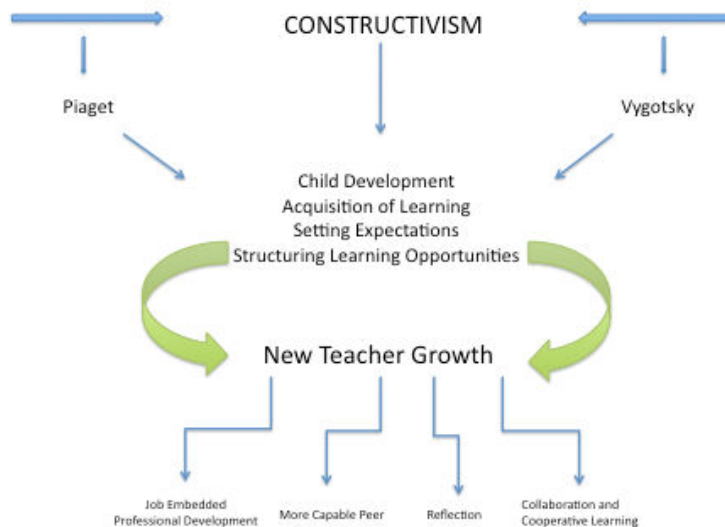


Figure 13. Conceptualized Adult Constructivist Professional Development Model

This study was conducted within the context of an on-going feasibility study and exploration period of the International Baccalaureate Middle Years Programme (MYP). Therefore, the pedagogical techniques of constructivism used for topics of professional development encompassed the MYP framework, beliefs, and areas of interaction. To create the preliminary professional development plan, research from Chapter 2 on block scheduling, constructivism, and professional development provided a framework for content and application. Based on the research for professional development from Chapter 2, the plan was designed to be on-going, job embedded, relevant, research based, and foster reflection. The following research questions guided this study and helped develop recommendations for further study.

1. To what extent did the subjects perceive that the professional development prepared them to deliver developmentally appropriate pedagogy for middle school students during a block period?
2. To what extent did the staff perceive that the pedagogy of the subjects improved as a result of the professional development sessions?
3. To what extent did the subjects implement the constructivist teaching practices that were learned during the professional development sessions?

These research questions were created to gauge the perceived growth of new teachers as they participated in professional development activities, and ascertain the level of implementation of new pedagogy techniques. Using these research questions, the principal researcher was able to facilitate the action research cycle while relying on the constructivist theoretical framework to assist teachers with assimilating, equilibrating, and accommodating to new pedagogy. The action research cycle helped to facilitate these constructivist stages of learning as the subjects participated in diagnosing problems, action planning, taking action, and

reflecting. As new material and teaching techniques were introduced, subjects planned for and implemented them into their classrooms, and were then asked to reflect on the effectiveness and impact on pedagogy. The cyclical nature of the action research cycle supported the adult learning by facilitating the maturation of stages and reinforcing reflection.

Research on professional development to promote adult learning suggests a social setting that fosters collaboration and a team approach (Darling-Hammond, 2005; Drago-Severson, 2004; Danielson, 2007; NMSA, 2006). These recommendations were encompassed through the constructivist nature of this study, which was influenced by Vygotsky's theory of social learning. During analysis of the data from this study, it became evident that two of the three subjects showed greater growth and implementation of the constructivist practices learned during professional development sessions and preferred the social setting to facilitate their own growth. In the same way, theoretical understandings and convictions of subjects may have influenced the acquisition of learning and implementation of strategies. The subjects who viewed their role as facilitator in the classroom and were more closely connected to the Vygotskyian learning style, were more open to learning and collaborating to improve their learning and that of their students.

Results of this action research study combine several aspects of school reform that can effectively help middle school programs with implementing block scheduling, navigating new programs and pedagogy, providing meaningful professional development for beginning teachers, and creating a practice for reflective learning. This study provides a new contribution to the field of literature through the combination of middle school block scheduling and the use of constructivism with young adolescent learners, completed within the context of the Middle Years Programme exploration period. Furthermore, this study provides continued contributions to the body of literature surrounding school professional development programs. This chapter sets forth

the key findings of the study, discusses implications for practice in the field of education, and makes recommendations for further study.

Key Findings

Job-embedded professional development. A comprehensive review of professional development literature suggested that training for teachers should be research based, job-embedded, relevant, timely, and applicable (NMSA, 1981; NSDC, 1997; NASSP, 2006; Wiggins & McTighe, 2007). Based on recommendations from these associations and leading authors of school improvement, the professional development utilized members of the X Middle School organization to teach the sessions including the previously mentioned suggestions. To foster the learning community, persons chosen to facilitate the professional development were members of the school staff with expertise in the specific topic. This constructivist professional development model reinforced the use of the more capable peer, and allowed on-going access for further clarification or information from topic presenters. Moreover, the use of more capable peers was a strength of the study because it utilized teacher leaders and provided them with roles for instructional leadership. Interviews held with professional development facilitators revealed that subjects continued to seek their guidance and assistance as they continued to learn and grow in their pedagogy. The facilitators described a willingness of subjects to implement other strategies they taught and a genuine feeling of productive collaboration.

Reflective practice. Wiggins & McTighe (2007) maintain that teachers should engage in professional readings and discussions as well as reflect on their own practices. This study used job-embedded time to meet, learn, and discuss pedagogy techniques that were acquired during training sessions. A dedicated time within the school calendar provided certainty and consistency to the training and discussion sessions. Likewise, the time allotted for discussions

allowed the new teacher cohort to take part in their own learning. During discussions, information was shared, research based articles were read and discussed, and participants were provided a venue to share their insights, needs, and successes. A study completed by Becker (1999) revealed that teachers who engage in discussion with other teachers about pedagogy and content issues were 3 ½ times more likely to employ a strong “knowledge construction” than those who did not. Data from Chapter 4 demonstrated that the subjects enjoyed the time for collaboration and felt it had a great impact on their practice and growth. In reflective questionnaires, subjects articulated an appreciation for time to collaborate and share ideas with their colleagues, as well as brainstorm ideas to implement into their classrooms.

“Those who tout reflective practice as the most important aspect of professional development are right” (Collay, 1998 p.62). Collay (1998) acknowledged that reflection comes in varying forms and has a large influence on changing practice. Throughout this study, participants were encouraged to ask questions relative to their own experiences in an effort to expand the knowledge base of the group. After professional development sessions, participants were asked to complete reflective questionnaires and share their insights and thoughts. Additionally, participants were asked to reflect on their sessions and implementation of strategies, and share in the cohort discussion groups and on discussion boards. These discussions paved the way for the study and provided a tool for needs assessment. Data gathered from discussions helped to revise the professional development plan and insert topics of relevance and need.

Authentic context. Sagor (1999) stresses the importance of conducting action research in our own context because of the vast differences between students, teachers, and organizations as a whole. This study used the action research cycle to continually evaluate the program,

diagnose problems, facilitate planning, and implement action within the relative learning environment. This approach allowed the participants to articulate their needs in a manner that would assist them with delivering instruction for middle school students, resulting in the course of study being changed to meet their needs. Data from Chapter 4 demonstrated that subjects were having difficulty with lesson planning which led to a change in course for the study to meet the needs of the new teachers.

Additionally, the immediate school setting provided a relevant context with applicability of pedagogy learned due to its relationship with the organization. For example, data from Chapter 4 indicated that subjects continued to seek out CIRTs and the technology coordinator to expand ideas and continue learning about the professional development topics presented. The technology coordinator noted that study subjects continued to implement new technology (smart boards and document cameras) into their classrooms to facilitate cooperative learning and summative assessments through interactive programs and software. Easy access to professional development facilitators helped promote this process.

Benefits of technology. Reinforcing the constructivism connection through technology can provide many benefits to new teachers. Becker (1999) holds that there is a strong relationship between computers and constructivism as the technology provides unlimited access, facilitates communication, and allows students to research and test their ideas. Furthermore, he contends that this relationship expands the audience and diversity of the group given the unlimited access. Becker (1999) feels these conditions are ideal for constructivist learning. Conducting this study through Blackboard allowed open access for study participants throughout the duration of the study. All materials, questionnaires, surveys, and discussion boards were available for members to review and share. Blackboard also allowed the principal researcher to

provide feedback and questions for reflection as subjects shared their new understandings. Additionally, the open nature of Blackboard reinforced the social context of constructivist learning.

The ability for new teachers to collaborate through discussion boards and provide each other feedback enhanced their learning. In the same way, the principal researcher was able to guide the subjects through questions to assist them with understanding new concepts taught, or provide reflective feedback. Subjects had access to all course materials, which provided them a point of reflection and review if needed. Lastly, Blackboard assisted with the subjects' learning because it was used as both a teaching tool for the adults, and a tool for technology integration. New teachers were taught how to use Blackboard and participated as students in a class. This format allowed the principal researcher to model technology integration to enhance and transform pedagogy.

Too much information. Sparks & Hirsch (1997) encourage school leadership and improvement teams to think strategically when creating professional development plans. They note that all too often the goals of the professional development are not always clear and that “before [participants] are able to master the new technique or skill, the school has moved on to other topics” (p. 24). The evidence suggests that the professional development may have suffered due to the number of professional development topics chosen for the new teachers. As the action research cycle evolved, it became clear that the new teachers were overwhelmed with the amount of information provided and were struggling to meet the demands of the first year of teaching. While the goal was clear, the professional development plan moved too quickly. The preliminary plan for professional development included a different topic for each month of the school year, totaling nine different subjects. Through problem diagnosis, the original pace and

content was evidenced to be too much; and only four of the initial topics were taught and lesson planning was added, totaling five. Through surveys and questionnaires, subjects indicated a greater perceived impact of the topics that were allotted a greater amount of time and delivered at a slower pace, most notably questioning and lesson planning. Based on the data, four or five concepts, beginning with lesson planning, could be an appropriate amount of professional development topics to assist new teachers.

In the same way, Sparks & Hirsch (1997) indicate that teachers undergo three stages of professional growth as they learn new pedagogy: (1) orientation - getting started, (2) mechanical use – completing the scripted formula, and (3) refinement, integration, and innovation - adapting the skills to their own teaching and making connections between student learning and change of pedagogy. Because of the pace of this study, not all of the subjects achieved these stages of professional growth. A shift in pedagogy requires time to reflect, experiment, refine, and implement which in this study was an expectation of the new teachers. During this study, new teachers were asked how they would implement the learned strategies in their classroom and to articulate how/if it changed their thinking about teaching and learning. While new teachers were provided time for reflection and feedback throughout this study, the expectation of stage three (refinement, integration, and innovation) would have been exemplified in their implementation and personalization of pedagogy techniques.

Data from Chapter 4 suggest that Mr. Green and Ms. Orange achieved level three throughout the course of the study with all of the professional development topics. These subjects were observed using the pedagogy techniques on a regular basis to plan and deliver engaging and creative lessons for students. Mr. Green used technology and questioning to create a real world math lesson of a shopping experience in a best buy store. Mr. Blue was able to

achieve level three most notably with formative assessment and questioning technique; however a longer period of disequilibrium existed for other topics. A slower pace to professional development with more integrated time for reflection and feedback could have resulted in all subjects reaching the stage of refinement, integration, and innovation.

The context of this study added an additional layer to the information provide to the new teachers. To facilitate the exploration of the Middle Years Programme, IBO (2008) recommends a two-year time frame, requiring most of the professional development to be off site. However, they encourage schools to use turn around training and sharing after teachers attend workshops. Using this model provided X Middle School with an excellent way to address the influx of new teachers, and capitalize on the expertise and training of experienced staff members. Given the size of Division X, most professional development is created and implemented at the school level, outside of IB workshops. This study combined the knowledge gained from IB workshops and expertise from within the organization to create a plan that would assist the new teachers with navigating instruction during their first year, and encompassed core aspects of the Middle Years Programme. However, the rigorous timeline set forth in the preliminary professional development plan, guided by the MYP feasibility and exploration period, may have been too much for new teachers to process in their first year.

Incorrect assumptions regarding preparation. Professional standards for teacher accreditation and certification stress the importance of pre-service teachers possessing in-depth knowledge of content, lesson planning, and pedagogy to meet the varying needs of their students (NCATE, 2008). Chapter 2 discussed Danielson’s (1996, 2007) framework for enhancing professional practice that stressed the importance of planning and preparation. Based on answers to questions asked during the interview process and baseline data from the Entrance Ticket, it

was assumed that the new teachers had a good understanding of the lesson planning process. In addition, the three subjects expressed a high level of comfort for planning and teaching in the block period, indicating that the preliminary plan for professional development could be implemented. Therefore, an assumption of the original professional development plan was the inferred skill of quality lesson planning. Through problem diagnosis in the action research cycle, it became evident that the information gathered from hiring interviews and Entrance Tickets may not have been complete.

Student teaching experiences provide pre-service teachers with a sheltered environment to introduce and experiment with their pedagogical skills. As part of the interview process, school administrators ask questions and obtain references from those who have seen them teach to inform their decisions and gauge readiness to enter the classroom. Nevertheless, it is not until administrators begin completing classroom walkthroughs and observations that they can establish the skills and needs of beginning teachers in the specific school context. In this study, information gathered from the interview process and the Entrance Ticket guided the beginning stages of the professional development. However, getting to know the teachers in the actual school context, over a period of designated time, could have proven a better way to assess their professional growth needs and plan professional development accordingly.

Aligning perceptions with application. In this study, the issue of quality lesson planning was exacerbated because the principal researcher, also the building principal, did not formally evaluate the subjects to avoid bias in the formal evaluation process. However, she relied heavily on the perceptions of the new teachers to evaluate the effectiveness of the professional development and implementation of new pedagogy techniques. The new teachers slowly recognized and acknowledged their need for professional development on quality lesson

planning, but the issue might have been detected earlier if the principal had evaluated the teachers. In addition, the principal researcher created survey instruments designed to foster reflection and gauge perceived growth of the new teachers, which was potentially skewed by personal perceptions, and not used to identify problems. A more balanced approach between perceived growth and increased frequency in observations might have resulted in quicker identification of the problem and action planning for amelioration.

Practice Implications

Learning models and theory. Based on the research completed in Chapter 2 and knowledge of best practices for young adolescent learners, this study was conducted using a constructivist model. The purpose was two fold as it facilitated the social nature of learning, and allowed subjects to form new schema as the study progressed. The desired state of disequilibrium was achieved for all who participated in the study, however achieving equilibration was longer for Mr. Blue. It is important to acknowledge the nature and scope of the study because the data, as presented in Chapter 4, shows that not all subjects accommodated to learning new skills. Mr. Green and Ms. Orange were able to implement elements of pedagogy that were taught to enhance their teaching and use time during the block effectively. Observations detailed routine and structure led by appropriate sequencing and pacing of lessons for these subjects. These subjects learned the new techniques and implemented them into their classroom indicating that equilibration had been achieved.

The first implication to be drawn from this study is the importance of choosing an appropriate model for professional development. Given the recommendations for working with young adolescents and adult learners, a constructivist model, influenced by Piaget and Vygotsky's teachings, was chosen for this study. However not all participants were comfortable

with this style and the period of disequilibrium that was created. Observers noted that new teachers wanted to use the new techniques, but articulated being overwhelmed with the responsibilities of classroom planning and instruction. A differentiated professional development model, based on needs of teachers, would create ideal conditions for personal professional growth of new teachers. A scaffolded approach to the professional development would use the zone of proximal development challenging them to continually improve on their emerging skills as educators. This approach would also need to embrace and support the team aspect of middle school to assist teachers with collaboration and social learning.

Social learning for middle school. A second implication derived from this study was that professional development planners must know their students. Piaget and Vygotsky disagreed on how children learn with regard to their environment and the effect of social interaction on learning. Understanding Piaget's theory on children's acquisition of information is important for teachers to apply in order to meet the educational needs of their students. Utilizing Vygotsky's zone of proximal development and scaffolding allows teachers to challenge students with appropriate support. The framework of this study was created on the theories of both Piaget and Vygotsky; however, was executed using the Vygotskyian model of social learning and relied heavily on the group model to facilitate learning and sharing. Furthermore, the research on best practices for middle school pedagogy cite cooperative learning, large group work, small group work, independent study, problem solving, and other useful instructional strategies that empower learners as a successful model for teaching (NMSA, 2006). Based on the research and previously stated recommendations for adult learning and professional development, the ideas were combined to model an approach of cooperative learning for adults, that was conducive to both teaching and learning, and would translate to best practices in the

classroom. Therefore, the professional development sessions were designed to facilitate learning from others and empower the teachers to implement and refine their craft. Data from Chapter 4 noted that Mr. Green and Ms. Orange showed increased growth in the empowered, social setting throughout the study with greater implementation of new pedagogy learned. These subjects were active participants in group discussions and activities sharing ideas and insights, ultimately helping to facilitate their learning and that of their peers.

Research on best practices in middle schools indicate that we must foster a safe, structured, and supportive learning environment for students to succeed (NMSA, 1981). Data from Chapter 4 noted that Mr. Blue needed to provide students with a more structured class where students would feel safe and ready to take risks. A suggestion for more structure in the class was given to ensure that students would participate without fear of humiliation from peers. Moreover, the 14 characteristics for effective middle schools outline the need for active learning, multiple learning and teaching approaches, and high expectations for students. Understanding these key elements for school culture and climate indicate that teachers should embrace and model them for students through appropriate scaffolding. Through professional development, we can teach these core beliefs and necessary elements for effective schools; however, teachers must embrace and execute these beliefs to effectively help young adolescent learners.

A highly Piagetian teacher may opine differently on the importance of scaffolding instruction and differentiating to meet the needs of the students. Rather, that teacher may suggest “throwing them into it” with little to no support, allowing them to respond to their internal self to form independent thoughts and ideas. Data from Chapter 4 reveals that Mr. Blue subscribed predominantly to the Piagetian theory demonstrating, through observations and interviews, that he many not have wholly embrace the Vygotskyian view of young adolescent

learning and sought to address the needs of his students differently. He was observed using primarily teacher led discussions as a method for delivery of instruction. He also preferred to use “big questions” that would invoke independent thought for students. Creating a plan of independent learning and response to the environment, rather than a plan of modeling and interaction, could have helped this subject with developing his own understanding of the social aspect of young adolescent learning. However, middle school stresses a team oriented school approach where teachers collaborate and function as one unit. A teacher who does not take advantage of this approach, despite differentiated professional development, will have difficulty operating in this type of collaborative school atmosphere.

Openness to learning. An important piece of data collected in this study was the Entrance Ticket. Each subject was asked to define “professional development” in his or her own words. Expectations for answers involved those similar to the NCATE standards: life long learning, knowledge, growth, and collaboration to name a few. A definition that was not expected was: “professional development is the often bureaucratically mandated and guided growth of professionals within an industry.” Chapter 2 discussed the importance of fostering reflection and growth of teachers; however, it is important to first obtain their willingness to learn and change. Therefore, a third implication drawn from this study is that those who interview and work with new middle school teachers must establish a desire to learn, share, and embrace the social, emotional, and academic differences that young adolescent learners possess. Students are continually asked to process and apply new knowledge, and this should also be expected of teachers. Those who are open to learning new and different ways to approach a diverse classroom of learners will exemplify the core belief in education of life long learning and be better equipped to work with middle school students.

During the consideration phase of hiring new staff, school interview teams use a variety of questions to obtain information about candidates and gain insight to their thinking. Clement (2004) recommends using behavior based interviewing which asks a candidate to take previous experiences and apply them to current classroom situations. Furthermore, she advises that questions should encompass curriculum, instruction, communication, lesson planning, grading, and classroom management. What must be considered is the situation when a person can answer these very targeted questions and recreate scenarios, but have difficulty with direct application to the classroom setting.

In this study, Mr. Blue was excellent at answering questions and providing a wealth of theory and knowledge. However, this did not always translate to classroom practice. He was frequently observed using teacher directed discussion as the method of delivery for instruction. It was also noted that classroom procedures and policies were loosely structured and classroom management was, at times, an issue. For this reason, a consideration should be given to expanding the interview process to include teaching a lesson to a classroom full of middle school students. This authentic assessment will provide interviewers with more accurate information on baseline skills of potential candidates.

Hiring and certification. Perhaps one of the most difficult areas to discern for principals is teacher certification. Middle School grades span three different certification areas – elementary, middle, and secondary. While teacher preparation programs have made significant gains in implementing middle school teacher preparation programs, only 28 states offer a middle school license (see Appendix I for patterns by state). The National Middle School’s Position Statement (2006) on the professional preparation of middle level teachers outlines their beliefs about licensure:

Middle level teacher licensure regulations should require that middle level teachers receive the specialized knowledge, skills, and dispositions necessary to be highly effective even in their first years of teaching. The failure in some states to create mandatory middle level teacher licensure has resulted in the majority of middle level teachers being inadequately prepared to teach young adolescents when they begin their careers (p.3).

This position statement exemplifies the fourth implication that can be drawn from this study – consider training and licensure when hiring middle school teachers. There are traits and skills that are associated with good teaching at any level, such as quality lesson planning, knowledgeable, content specialty, strong instruction, and compassion. However, the National Middle School Association believes that specific training and qualifications set middle school teachers apart from others. NMSA (2006) takes the position that middle level teachers must be experts in the development and needs of young adolescents. Further, they contend that middle school teachers should know and understand middle level philosophy and organization, focus on integrated, yet content specific curriculum, and utilize appropriate measures of middle level planning, teaching, and assessment. In this study, Mr. Green and Ms. Orange possessed middle school licenses and readily accepted the Vygotskian model of social learning and demonstrated understanding of Piaget’s theory of young adolescent learning. The new teacher consultant praised both subjects for “really understanding the minds of middle school students.” These subjects were observed creating learning opportunities that used big ideas that challenged students, while at the same time providing support. The data do not permit one to reject the possibility that this was a coincidence, but the teachers in this study differed depending on whether they obtained the training that middle level teachers receive in specialized programs.

When school teams interview and hire middle school teachers, they should review what the National Middle School Association holds to be specific to middle level teacher development. Understanding young adolescent learners is not an easy task; however, specific training in this area could greatly increase one's ability to successfully navigate the very diverse middle school classroom. Furthermore, understanding and embracing social learning, as reinforced through constructivist teaching styles, will assist middle school teachers with meeting the needs of their students. Data from Mr. Green and Ms. Orange as presented in Chapter 4, detailed the use of pedagogy recommended by NMSA. These subjects were observed using cooperative learning, project based assessment, fostering a safe learning environment, and facilitating lessons based on the varying needs of the students. These subjects were also praised with quickly identifying when students didn't understand and attending to their needs immediately and appropriately. The ability to understand young adolescent learning and development assisted these subjects with continued growth throughout the study.

Further professional development for block teaching. This study was designed to help new teachers with developing their growth in pedagogy using constructivist practices while teaching during a block period. Canady & Rettig (1996) discuss the struggles that teachers face with longer periods of instructional time and recommend using specific strategies to engage active learners. Pacing instruction and creating an environment conducive to active learning are keys to effectively using time in the block. Subjects in this study learned how to scaffold learning groups, integrate technology, and use various formative assessments and questioning techniques to engage learners, showing growth of implementation throughout the year. Nevertheless, middle school teachers should continue to refine and learn new techniques, such as interdisciplinary teaching, authentic assessment, and project-based assessment, through

continued professional development to assist them with building pedagogy that is proven to be successful with young adolescents. The pedagogical techniques taught during this study should be expanded to help middle school teachers continually build their toolbox for differentiation and engagement. When middle school students are actively engaged and time in the block is used effectively, teachers can focus on depth of understanding rather than covering the material.

Future Research

This study was designed to assist new teachers with providing developmentally appropriate instruction to middle school students during a block period using constructivist practices. As we consider the benefits of block scheduling and constructivist teaching, we must excavate the skill set and educational philosophy of those who accept the responsibility of applying it to pedagogy for young adolescent learners. The first two recommendations for further study center around teacher preparation and licensure, and the discernment of theoretical and philosophical underpinnings. It is important to evaluate the effectiveness of teachers who have secondary certification (grades 6-12) serving in middle level positions, and ascertain a way to distinguish a new teacher's readiness to embrace middle school pedagogy proven effective with young adolescents.

Recommendation #1. A study that reviews teacher preparation and licensure is recommended for further study. The National Middle School Association's Position Paper on the professional preparation of middle level teachers clearly outlines the problems that middle school leaders face when it comes to teacher licensure, most notably lack of specialized training for working with young adolescents. In the United States, 46 states offer middle level licensure/certificate or endorsement; only 28 offer licensure, meaning that a separate license is obtainable. When we analyze this statistic, it becomes very clear that an evaluation of the

current licensing system must be conducted. A secondary certification spans the grades of 6 through 12 with age ranges of 11 to 18+. A desire to have teachers with expertise in young adolescent development and integrated teaching is not easily accomplished with a certification heavily focused on content. Thus, a study that compares those who are middle level licensed versus those who are secondary licensed and their overall success with young adolescent learners is suggested.

Recommendation #2. The first recommendation for future research lends itself to the second recommendation derived from the research completed in this study, which is to establish traits of effective middle school teachers and use them for hiring purposes. Based on key elements and beliefs of the National Middle School's Association's *This We Believe*, The International Baccalaureate Middle Years Programme, and *Breaking Ranks in the Middle's* nine cornerstone strategies, the following characteristics or traits are present in their collective definitions of effective middle school teachers:

- Possesses middle level endorsement
- Specific training on young adolescent development
- Uses interdisciplinary teaching
- Sets high expectations and provides rigor for academic success
- Uses constructivist teaching practices to include scaffolding, differentiation, quality questioning techniques, and varied assessments
- Advocates for students by personalizing the instruction and building relationships
- Works collaboratively with teacher team, parents, and community to meet the needs of students

The data in Chapter 4 evidences that Mr. Green and Ms. Orange embraced and possessed these characteristics. These subjects saw themselves as facilitators in the classroom and designed lessons to meet the specific needs of their students. Mr. Green was praised for the ability to identify with and understand the students, and provide them with personalized learning through alternative assessments. Additionally, these subjects indicated a preference for the Vygotskyian approach to social learning; however, used Piaget's knowledge of how children learn to design appropriate lessons and create learning objectives. In the reflective questionnaires, the subjects expressed satisfaction with the opportunity to collaborate and brainstorm ideas through the social setting. They indicated that time to share ideas helped them reflect on their current practice, and garner new insights for lesson planning and delivery of instruction. Given what the research indicates to be effective for young adolescent and adult learning, a study that identifies traits commonly found in teachers who embrace social constructivism and are successful with delivering developmentally appropriate instruction to middle school students is suggested.

Exploring and evaluating teacher preparation programs and licensure combined with establishing positive attributes of effective middle school teachers, will assist middle level leaders with hiring only the most qualified teachers to work with this diverse population. It is important to ensure that teachers are properly prepared, understand the nature of the young adolescent learner, and possess the traits that embrace the middle school philosophy. Furthermore, interview teams should have a tool that assesses if candidates support and embrace the theories behind established best practices for middle school students. Recruiting, hiring, and providing professional development for those who desire to work with young adolescent learners will be essential to the continued success of middle school programs.

Recommendation #3. This study employed the use of an Entrance Ticket to gain baseline data for progression of the study. This type of data and concrete information could be invaluable when added to the interview processes. Critical components of the educational program at schools could be included in the Entrance Ticket to obtain candidate background knowledge, teaching philosophy, and understanding of the instructional program. The Entrance Ticket in this study provided a baseline of data for this study, but lent itself to inaccurate or incomplete information. For example, based on the Entrance Ticket information, it was assumed that the new teachers had a good knowledge base of lesson planning. Data presented in Chapter 4 detailed a different scenario. Teachers had difficulty with lesson pacing and sequencing, objective writing, and using instructional space effectively. The lesson planning issue was not detected until classroom observations began and the school year was underway. Given the usefulness of the Entrance Ticket, a third recommendation for further study would be to investigate how to refine the Entrance Ticket so that it would become a more reliable and valid indicator of what new teachers know and need, and then used as a tool for school interview teams.

Recommendation #4. This study was designed to assist new teachers in one school, in one school district; making the sample size and context small. This study was also conducted within the context of the MYP exploration period. The exploration of MYP provided a framework for constructivist pedagogy; however brought an imposing timeline. Teachers selected to be subjects in this study were focused in the middle grades; however, new teachers in multiple contexts could benefit from a comprehensive system of professional development designed to meet their specific needs. Therefore, the fourth recommendation for further study is

to duplicate this study on a larger scale and expand to multiple grades with consideration given to the MYP context.

Recommendation #5. This study used teacher leaders to provide professional development within the school organization. This was not only a reflective activity for master teachers; it was an economical way to provide job embedded and relevant professional development. As school districts continue to face difficult budget situations and organizational needs differ, a cost effective and highly personalized comprehensive model for professional development will be necessary. Thus, the fifth recommendation for further study is to evaluate professional development systems that utilize master teachers to create individualized and quality programs that demonstrate fiscal responsibility.

Concluding Statement

This study demonstrated that focused professional development that combines social learning and effective teaching practices could help new teachers grow in their professional practice. Important aspects considered for the professional development were the needs of adult learners and their readiness to learn and implement various strategies proven to be effective with young adolescent learners while undergoing their own cycle of learning. Tantalizing to the study was the identification of needs as the study progressed. Educators know that the first year of teaching is perhaps the most difficult, and new teachers cannot always articulate what they need. It is imperative that school leaders keep a pulse on the struggles of the first year teacher: sometimes, the simplest observation or idea is the one that can have the biggest impact. During the course of this study, professional development on lesson planning was identified as a need for the new teachers. In reflective questionnaires and surveys, the professional development on lesson planning had the greatest impact on instruction of those involved with the study. Wormeli

(2001) notes that quality lesson planning is a key to success in teaching in the block and learning; providing teachers with more experience and knowledge in this area assisted them in refining skills that were essential to every day instruction.

The International Baccalaureate Organization has acknowledged the power of constructivist teaching to create rigor and teach the whole child (IBO, 2008). In the same way, the National Middle School Association acknowledges the necessity of well prepared teachers to meet the needs of young adolescent learners to execute such pedagogy that is recommended by the IB (NMSA, 2006). Combining these research based ideologies provides middle school educators with a wealth of information to build programs that prepare teachers to meet the ever growing academic needs of young adolescent learners and facilitate the growth of teachers. Understanding Piaget's (1969) stages of child development and capitalizing on Vygotsky's (1978) model of social learning, middle school educators will foster collaborative learning environments for adults and students.

As educators continue to progress in the development of successful middle school programs, focus must be placed on preparing teachers to deliver instruction that is designed to meet the diverse needs of middle school students. Creating teacher preparation programs and professional development targeted at specifically doing so will bring us closer to meeting the ever changing needs of middle school students. This study encompassed recommendations from several proven middle school reform efforts to meet the needs of first year teachers. It was designed to assist them with their professional growth and ability to deliver developmentally appropriate instruction to middle school students. Successful middle school programs will be those that foster the learning of adults enabling them to meet the ever-changing educational needs of the young adolescent learner.

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Appendix A

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Informed Consent for Participants in Research Projects Involving Human Subjects

Title of Project: Block Scheduling, Constructivism, and Professional Development in Middle School

Investigator(s)

Dr. William Glenn

Ms. Ann McCarty

I. Purpose of this Research/Project

This project involves analyzing a professional development model that has been designed to assist teachers with teaching in a block schedule using Constructivist practices. Many schools have implemented block scheduling in order to procure longer periods of instructional time, but have failed to provide the proper professional development for the teachers to be successful. The purpose of this study is to study how a high performing middle school attempts to increase the preparedness of beginning teachers to teach during a block class. The foundation of the professional development model will be based on the following four principles of Constructivism: Genetic Epistemology, Equilibration, Zone of Proximal Development, and Scaffolding. Using this theoretical framework, we will study job embedded and research based professional development geared for longer periods of instructional time. Subjects in this study will learn about Authentic Assessment, Project Based Assessment, Data disaggregation for instructional purposes, fostering classroom environment for adolescent learners, technology integration, and using inquiry based instruction. The anticipated findings of this study are that the professional development sessions will produce teachers who are better equipped for teaching and engaging students during a block period.

The subjects for this study will be teachers who are new to the profession with either a Bachelor's Degree or Master's Degree in education. The concentration areas of the subjects are varied across the curriculum.

II. Procedures

This study is designed to assist new teachers by providing professional development that is job embedded. The professional development itself will be conducted as part of the job requirements for the new teachers. Most of the training will occur during normal working hours, but some after school meetings will be required as well as attendance during allocated school professional time. All sessions will be held at Mary Ellen Henderson Middle School.

The additional requirements for this study require participants to participate in interviews, observations, and surveys. Interviews will be conducted 3 times during the 2008-2009 school year. Participants will be surveyed quarterly regarding their perceptions of the professional

development. Participants will be observed bi-weekly as part of their training, in addition to frequent informal classroom walk throughs. These observations will be conducted by Ms. McCarty and by the facilitators of their professional development. These observations will be separate and distinct from the evaluation procedures required by the school division.

III. Risks

There are minimal risks to participants.

IV. Benefits

The study will analyze a program designed to help beginning teachers benefit from ongoing support at the school building level. The participants will be part of a new teacher cohort that will be used to build collegiality and foster a professional learning community. Teachers will be able to share ideas and learn from each other while becoming more reflective in their professional practice. Society will benefit from the dissemination of a model that will increase the support of new teachers who work in schools using the block scheduling arrangement.

The benefits of this study are not intended to encourage participation.

You are free to contact the researcher at a later time in order to gain more information or for a summary of the research results.

V. Extent of Anonymity and Confidentiality

Participants will be given an ID code, such as John Doe = Study ID 1, etc. These codes will be used on all study documents in place of names. Pseudonyms will be used for the purposes of any presentations or publications.

At no time will the researchers release the results of the study to anyone other than the individuals working on the project without your consent.

The researcher may video or audio tape some of the professional development sessions in order to evaluate the program or transcribe data. The transcriptions will be done by the researcher. These recordings will be stored with the researcher in a private file that is password protected on a secure server. These sessions will be kept in order to inform the researcher for further work and study.

It is possible that the Institutional Review Board (IRB) may view this study's collected data for auditing purposes. The IRB is responsible for the oversight of the protection of human subjects involved in research.

In some situations, it may be necessary for an investigator to break confidentiality. If child abuse is known or strongly suspected, investigators are required to notify the appropriate authorities. If a subject is believed to be a threat to herself/himself or others, the investigator should notify the appropriate authorities as described in the Falls Church City Public Schools guide to student conduct in accordance with the Fairfax County Child Protective Service Board.

VI. Freedom to Withdraw

Subjects are free to withdraw from the study at any time without penalty.

Subjects are free not to answer any questions or respond to situations that they choose without penalty. There may be circumstances under which the investigator may determine that a subject should not continue as a subject.

VIII. Subject's Responsibilities

I voluntarily agree to participate in this study. I have the following responsibilities:

- Attend Professional Development Sessions
- Participate in discussion groups in person and on ANGEL
- Answer surveys and interview questions
- Provide ongoing feedback for researcher
- Keep reflective journal regarding progress and growth

IX. Subject's Permission

I have read the Consent Form and conditions of this project. I have had all my questions answered. I hereby acknowledge the above and give my voluntary consent:

_____ Date _____
Subject signature

_____ Date _____
Witness (Optional except for certain classes of subjects)

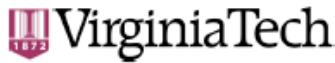
Should I have any pertinent questions about this research or its conduct, and research subjects' rights, and whom to contact in the event of a research-related injury to the subject, I may contact:

Chair, Virginia Tech Institutional Review
Board for the Protection of Human Subjects
Office of Research Compliance
2000 Kraft Drive, Suite 2000 (0497)
Blacksburg, VA 24060

Ann M. McCarty, Principal
Mary Ellen Henderson Middle School
7130 Leesburg Pike
Falls Church, VA 22043
(703) 720-5703
mccartya@ficeps.org

Dr. William Glenn
Assistant Professor
School of Education (0362)
Northern Virginia Graduate Center
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Falls Church, VA 22043
(703) 538-8493
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Appendix B



Office of Research Compliance
Institutional Review Board
2000 Kraft Drive, Suite 2000 (0497)
Blacksburg, Virginia 24061
540/231-4991 Fax 540/231-0959
e-mail moored@vt.edu
www.irb.vt.edu

FWA00000572(expires 1/20/2010)
IRB # is IRB00000667

DATE: August 5, 2008

MEMORANDUM

TO: William Glenn
Ann McCarty

FROM: David M. Moore

Approval date: 8/5/2008
Continuing Review Due Date: 7/21/2009
Expiration Date: 8/4/2009

SUBJECT: **IRB Expedited Approval:** "Block Scheduling, Constructivism, and Professional Development in Middle School", IRB # 08-429

This memo is regarding the above-mentioned protocol. The proposed research is eligible for expedited review according to the specifications authorized by 45 CFR 46.110 and 21 CFR 56.110. As Chair of the Virginia Tech Institutional Review Board, I have granted approval to the study for a period of 12 months, effective August 5, 2008.

As an investigator of human subjects, your responsibilities include the following:

1. Report promptly proposed changes in previously approved human subject research activities to the IRB, including changes to your study forms, procedures and investigators, regardless of how minor. The proposed changes must not be initiated without IRB review and approval, except where necessary to eliminate apparent immediate hazards to the subjects.
2. Report promptly to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.
3. Report promptly to the IRB of the study's closing (i.e., data collecting and data analysis complete at Virginia Tech). If the study is to continue past the expiration date (listed above), investigators must submit a request for continuing review prior to the continuing review due date (listed above). It is the researcher's responsibility to obtain re-approval from the IRB before the study's expiration date.
4. If re-approval is not obtained (unless the study has been reported to the IRB as closed) prior to the expiration date, all activities involving human subjects and data analysis must cease immediately, except where necessary to eliminate apparent immediate hazards to the subjects.

Important:

If you are conducting **federally funded non-exempt research**, please send the applicable OSP/grant proposal to the IRB office, once available. OSP funds may not be released until the IRB has compared and found consistent the proposal and related IRB application.

cc: File

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Appendix C

Preliminary Professional Development Calendar

Month	Topic	Presenter(s)	Objective/Purpose	Books/Resources
September Beginning Days Short Wed	Technology Integration/LMS	[REDACTED]	Using technology to enhance instruction. How can we use Blackboard? Setting up a blog for collaboration & sharing	Computer Lab Document Camera Digital Camera
September/ October Monday Meetings	Data Disaggregation to guide instruction	[REDACTED]	Learning how to disaggregate different types of data and how to apply to classroom for instruction. Using data to inform assessment practices.	Data Wise Organization chart
October Short Wed	Scaffolding	[REDACTED]	Learning the concept of scaffolding by the teacher. Learning to create activities for cooperative learning. Learning how to scaffold groups during a lesson	Scaffolding children's learning Hand outs Classroom
November Short Wed	Formative and Summative Assessment	[REDACTED]	Learning the difference between formative and summative assessment. Using questions as a tool for formative assessment.	Classroom Assessment and Grading that Work Classroom Instruction that Works
December Short Wed	Questioning Technique	[REDACTED]	How to create questions and using questions as a form of assessment.	Quality Questioning
January Monday Meetings	Questioning 2	[REDACTED]	Using Blooms to ask questions and stay focused on the learning objective	Flip Book for Questions – Blooms

Appendix D

Entrance Ticket – The Beginning Stages

A questionnaire for gauging student knowledge and present level of performance

What is your philosophy of education as it applies to the middle school student?

How would you incorporate 5th grade (10-11 year old students) into your definition?

What impact do you feel common team planning can have on instruction and assessment?

What does Constructivism look like in the middle school classroom?

What is your familiarity with block scheduling?

What do you see as the benefits of 90-100 minutes of instructional time?

What do you see as the drawback of 90-100 minutes of instructional time?

Describe cooperative learning?

To what extent is cooperative learning a useful tool when differentiating instruction?

Describe your experience (short paragraph) with Learning Management Systems. (i.e. blackboard, angel)

Please rate the following on a scale of 1-10 (10 being extremely comfortable) beginning each statement with: As a first year teacher how prepared do you feel to –

- _____ Teach in a 90-100 minute block
- _____ Embrace middle school philosophy
- _____ Teach unknown content
- _____ Navigate new instructional approaches
- _____ Implement multiple styles of assessment

- _____ Disaggregate data
- _____ Use data to guide my instruction
- _____ Differentiate instruction
- _____ Use technology to enhance my instruction
- _____ Use technology to enhance my own learning
- _____ Teach lessons through Understanding by Design

Please provide a short definition (1-2 sentences) for the following:
Block Scheduling

Constructivism

Professional Development

3A Nation At Risk

Prisoners of Time

NCLB

Adolescent

Genetic Epistemology

Equilibration

Assimilation of Knowledge

Accommodation of Knowledge

Disequilibrium

Schema

Scaffolding

Zone of Proximal Development

NMSA

Inquiry Based Instruction

UBD

Formalization

Formative Assessment

Summative Assessment

Project Based Assessment

Authentic Assessment

Standards of Learning

This We Believe

Please share a personal teaching experience where you taught a lesson that did not go as planned and although the outcome may not have been what you wanted, it changed your thoughts about how to teach that particular concept? Please talk about both your role and the role of the students in this situation.

Appendix E

Teacher as Learner

Professional Development Questions for Reflection, Discussion, and Collaboration

In your own words, describe the professional development activity in which you participated?

Describe if/how it has changed your thinking about teaching and learning.

How will you implement the strategies learned during the professional development session?

How will this affect your teaching?

What impact do you anticipate for it to have on student learning?

Appendix F

Sample Discussion Board Prompts

- Of the technology tools you have learned about, which is your favorite?... please share
- Given what you learned about questions, please highlight how this will help you in your planning and assessment.
- As you reflect on lesson planning, think about the process you use when planning lessons, and describe how you achieve your end result.
- Of the constructivist practices you have learned, speak about how you are using them in your classroom....

Appendix G

Sample Assessments and Surveys

1.

Formative and Summative Assessment are the same thing?

- A) True
 B) False

2.

Formative Assessment involves lengthy extended responses that the teacher can use in order to provide timely feedback to students.

- A) True
 B) False

3.

Formative Assessment should always be used when calculating a student's grade.

- A) True
 B) False

4.

Which of the following is not an example of Formative Assessment?

- A) Questioning during a lesson
 B) Entrance tickets
 C) Short quizzes
 D) Unit tests from either teacher or book
 E) Feedback questions from students after learning concepts

5.

In your own words, please describe the difference between Formative and Summative Assessment?

[HTML Editor](#)

6.

In your own words, please describe the process you use in order to determine what type of assessment you will use in order to gauge student learning [HTML Editor](#)

Professional Development Follow Up – Technology Integration

1. Please rate the professional development activities related to technology integration based on the influence it will have on your teaching. 1 - Very little to no impact 10 - this is what I needed to transform my teaching

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

2. Would you attend another session on this topic?

Y

N

3. What aspect of technology integration did you find the most helpful?

learning process by using technology

Learning how to share electronically

Learning a variety of tools from which I can choose

Professional Development Follow Up - Scaffolding

1. In your own words, describe what it means to scaffold a lesson.....

2. In your own words, describe how you would scaffold groups in order to facilitate a lesson.....

3. Describe what you would see as the benefit of using scaffolding in your lessons.....

4. Was the way this concept was presented to you a new way of looking at scaffolding?

- Yes
 No

5. Please rate yourself on your knowledge now of scaffolding and ways to use it in the classroom?

- Beginner
 Intermediate
 Advanced

Appendix H

Scheduled Classroom Observation Form

Teacher		School	
Grade/Subject Area		School Year	
Date		Time/Period	

Directions: The evaluator will write a short narrative about the activity observed, areas of strength and suggestions for growth.

Part I. LESSON ACTIVITY (BRIEF DESCRIPTION):

Part II: CRITERIA *

	M	N	U
1. Instruction:			
2. Assessment:			
3. Learning Environment:			
4. Summary (may include Professional Growth and Professionalism)			

** Additional pages may be used*

Principal or Designee's Signature	Date	Teacher's Signature	Date
-----------------------------------	------	---------------------	------

Signatures indicate that the observation was completed and the results were discussed if a conference was held; signatures do not necessarily mean agreement.

NOTE: Copies of these evaluation reports will not be released to anyone outside of [REDACTED] administrative staff without specific permission of the teacher being evaluated.

Unscheduled Classroom Observation Form

Teacher		School	
Grade/Subject Area		School Year	

Directions: The principal or designee will write a short narrative about the activity observed, areas of strength and suggestions for growth.

Part I. LESSON/ACTIVITY OBSERVED:
Part II. AREAS OF STRENGTH:
Part III. SUGGESTIONS FOR GROWTH:
Part IV. COMMENTS OF TEACHER

A post-observation conference is requested by the evaluator		Yes		No
A post-observation conference is requested by the teacher		Yes		No

Conference Date

Principal or Designee's Signature Date Teacher's Signature Date

Signatures indicate that the observation was completed and the results were discussed if a conference was held; signatures do not necessarily mean agreement.

NOTE: Copies of these evaluation reports will not be released to anyone outside of [redacted] administrative staff without specific permission of the teacher being evaluated.

* Additional pages may be used

Summative Evaluation Report

Teacher		School	
Grade/Subject Area		School Year	
Date		Time/Period	

Directions: Assess teacher’s performance in response to the five criteria using the assessment symbols below.

M – Meets or exceeds performance standards as demonstrated by performance indicators within the designated criteria.

N – Needs improvement in one or more specified performance standard(s) within the designated criteria. If the teacher receives one or more ratings of N, continued monitoring will be necessary with another scheduled evaluation and a Plan of Assistance in effect the next school year.

U – Unsatisfactory achievement of specified performance standard(s) within the designated criteria. If the teacher receives one or more ratings of U, the evaluator will recommend job action to the Superintendent.

Part I. Criteria and Comments			
1. Instruction	M	N	U
2. Assessment	M	N	U
3. Learning Environment	M	N	U
4. Professional Growth	M	N	U
5. Professionalism	M	N	U

Summary

--

* *Additional pages may be used.*

Part II. Recommendation

	Continued Employment
	Plan of Assistance
	Type here and the cell will grow
	Non-Renewal of Contract

Part III. Comments of the Teacher

Type here and the cell will grow

Principal or Designee's Signature

Date

Teacher's Signature

Date

Signatures indicate that the observation was completed and the results were discussed if a conference was held; signatures do not necessarily mean agreement.

NOTE: Copies of these evaluation reports will not be released to anyone outside of [REDACTED] administrative staff without specific permission of the teacher being evaluated.

Appendix I

Certification/Licensure by State
Middle Level Teacher Certification/Licensure Patterns by State

State	License Type	Grade Levels	State	License Type	Grade Levels
Alabama	License	4-8	Montana	None	None
Alaska	Endorsement	5-8	Nebraska	Endorsement	4-9
Arizona	Endorsement	5-9	Nevada	License	7-9
Arkansas	License	4-8	N. Hampshire	License	5-8
California	None	None	New Jersey	Endorsement	5-8
Colorado	None	None	New Mexico	Endorsement	5-8
Connecticut	License	5-9	New York	Endorsement	5-9
Delaware	License	5-9	North Carolina	License	6-9
D. C.	License	5-8	North Dakota	License	5-8
Florida	Endorsement	5-9	Ohio	License	4-9
Georgia	License	4-8	Oklahoma	Endorsement	4-8
Hawaii	License	5-9	Oregon	License	5-9
Idaho	None	None	Pennsylvania	License	4-8
Illinois	Endorsement	5-8	Rhode Island	Endorsement	5-8
Indiana	License	5-8	South Carolina	License	5-8
Iowa	Endorsement	5-8	S. Dakota	License	5-8
Kansas	License	5-8	Tennessee	License	5-8
Kentucky	License	5-9	Texas	License	4-8
Louisiana	Endorsement	4-8	Utah	License	5-9
Maine	Endorsement	5-8	Vermont	License	5-8
Maryland	License	4-9	Virginia	License	6-8
Massachusetts	License	5-9	Washington	Endorsement	5-9
Michigan	Endorsement	5-9	West Virginia	License	5-9
Minnesota	License	5-8	Wisconsin	License	5-9
Mississippi	Endorsement	4-8	Wyoming	License	5-8
Missouri	License	5-8			
Number of states with middle level license/certificate or endorsement: 46 + DC					
Number of states with middle level license: 28 + DC					
Number of states with middle level endorsement: 18					

Note: This information was gathered by examining documents available at Web sites that provide certification/licensure regulations for each of the states. It is clearly understood that state licensure standards change frequently and that some of the information provided here may have

changed. Persons interested in more detailed information should contact each respective state. This chart is intended only to identify trends in middle level licensure. The term "license" is used to mean that a separate middle level license is available and the term "endorsement" is used to mean that the middle level teaching license is available only as an add-on credential for those also qualifying for a different license; for example adding a grades 5 through 8 mathematics middle level endorsement to an elementary education teaching license.

Submitted by C. Kenneth McEwin
Middle Grades Education Coordinator and Professor
Department of Curriculum and Instruction
Appalachian State University
Boone, NC 28607
January 15, 2007