

ABSTRACT

MASIER, DARREN JOSEPH. Teachers' Pedagogy through Andragogy: Facilitating Learning in Secondary Education Students by Incorporating Self-Directed Learning. (Under the direction of Dr. Julia Storberg-Walker.)

In a qualitative analysis, based upon three cases of mid-career¹ secondary education teachers, their strategies, philosophies, modalities, and student expectations were analyzed in an effort to understand the extent to which self-directed learning (SDL) can impact the success of students' learning. These practical implications of the study by experienced teachers supported and also challenged theoretical concepts of primarily Piaget, Knowles, and Vygotsky, but also examined those of Bloom and Wlodkowski. Specifically, results demonstrated that the incorporation of some adult learning methodologies into secondary education environments has contributed significantly to the effectiveness of these teachers. Perhaps this knowledge can guide future research into how to best identify and further develop secondary education teachers' pedagogies to utilize SDL techniques in the 21st century classroom.

¹ *Mid-career* is defined as having more than 6 years of experience in industry; similar terms include *veteran* or *experienced*.

Teachers' Pedagogy through Andragogy: Facilitating Learning in Secondary Education
Students by Incorporating Self-Directed Learning

by
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BIOGRAPHY

The author of this study, Darren Joseph Masier was born just outside of Chicago, IL and has resided in Cary, North Carolina with his son, Noah and wife Terri Lynn (Robinson) Masier for the past fifteen years. Darren was an only child and graduated from Purdue University with a bachelor's degree in Spanish in which he is fluent in 1990. He played four years of intercollegiate soccer and currently runs and competes in triathlons.

After spending twenty years within leadership capacities of the finance and banking industries including business ownership, he elected to follow his heart to immerse himself in middle school education, where he plans to teach, coach, and evolve into leadership within secondary education. After entering the graduate program of Human Resource Development at North Carolina State University full time, Darren was offered a position as Graduate Assistant in the same department, he simultaneously enrolled in and completed the requirements for his K-12 teaching certificate in North Carolina, he was offered the role as president of the Golden Key International Honour Society at North Carolina State University, and he continues to coach both the boys' and girls' soccer teams at a local middle school in Cary, NC.

As a substitute teacher at the school where he coaches for the past three years, Darren has gained valuable experience in front of a classroom, yet, as discussed in the orientation section of the methods chapter of this study, he does not claim to be a vastly experienced practitioner choosing to share experiences for the betterment of society – but moreover, this study interviewed three current secondary education teachers (grades 6-12) to understand the extent to which SDL influences their teaching philosophies, strategies, and ultimately their

student's learning. The researcher clings to a commitment of scientist vs. post-modern advocate.

Upon completion of the Masters Degree, the author intends to pursue a Doctorate of Education at North Carolina State University, as well as continue the above mentioned affiliations and commitments. Darren's professional experience has poised him for a position of leadership within a K-12 environment, and his several years of diverse experience in the field of training and development will be complimented nicely with this accomplishment in higher education.

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1. An extension of gratitude is offered to the author's supportive wife, Terri throughout the arduous task of his full time commitment to this post graduate degree.
2. The eyes of the author's six-year-old son, Noah have guided the author in a quest to exemplify integrity and perseverance.
3. The author will forever hold dearly in his heart the genuine generosity and support shown by his adoptive (parents) – his Aunt Ginny and Uncle Tom.
4. In his first semester in a class taught by this committee member, the author was repeatedly inspired and guided by Dr. Tim Hatcher, and in subsequent semesters and classes, by the remainder of the committee, Dr. Julia Storberg-Walker and Dr. Diane Chapman. These three professors have provided countless help toward the author's work contained within this study, as well as his coursework within this Master's program.
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CHAPTER ONE INTRODUCTION

Various teaching styles, methodologies, and focuses exist within K-12 academia today, and each has its merits with regard to success. The challenge associated with methods by which teachers get their students interested, motivated, and engaged is one that continues to evolve. The success of those teachers is mostly notated in the successful academic experiences of their students, and in particular, end of grading, or EOGs, as well as others to be discussed later in this introduction. Being perceived as a *good* teacher often relies on the ability to get students involved in school, and this study will examine recommended practices of experienced, successful teachers and the theorists that support their instruction.

One of the most popular preschool and kindergarten activities that teachers have used for years is “show and tell”. Dailey (1997) informs us that show and tell serves to accomplish several objectives that are significant in each child’s development. Through an activity like show and tell, children subsequently are gaining confidence, developing strong self-concepts, improving language acquisition both as speakers and listeners, and gaining new knowledge. Dailey (1997, p. 224) asserts, “Appropriate practices reveal that it is not the teacher’s role to direct all activity and to decide what children will do and when; rather, the teacher should serve as a facilitator, guiding the children in their learning and language development and serving as a participant, learner, and observer”. She further contends that teachers can actually empower children by allowing them to take more ownership of activities like show and tell, thus creating a more student-centered environment that fosters

engagement in dialogue, exploration and creativity, as well as more learning experiences. Most young students have looked forward to the day when they were allowed to bring to school and present to the class something from home that connects with their world.

Creating excitement that eventually converts into participant engagement is a critical component of success for teachers with their students, and the sooner that a young boy or girl has positive experiences in school while engaged, the better the chances for continued engagement. Robins (2005) discusses some applicable Constructivist strategies of learning that are differentiated from traditional pedagogical methods. A Constructivist model is more student-centered not focusing on control, reliability, and communications, but relying on collaboration, personal autonomy, reflectivity, and personal relevance (Robins, 2005). The example of show and tell encompasses self-directed learning (SDL), as students are taught to analyze, categorize, organize, and classify information, making necessary relevant records at the appropriate steps in the process (Robins, 2005). This ideology promotes social learning and social responsibility (Bolhuis & Voeten, 2004; Robins, 2005) in students, and supplements traditional pedagogical teaching and learning styles that have become the norm. These “progressive” (Hill, 2006, p. 5), Dewey-inspired teaching tools are catalysts to critical thinking (Wuenstel, 2002; Barak & Shakhman, 2008). Booker (2007) references Bloom’s Taxonomy and the value of his Higher Order Thinking (Barak & Shakhman, 2008) being predicated upon “fundamental knowledge” (the first position of Bloom’s Taxonomy) gained from teachers providing a classroom less concerned with factual knowledge and more conducive to problem solving and independence of thought. Yang (2000) notes a Vygotskian

(to be discussed in literature review) premise that what children can do with assistance today, they can do alone tomorrow.

Context of problem

When teachers can facilitate learning scenarios by communicating the objectives of an assignment and monitor subsequent deliveries, young students are given an opportunity to think, plan, and present independently. In many of these situations, and because the material that will be utilized by the learners ties to their personal interests and own ideas, a motivated mindset, along with teacher consultation, fuels their progress. Often, when a child feels as though he or she has a great topic to build upon, that ignited mind engages in SDL experiences that also promote self-confidence, a strong self-image, self-reliance, and self-efficacy. A terrific example of this type of assignment is a popular “learning contract” used in some K-12 schools today. Abdullah (2001) discusses that SDL must be defined by teachers as being meaningful, and when these learning experiences are also perceived as fun by the students, the ultimate result is beneficial to all parties associated with it. Even though self-directed learning insinuates that the student is in control, the ultimate jurisdiction is handled by the teacher and the learner proceeds accordingly. Loyens, Magda, & Rikers (2008) referenced a study that found that students believed as long as they were given a set of learning objectives with some semblance of an agenda, like a learning contract, they felt they could be self-directed. These students indicated that they preferred support in their individual progress in SDL, and when it was adequate with appropriate scaffolding

(Abdullah, 2001; Davis, 2000), they were motivated to structure a plan designed to help achieve their learning goals. Bolhuis & Voeten (2001) explain that SDL encompasses the concept of process-oriented teaching, which they define as, “teaching that facilitates independent learning, supporting students to become proficient learners in the field concerned and preparing them for life-long learning” (p. 838). This teaching process transitions from modeling, to activating the students to participate, and ultimately having them practice and present on their own. Bransford, Brown, & Cocking, 1999) assert, although much of children's learning is self-motivated and self-directed, other people play major roles as guides in fostering the development of these children’s learning. Other students and the presence they have within academic settings play major roles, as well as adults (caretakers, parents, teachers, coaches, etc.). It requires an intentional, planned effort by teachers to successfully guide SDL. Most schools do not expect or even promote it; moreover, the burdens of teaching, learning, and accountability are a questionable debate and will be discussed below.

Assumptions

Various assumptions exist in the context of secondary education and some that are applicable to this study will be discussed within this section. This is not an exhaustive list, and the emerging assumptions that apply directly to the focus of this study are as follows: individual students’ rights of an education and accountability of provision of that right; the premise that education is a worth-while activity and is indeed good; and the belief that teachers are working within the classrooms with integrity regarding the educating and ultimate betterment of their students.

Leandro vs. the State of NC

As students progress further into their educational journeys, the complex developments within secondary education can literally catapult or stifle learning. At this part of many students' lives, academic engagement tends to decrease in priority, and the responsibility of educating American children rests not on the children or their parents, but on the school. *Leandro vs. the State of NC* (McColl, 2001) paved the way for an objective, lawful guide dictating the exact responsibilities associated with the education of all K-12 students. It is centered upon and challenges three debated issues: 1) the determination of a baseline level of education to which all children in NC are constitutionally entitled; 2) the responsibility for providing the baseline level of education; and 3) upon determining answers for the prior two questions, determination of parameters that the constitutionally responsible party will respect to provide that established baseline level of education for children in NC (McColl, 2001). In 1995, the Supreme Court found that every child in NC is entitled to a "sound, basic education" (McColl, 2001). Furthermore, the schools are considered constituent branches of the state, consequently, several parameters were established for the state to implement in every school and additional responsibilities of the schools were defined to ensure that all students get their proper education. These included hiring good principals, providing safe and orderly environments, accepting multiple teaching methods, and providing competent, well-trained teachers with high expectations of their students and themselves.

The Court's decision regarding *Leandro vs. State of NC* was an unprecedented Supreme Court ruling for both NC as well as the US. The Court legally determined that

every child in NC possesses both the ability and the right to learn, and also that the mandated responsibility to facilitate that law belongs to the state. Nieto & Bode (2008, p. 5) posit that “education is for *everyone* regardless of ethnicity, race, language, social class, religion, gender, sexual orientation, ability, or other differences.” The Leandro vs. State of NC ruling exemplified the critical role that the quality and commitment of teachers has on a clearly defined education objective for all.

No Child Left Behind

A popular topic within K-12 education over the past decade has been the federal government’s *No Child Left Behind* (NCLB) legislation, signed into law in 2002 requiring states to test students annually in mathematics, English/language arts, and science (Louie et al, 2008). This was a significant national modification in our public education system, and NCLB holds states accountable for the success and failure of all of their students. Because of NCLB, the extent to which instruction should be tied to standards or, what is referred to as *standards-based-instruction* (Mathis, 2004), has become a major issue in educational psychology and US classrooms. This issue centers itself on standards of excellence and what it takes to get students to pass external, large-scale, high stakes tests (Mink & O’Steen, 2003). Even though NCLB is federal legislation, like Leandro vs. NC, the burden of accountability is passed to the individual states to ensure that students’ achievement is satisfactory.

Various criticisms of NCLB have mounted since its implementation. For instance, using a single score from a test as a sole indicator of students’ and teachers’ progress and

competence represents a very narrow aspect of students' and teachers' skills and abilities. To more adequately assess student progress and achievement, psychologists and educators agree that a number of measures should be used including tests, quizzes, projects, portfolios, and classroom observations – rather than a single score on a single test (Hines et al, 2007; Mathis, 2004). These tests used as part of NCLB to measure students' achievement and progress do not evaluate important skills such as creativity, motivation, persistence, flexible thinking, and social skills. Critics also argue that teachers are spending far too much time “teaching to the test” at the expense of more student-centered Constructivist strategies that focus on Bloom's Higher Order Thinking Skills (Booker, 2007). Nieto & Bode (2008) discuss the dismal results so far of NCLB by suggesting that since NCLB's implementation, the law is leaving more children left behind than it is actually saving. Nieto & Bode explain:

“NCLB has also had devastating effects on teachers' sense of professionalism. Many teachers are now reluctant to engage in interesting projects with their students, or even to collaborate with peers because of criticisms they are likely to be received from administrators, who are also under tremendous pressure to keep their schools out of the headlines for failing to meet ‘adequate yearly progress’, or AYP. The result in many schools around the country is that teachers are expected to follow a rigidly prescribed curriculum with little room for innovation or collaboration. What are teachers to do?” (2008, p. 28-29).

Education

Peters (1970) analyzes education with the criteria that something *worth-while* should be achieved. He furthers that “bad education” is an oxymoron and that all education is good. Educators are assumed to possess an intrinsic motivation to bring about achievement in their students. Peters (1970, p. 36) states, “For the teacher is institutionally concerned with fostering interests which it is in children’s interest to develop”. Assuming that education is good, we must also assume that educators have the best interest of all students in mind while educating them. Zmeyof (1998) claims the main goal of modern education is to provide individuals with multifaceted training, knowledge, and skills for adaptation into the ever changing natural and social world. He adds that education has been transformed into “a sort of contract organization providing services to customers: individuals, social groups, social institutions (including the state), and society” (p. 104). Without the assumptions listed above, this study is clouded with tangents of challenges that devalue the theoretical implications.

Statement of Problem / Purpose of Study

Leandro vs. the state of NC and NCLB clearly indicate that the burden of educating all children is mandated by the federal government, delegated to the individual states, and ultimately rests on the shoulders of the respective schools, administrators, and teachers. Every child in America has the right to an education, but, as it exists in the public school system, many of them are neither cooperative nor willing to actually learn. Frequently, their parents do not or cannot offer necessary support, guidance, accountability, or motivation for their kids to receive that education. This is not always a knowledgeable reality; for example,

many Hispanic immigrant parents have typically become accustomed to the cultural norm of dressing their children for school, preparing a lunch for them, and sending them to school to become “bien educado”, which translates to well-educated (Ortiz & Plunkett, 2003).

Acculturation processes of learning parental support nuances that are extremely helpful within the American public school system are now lacking, and unfortunately sometimes never replace the honest ignorance existent in many immigrant parents.

While parents might not provide the incentive for their children to willingly engage in education, teachers also struggle with their responsibility to educate. Activities that incorporate SDL can also serve as a motivator for secondary education students.

Wlodkowski & Ginsberg (1995, p. 17) assert, “Engagement is the visible outcome of motivation, the natural capacity to direct energy in the pursuit of a goal.” The meaning of learning to individual students is crucial in their engagement, and Wlodkowski & Ginsberg (1995) discuss that an incorporation of various teaching modalities leads to more consistency with regard to collective classroom engagement. The key to the creation of a student’s intrinsic motivation to learn is illustrated by teachers helping students connect lesson content to their own worlds, and in the case of Hispanic families, as mentioned above, cultural SDL activities are an ideal platform. Estes (2004, p. 146) refers to Dewey’s Experiential Learning when she states, “The teacher’s role is to facilitate students’ learning by engaging them in experiences that are fundamentally reflective because of their relevance to students’ lives.” Dewey contributed to the educational format of American schools today; he recognized that schools, particularly K-12, were often repressive entities that did not foster and promote exploration and growth for students (Gayman, 2007).

It is critical that teachers captivate all students' interest in order to sustain and maintain engagement, and SDL offers an effective option for teachers to incorporate into their curriculums. A certain neo-Piagetian quandary challenges Piaget's stages of development in that secondary education students actually possess more capability to learn through SDL activities; this will be discussed within the literature review. The term, andragogy encompasses many of the components of SDL but has often been associated with an exclusively adult-learning strategy. Knowles, (1970) argues that andragogy is simply another model of assumptions about learners that should be used alongside pedagogical models, thereby providing another methodology that might be more appropriate and effective in certain situations. Moreover, Knowles, Holton III, & Swanson (1980) suggest that the two models would probably be most useful when not considered as dichotomous but rather two different ways to teach. Zmeyov (1998, p. 107) states, "Andragogical principles of learning are widely needed now, and not only in adult education". This study will help clarify the realistic possibilities associated with the incorporation of SDL with other traditional pedagogical teaching styles. In order for teachers to succeed in the grand quest of providing an education to all students, numerous and various styles and opinions exist. The purpose of this exploratory study is to understand more about the role of SDL in secondary education, and how teachers might successfully facilitate engagement, and ultimately promote more effective learning environments (See Figure 1).

Research Question

1. To what extent can the incorporation of SDL techniques add to the effectiveness of secondary education teaching?

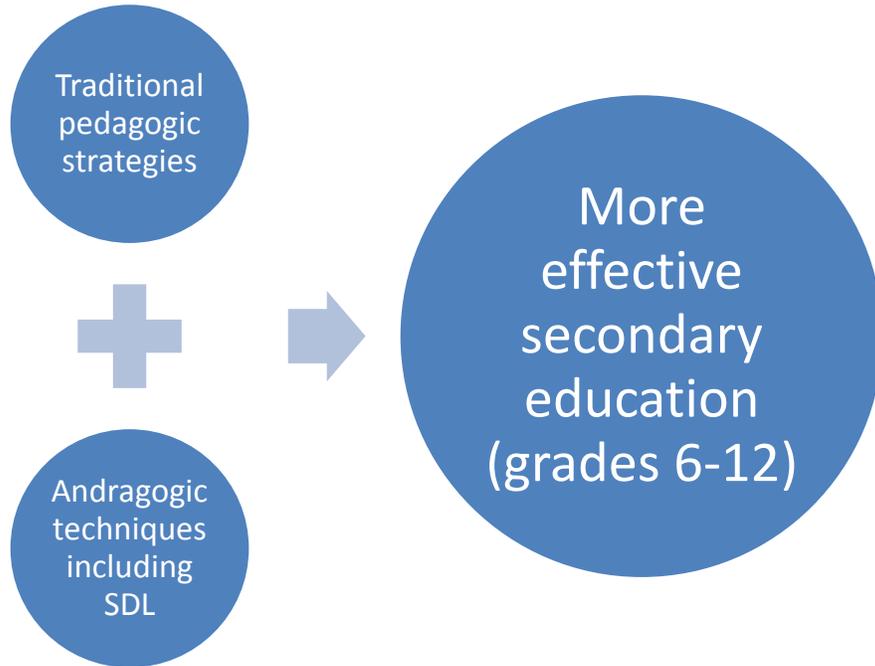


Figure 1: *Researcher's Hypothesis of Study*

CHAPTER TWO LITERATURE REVIEW

The theoretical framework of this study encapsulates the theory-based educational platforms of Piaget, Vygotsky, and Knowles. The literature review will examine how incorporating Knowles' andragogical methodologies such as SDL with the traditional pedagogical studies of Piaget, teachers can facilitate learning more effectively by guiding secondary education students into Vygotsky's *Zone of Proximal Development*, (Robins, 2005; Yang, 2000) where learning occurs. In addition, Blooms' taxonomy of learning, as well as Wlodkowski's theoretical components of motivation will be examined. A sequential background of these theorists will build upon one another forming the theory-based hypothesis of this naturalistic study of human science – a networked teaching strategy of theorists will be formed. Additionally, emerging applicable literature will follow the initial descriptive sections on the theorists.

Piaget

Jean Piaget dedicated nearly 60 years of research to determining just how human knowledge develops; moreover, he tried to ascertain the evolution of humans' different, changing modes of thinking over their lifetimes (Papert, 1999). Bransford, Brown, & Cocking (1999) discuss that after several years of an accepted belief that a newborn's mind was a "tabula rasa" (p. 67), Piaget argued that a newborn mind is a much more complex cognitive structure. Beginning with infants, he differentiated stages of development (See Table1) into four categories of thought schemas, and Webb (1980) explains that these stages are sequential "propellants to mental development" (p. 93). Piaget theorized that transition

from the Concrete Operational stage to Formal Operational (abstract thinking) occurs for all children during their early secondary education years around 11 or 12 years of age.

Table 1: *Piaget’s Four Stages of Cognitive Development* (Fischer, 1999)

Sensorimotor	0 - 2 years	Coordination of reflexes
Preoperational	2 – 6 or 7	Self-oriented/Egocentric
Concrete Operational	6 or 7 – 11 or 12	<ul style="list-style-type: none"> • Multiple viewpoints • Minimal abstract views
Formal Operational	11 or 12 – up	Abstract thoughts/reasoning

Piaget believed that each person possesses a self-regulated, internal mental capacity that allows the brain to take new experiences and build upon existing knowledge; this process is referred to as *assimilation* (Fischer, 1999). When brand new data is analyzed by individual brains and subsequently stored, the process is referred to by Piaget as *accommodation* (Fischer, 1999). In this complex, the individualized process of interpreting and eventually understanding the world around us, Piaget claims that we tend to switch between assimilation and accommodation frequently. Although Piaget’s stages are described as occurring sequentially during each child’s development, Webb (1980) explains that individual intelligence levels and certain environmental conditions might cause variations. Case (1987) illustrates the various opinions referred to as to neo-Piagetian ideas including perhaps that more stages of cognitive development actually supplement Piaget’s four. These postulated steps might account for “substantial differences, both within and across individuals, in the rate and patterning of children’s development in different domains (p. 777)”.

Vygotsky

Lev Vygotsky drew from Piaget's work, but posited that children's cognitive development is much more impacted by social and environmental influences, including cultural influences (Zuckerman, 2007). Vygotsky is perhaps best known for his *Zone of Proximal Development (ZPD)*, which denotes the gap in any situation between what a child knows about something and what he or she could learn with the guided assistance of a teacher, parent, or another adult (Zuckerman, 2007). Jennings, Dunne, & McShea (1997) refer to Piaget as a theorist who looked from within the learner as a "lone scientist" (p. 310), but a term that could be considered analogous with Vygotsky's perspective on cognitive development from outside learning guidance and assistance could be "young apprentice" (Jordan, Jensen, & Greenleaf 2001). Vygotsky posits that children's interactions with others, primarily adults, are critical to the brain's development. Zuckerman (2007) fittingly states, "...the teacher does not teach what is well within the child's own capacity. The child comes to school not knowing how to do certain things; with the teacher's help he becomes increasingly independent; and, finally, he is able to act without outside assistance and needs no further guidance, instructions, and collaboration (p. 45)".

Knowles

Malcolm Knowles is known for his studies of andragogy – a term originally formulated by German teacher, Alexander Kappin in 1833, which was created from **andra**, meaning "man" and **agogos**, meaning "leading" (Zmeyov, 1998; Ozuah, 2005). Kappin coined the term to try and further explain elements of Plato's education theory (Ozuah, 2005). The definition of andragogy is "the art and science of helping adults learn" (Zmeyov,

1998, p. 105), and has been contrasted, although strikingly similar, to pedagogy – “the art and science of helping children learn” (Ozuah, 2005). Incidentally, the word pedagogy is derived from the Greek word “paid”, which translates to “child” (Ozuah, 2005) and agogos.

Gehring (2000) discusses that a major component of Knowles’ andragogical processes of learning requires teachers to facilitate the acquisition of learning through more student-centered, or “person-centered” (p. 158) scenarios that require higher order modes of thinking, and this includes SDL. In Knowles research, he wrote that, unlike the assumptions about child learners on which traditional pedagogy is premised, andragogy is grounded on the five crucial assumptions about the characteristics of adult learners: 1) *Self-concept* - As a person matures, his self concept moves from one of being a dependent personality toward one of being a self-directed human being; 2) *Experience* - As a person matures, he accumulates a growing reservoir of experience that becomes an increasing resource for learning; 3) *Readiness to learn* - As a person matures, his readiness to learn becomes oriented increasingly to the developmental tasks of his social roles; and 4) *Orientation to learning* - As a person matures, his time perspective changes from one of postponed application of knowledge to immediacy of application, and accordingly his orientation toward learning shifts from one of subject-centeredness to one of problem-centeredness; and 5) *Motivation to learn* - As a person matures, the motivation to learn becomes internal (Ozuah, 2005).

Although much controversy has arisen with regard to the application of andragogy into child learning, Holmes & Abington-Cooper’s (2000) article quotes Knowles’ argument (as cited in Knowles, Holton III, & Swanson, 1980, p. 43), “...andragogy is simply another model of assumptions about adult learners to be used alongside the pedagogical model of assumptions,

thereby providing two alternative models for testing out the assumptions as to their ‘fit’ with particular situations. Furthermore, the models are probably most useful when seen not as dichotomous but rather as two ends of a spectrum, with realistic assumption in a given situation falling between two ends”. This idea of adult-learning does not exclusively demand that a learner be legally an adult, or above the age of 18; moreover, it suggests that the learner, regardless of age, engages in a learning scenario that invokes a self-directed, more mature engagement with proper guidance. Knowles, Holton III, & Swanson (1998, p.63) created an applicable depiction (See Figure 2) of where and how he suggested that children could actually benefit from andragogical methods; the shaded area represents where Knowles suggested that pedagogy is practiced inappropriately and perhaps children could benefit from andragogical efforts. In Knowles’ andragogy model, when what he refers to the *locus of control*, Knowles, Holton III, & Swanson (2005) transition from the teacher having that control to it being shared by both the learner and the teacher (hence facilitation of learning); the learner will progress more effectively.

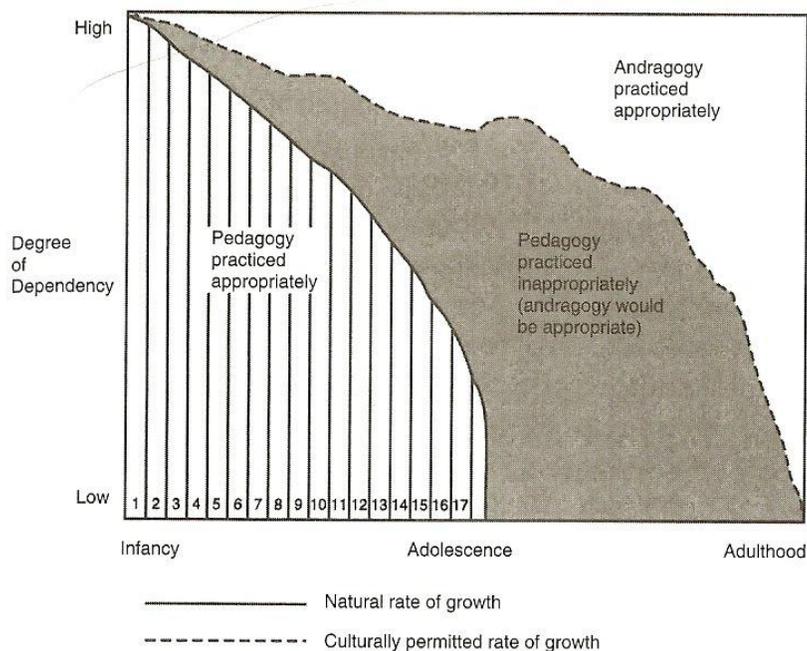
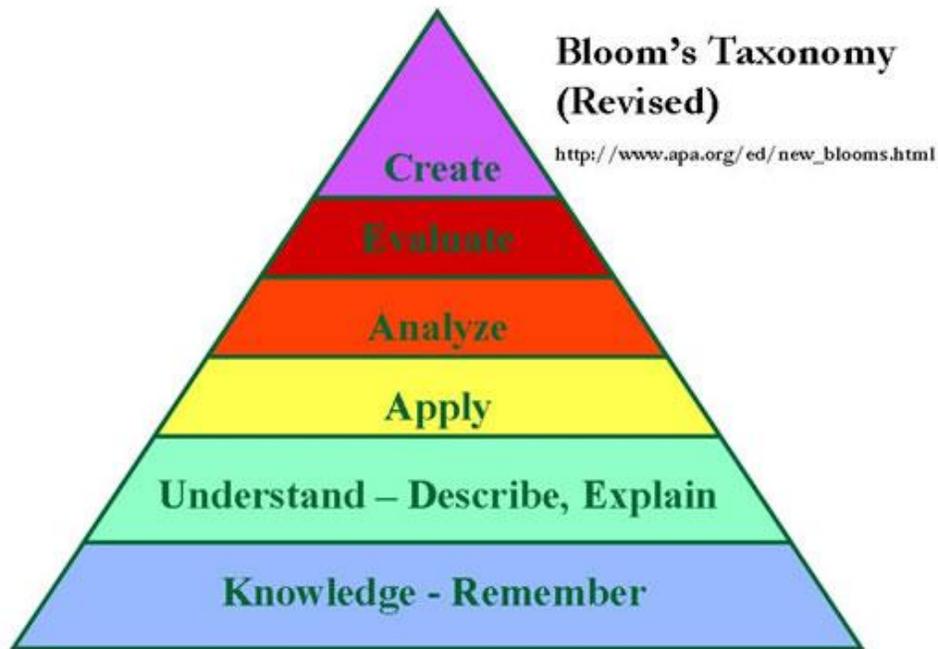


Figure 2: *Knowles' Andragogy Model* (Knowles, Holton III, & Swanson, 1998, p. 63)

Bloom

Although, like Knowles, Benjamin Bloom originally intended for his taxonomy to apply to higher education college learning, it later became a framework for K-12 educators (Booker, 2007). Booker (2007) states that Bloom's Taxonomy and its focus on Higher Order Thinking has become "a creature of the K-12 system" (p. 354). The lowest of six levels (See Figure 3), *Knowledge*, is a necessary predicate in learners that leads to each subsequent step; the levels build upon one another (Booker, 2007). Pintrich (2002) connects Bloom's work to that of Piaget and Vygotsky, and without making the direct link, he makes a connection to Knowles by his statement that Bloom's Taxonomy was initially published with an objective to , "help students become more knowledgeable of and responsible for their own cognition

and thinking (p. 219)”.



Based on an APA adaptation of Anderson, L.W. & Krathwohl, D.R. (Eds.) (2001)

Figure 3: *Bloom's Taxonomy of Learning* (Forehand, 2005)

The term, “Higher Order Thinking” is taken from Bloom’s work, and it includes more sophisticated, complex inquiries for learners, such as, “What do you think about X?”, and “Do you agree with X (Booker, 2007, p. 354)?” In 1980, public US schools adopted a program for at-risk students from the fourth to the eighth grades called Higher Order Thinking Skills, or HOTS (Booker, 2007). These methods for teaching are examples of non-teacher-directed methods that require engagement from a motivated classroom.

Wlodkowski

Raymond Wlodkowski is known for his research and writing regarding motivation and learning; in particular, he is steadfast in his belief that teachers should relate lesson

content to student's backgrounds (Ginsberg, 2005). By relating lesson planning to student's environments, in particular their cultures and emotions, Wlodkowski & Ginsberg (1995) argue that it will evoke intrinsic motivation within the learners, thus making the learning experience much more worthwhile to the students. In 2007, the state of NC adopted a framework of culturally responsive teaching for its public school system from Wlodkowski & Ginsberg (1995) that focused on 1) establishing inclusion within the classroom; 2) helping the students develop positive attitudes; 3) enhancing meaning for students in learning experiences; and 4) engendering competence, which incorporates that teachers create an understanding that students are effective in learning something of value (Hobgood, 2007). This framework is designed to continuously create or enhance these four conditions that the literature suggests ensures encourage motivation. Also, Ginsberg (2005) stresses that every instructional plan should be motivationally designed from beginning to end.

From a networked convergence of theorists, a teaching strategy is hypothesized to emerge, and this study aims to connect the theorists' individual concepts to the experiences of the participants (See Figure 4). The following section will examine more current and emerging literature, as well as some of the more recent studies that have touched upon the premise of this thesis.

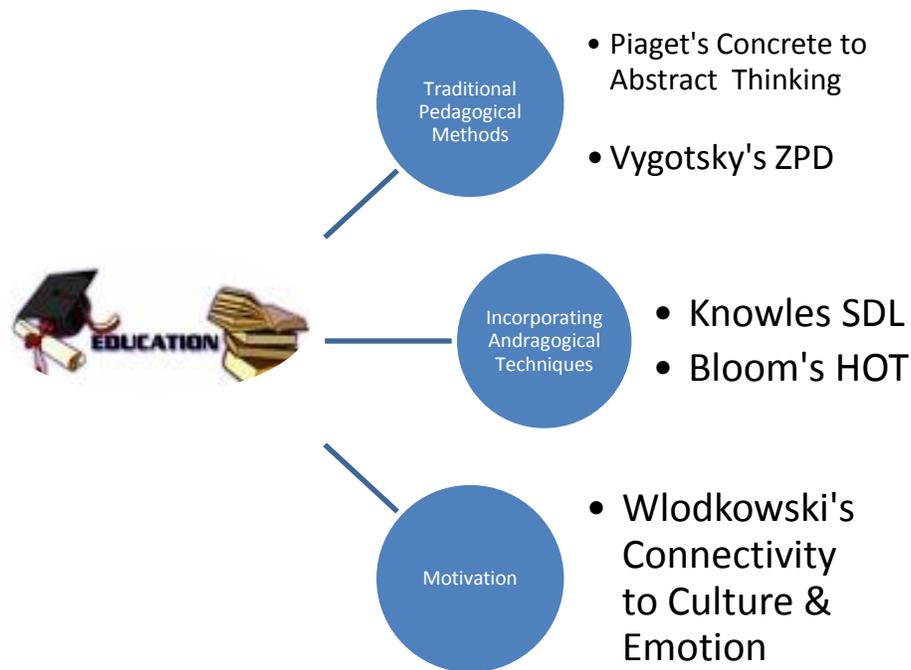


Figure 4: *Researcher's Hypothetical Teaching Strategy*

Emerging Research

Bolhuis & Voeten (2000) conducted an observational study in Denmark amongst secondary education teachers and their SDL classrooms. The results of the study indicated that, although the teachers attempted to facilitate learning by incorporating self-directed activities, insufficient progress was made in learning since the students were not actually taught how to learn in a self-directed manner. Estes (2004) explains that student-centered facilitated learning is often unsuccessful since many teachers guide the learning experience into a SDL activity based upon the teachers' values rather than the students'. She furthers that in order for any student-centered activity to warrant its terminology, "the learner [must be] actively engaged in posing questions, investigating, experimenting, being curious, solving problems, assuming responsibility, being creative, and constructing meaning (p. 158)". Bolhuis (2002)

explains the importance of moving gradually to student regulation of the learning process. He states that competence in SDL needs to be developed, and students need to practice and be guided by teachers in order to learn how to be better learners in these environments.

Merriam (2001) takes a look at the actual learner – moreover, the distinction of adult vs. child. She questions the extent to which the assumptions of Knowles’ work with andragogy are characteristic of *adult* learners only. Albeit, some adults are highly dependent on a teacher for structure, conversely, some children are extremely independent, self-directed learners. The article mentions that the same holds true for motivation; adults may be externally motivated to learn, such as compliance with attending learning initiatives for their job, for example, while children may be motivated by curiosity, or the internal pleasure they receive from learning. She also notes that one should not assume that adults have more and deeper life experiences than children; she posits that it may or may not function positively in a learning situation. “Certain life experiences can act as barriers to learning. Further, children in certain situations may have a range of experiences qualitatively richer than some adults (p. 5)”.

Zion & Slezak (2005) conducted a study of high school biology students in an effort to observe how the student’s functioning in a SDL classroom corresponds to the leadership of the teacher. The authors suggest that SDL environments are not designed to allow students to do whatever they want, moreover, the approach refers to the careful planning and management, or facilitation of the learners. This study showed how effectively a teacher could design a project in which *guidelines* rather than instructions were provided by the teacher, and critical thinking and reasoning skills emerged in the students from the process.

Finally, this documented experiment proved the value of a prepared, facilitating teacher, and the study discussed the huge impact of the motivation and satisfaction that the students took away from the activities that incorporated SDL in their classrooms.

CHAPTER THREE METHODS

Orientation

The orientation of the researcher of this study is such that he intends to “make preferences clear” and that the readers “need to know where [he is] coming from” (Miles & Huberman, 1994, p. 4). The researcher does not claim to be a vastly experienced practitioner choosing to share experiences for the betterment of society – but moreover, this study interviewed three current secondary education teachers (grades 6-12) to understand the extent to which SDL influences their teaching philosophies, strategies, and ultimately their student’s learning. The researcher clings to a commitment of scientist vs. post-modern advocate; Anfara & Mertz (2006, p. xxiii) state, “How you study the world determines what you learn about the world.” I am the “classic stranger seeking to understand the natives” (Anfara & Mertz (2006, p. 8). Creswell (2009) refers to this qualitative strategy as narrative research and my efforts will require that I place an artificial boundary (Miles & Huberman, 1994) or temporary barrier on the world to try and understand it. Perhaps the results of this study might lead to dissertation work and eventually practitioner application for me.

Design of the Study

As a neophyte of K-12 education, especially when compared to the combined 80 years of experience of the three participants, the researcher maintains a scientific mode of inquiry throughout this study. Anfara & Mertz (2006, p. xxv) state that this style of research is “trying to make sense of what is going on in the social setting being studied”. It is through the lenses of the three practitioners’ “lived experiences” (Miles & Huberman, 1994, p. 10)

that the data will be compiled. By using a case study approach, each teacher is considered a ‘case’ and each case will be compared and contrasted. The teachers were selected (See Appendix A for informed consent) using personal connections and a modified snowball sampling technique (Miles & Huberman, 1994) of asking teachers if they could refer the researcher to other experienced teachers who are perceived as being successful and might be willing to participate in the study (See Appendix B). The initial approach was offered to six potential participants through email, and the first three who agreed to the study were selected. In each email, the proposed study was communicated in a brief description; since the prospective participants are proven to be successful teachers with a significant amount of experience teaching, the hypothesis and research questions were also provided to them.

Face-to-face meetings with each participant were scheduled at a time and location convenient to them, and these meetings lasted between one and two hours respectively. The interviews were recorded with a digital, audio device, listened to several times, and then transcribed, sorted, color-coded, and member checked. Data were downloaded onto a secure, password-protected personal computer accessible only to the researcher. The participants were asked to refrain from the use of any names of any people or schools – if any names were recorded by accident, the tape was edited with that information removed. In the notes, the documents do not contain any true names; pseudonyms were inserted for participants, any school names, or any other persons named in the interview. Any printed transcripts likewise do not contain any personal identifying information. All master lists were deleted both from the hard drive and recycle bin of the computer used for communication purposes, and finally,

no records were kept that link a participant name to a specific digital recording or transcription. Audiotape files will be destroyed at the end of the project.

During the interviews, care was taken to not use true names. Open-ended questions (See appendix C) were asked to each of the participants leading to individualized tangents in teaching. The analysis generated a narrative description of the role of SDL in teaching and learning for these three teachers. Preliminary descriptive analysis will document the interviews and then more complex inferential generalizations (Miles & Huberman, 1994) will follow. The interviews are the primary data source for this study with a supplement of lesson plans from each participant to reach across another data source. The three separate cases will be detailed in the next chapter of this study, and the findings in chapter five are intended to inform future studies about how SDL matters in contemporary education environments.

Trustworthiness

This study has attempted to generate meaningful and trustworthy findings by addressing considerations for both validity and reliability (Creswell, 2009). Approaches to address concerns about validity and reliability were carefully made, especially about the manners by which the data was handled. For instance, after each interview was interpreted in writing for this study, each participant was allowed to review respective synopses to verify accuracy and ensure member validity (Lindloff & Taylor, 2002). Reliability in data was predicated upon the researcher's diligent care in providing clear questions to the participants, conducting the interviews at a date, time, and location at the convenience of the participants, and utilizing the consultative assistance from peers within the researcher's university. Researcher bias was mitigated by early explanation to the participants of researcher's

position of scientific inquiry; researcher effects (Miles & Huberman, 1994) were also avoided with this early, intentional strategy.

Ethical Considerations

Interviewing techniques utilizing an audio recorder can render some ethical dilemmas. For example, interviewing does not visually portray subjective body language such as embarrassment or discomfort, and the researcher's ability to document all observations is impossible. One optimistic perspective is the possibility that perhaps the participants may obtain individual internal benefits by discussing their experiences and enjoyed successes, deepening self-knowledge or perhaps engaging in more applicable reflective practices as a result of participation in this study.

Interviewing can also be problematic for both the researcher and the participants; the very act of recording a discussion can alter the participation. Before the interviews, the researcher provided all participants with complete information relating to what the researcher will actually be attempting to accomplish during the interview process. This decision may have unintentionally promoted a response bias in the participants rather than an objective probing for data. The researcher employed a technique known as *epoché* (Creswell, 2009; Lindloff & Taylor, 2002), or bracketing during the interviewing to avoid biases, control assumptions or predispositions and to not affect, or lead any of the responses of the participants.

CHAPTER FOUR VOICES OF PARTICIPANTS

Data Collection

Teacher Demographics

Each of the three participants has taught secondary education for over twenty years and the respective content areas for them are different from one another. A combined 80 years of experience provides for tremendously useable data. Their experiences, styles, and other pertinent demographic information will be illustrated throughout the individualized interview synopses in the section to follow.

Interviews

Ms. Robin²

Ms. Robin enthusiastically agreed to participation in this study and prepared for the interview by researching every component of the predetermined questions written by the researcher (See appendix C). One of her first comments while being audio recorded was that she agrees that interviewing teachers is a great way to learn. She expressed personal interest and intrigue with the hypothesis of the study, and she asked to read it upon its completion.

Ms. Robin received a Bachelor's degree in zoology and science education, and then continued her education for a Master's in science education. She started teaching in a traditional school for the first six years and then changed to a year round school where she has remained for fifteen years. She was initially certified as a high school (HS) biology teacher but interviewed for and accepted a middle school (MS), sixth grade science position,

² All names are pseudonyms

which she enjoys immensely. For 21 years now, she says, “I fell in love with sixth grade enthusiasm”. She has also taught anatomy and physiology. When asked about teaching styles, Ms. Robin claimed to use several different styles; she furthered, “You can integrate so many parts of yourself and come up with creative ways to meet the needs of your students.” Here, she discussed the diversity that is present in all four of her classes. She said that teaching English language learners, academically gifted, learning disadvantaged, as well as other differentiated students forces her to look at all ways of teaching. She referenced her focus on hands-on science projects, kinesthetic, and auditory classroom activities. She loves to facilitate learning, and as she put it, she “gets the kids hooked and creates a “disequilibrium” which she said leads to student engagement. She stated that the students have a personal reason to learn when this happens, and the eight different groupings that typically comprise one of her classes during activities tend to work together to collect and analyze data only to be compared and contrasted with the other groups. “This, she stated, is a classic case of SDL”, and moreover, she indicated that some of the gifted students can actually guide the remainder of the groups whereas she, as their teacher, simply observes and oversees the process of learning.

Before our meeting, Ms. Robin read about Knowles’ work with andragogy. She said that learning through errors, as she read about Knowles, often leads to “a ha” moments for learners. She referenced that Knowles stating that students need to have a reason for learning and that she believes, like Knowles, that teacher-led lectures followed by exams is not her preferred way to teach. She believes, “students appreciate knowing why they are learning something and how it will help them”. The climax of the interview occurred as she claimed

that students need to “buy into” what they are doing rather than simply memorizing factual information. She said that when kids buy into a learning situation, they get inspired and excited going beyond teacher expectations. She smiled when she recalled sometimes, without even being asked, they would bring in things like rocks or minerals completely on their own. “This”, Ms. Robin proudly exclaimed, “is the beginning process of life-long learning”!

This enthusiastic participant pointed out that highly motivated students, either intrinsically or extrinsically [by the support of their parents], have a much easier time with SDL activities than do those who either lack motivation or come from homes that, as she indicated, “do not value education”. She furthered, “It’s tougher... more of a struggle... for non-motivated kids, especially if they don’t get support or guidance from home”. She vehemently raised her finger into the air and remarked, “If you’re in my classroom, I’m responsible for teaching you!” She said that she cannot *make* a child learn, and the accountability is shared by the individual students and her; she wants every kid to feel some success in her classroom.

Ms. Robin moved to what she referred to as being her favorite theorist from the researcher’s list in Wlodkowski. She read a few quotes of his from her notes that she felt applied nicely to her teaching: “Effort is the constant companion of personal excellence”; “Mistakes are a natural instructive part of learning”; “Value the way something is done rather than the end accomplishment”, and finally, she noted this final quote from Wlodkowski that she believes directly ties to SDL, “Hold oneself responsible for what influences your motivation”. She said that an example of this would be how she sees that her students love

the idea of picking from several options for a project. She interjected that she firmly believes family, along with culture, has a direct influence on motivation for her students. Whenever her kids could tap into emotional connections to family and culture, she has noticed deeper, more motivated and committed learning.

When asked if any other theorists listed in the researcher's questions, she looked down to her notes and talked about how her students are right at the cusp of Piaget's point of transition from concrete, operational thinkers to formal, abstract thinkers. She said, "They need someone to prod and guide them into becoming more abstract thinkers". She tries to get them to make a "Piagetian leap" and not simply fill in blanks or choose true or false, but, she said, "how to hypothesize, predict ...apply things to the real world". Instead of children just trying to find answers to questions, Ms. Robin is trying to "get her students thinking, understanding, comprehending material then using it in a real world situation". She concluded, at the end of a lesson, she asks them to "apply what they learned and write how it applies to the real world".

Mr. Patrick

Mr. Patrick has been involved in education for 34 years! He initially began in a MS and HS located in Atlanta, GA where he taught for two years. He moved to Durham, NC and has resided there ever since. After relocating, he quickly found an opening for his content area of history in a middle school near to his new residence. After teaching for five years, he moved into administration as the MS Director where he remained for 19 years. After committing himself to that responsibility, he moved back into the MS history classroom and

has been there for 11 years. He has also coached several boys' and girls' sports including football, soccer, volleyball, basketball, and baseball; he has ceased coaching duties.

Mr. Patrick's response to the question regarding his teaching style provoked a long discussion regarding his strong opinion of what he believes works. He stated that he likes to "keep the kids off balance". He added that humor certainly has a place in MS education, and he remarked that he has the capability to carefully and politely tease his students at times simply to take the edge off and ultimately "win the kids". He is a huge advocate of trust and believes that if the students realize that the teacher has the students' best interest in mind and truly cares about what he or she is doing, the students will recognize it and respond accordingly. He commented that, "We have an instinct to be good teachers and some just do not". Finally, he added that he does not require that students take notes, nor does he assign long papers or give frequent quizzes or tests.

When asked about his use of SDL techniques in the classroom, he responded with, "Sure, all of the time". He said that some instances include very short lessons asking for SDL in the classroom and others include week-long lab work where he, as the teacher, only supervises the class while they work toward established objectives. He said that he likes to give the classroom lots of choices; for instance, in a lesson about the U.S. Great Depression (See Appendix D, Mr. Patrick's second lesson plan), he distributed hundreds of photos and asked the students to compile their own Voice Thread including six or more photos then tell a story. In another example, after completion of reading a novel, he assigned a project in which the kids were told to use any form of technology to present their work to the class. The results included Imovies, poster boards with lighting borrowed from an electric board

game, PowerPoint presentations, Voice Threads, keynotes, and songs. He used the word “create”, which he said ties to Bloom’s critical thinking, in much of this discussion. He smiled while telling the story of a weekend-long assignment to design any individualized manner by which to present to the class a particular part of World War II. Some results included journals, buttons worn, songs that were sang and occasionally played with instruments, stories, and various random methods. His opinion of lecturing is that it indeed has its place in teaching, but it should be limited to perhaps once or twice per week. He stated that he does not advocate “pounding them with info and asking them to spit it back at you”. The majority of the week should be used for what he referred to as being, “other stuff [besides lecture]”.

He related much of his successes and failures in teaching to parental support. Perhaps his most powerful comment was, “The destruction of family really hurts education”. He sees the difficulties associated with families breaking up as a huge deterrent for children succeeding in school. He also interjected that it seems as though too many parents simply do not value education and it unfortunately trickles to their children.

Ms. Kari

The third and final participant interviewed in this study was Ms. Kari who has been an educator for 25 years. After obtaining an undergraduate degree in statistics along with a Master’s in applied math and another in math education, she taught math at the college level for 19 years, both locally and in Virginia. For the past six years, she has taught HS (grades 9-12) math; she prefers non-honors track students since, as she put it, she “connects better with the general track population”. The researcher was concerned that math might present a

huge challenge with regard to the incorporation SDL in teaching, especially comparing it to the other two participant's content areas of science and social studies. Following the interview, however, a surprisingly applicable strategy of teaching was described. Finally, Ms. Kari was fascinated with the study and quite curious and enthusiastic about its completion.

Ms. Kari explained that she has transitioned recently from being a more traditional, teacher-centered math lecturer into a much more student-centered facilitator. She introduced the relatively new term, "modeling" to the study, and described it as being derived from physics but now moving rapidly into many secondary education content areas including math. She continued that modeling is "right in line with SDL". She has attended a few modeling workshops about the teaching style and referred to how it helps generate independence, confidence, and the ability to utilize resources in students. Here, Ms. Kari illustrated her vast experience in education by referencing "tapping into Piaget's different schemes [to which] connections can be made to promote learning". She continued that it is easy for a teacher to stand in front of the classroom and present then expect the students to regurgitate the material. "Unfortunately", she passionately remarked, "by not accessing the frontal lobe, no executive function in the brain leads to learning". Finally, she offered an applicable example by saying that, rather than simply answering student's questions, she tends to answer questions with questions. For example, with a word and concept such as *exponent*, she begins with the origin of the word, what it might mean to others, and from where it is derived. Learners can then put things together and attach meaning to knowledge;

once three or four concepts build upon one another, connections are made and learning is richer.

Her concluding remarks included her belief that the power of praise in learning scenarios comprised of SDL strategies is crucial. She said that she is constantly monitoring learning activities by interjecting with positive feedback like, “what next; almost; you’re on the right track; and good job”, among others. One additional comment was her frustration with preceding MS math classes having “too many disjointed math topics that simply do not connect to anything for them to take into grades 9-12”. She is bothered with her opinion that no schemes are tapped into in MS and the entire methodology should be restructured to lead more systematically into HS.

For an example of lesson plans that incorporate SDL techniques in the classrooms of the three participants, please refer to Appendix D. Mr. Patrick shared two lesson plans, Ms. Kari one, and Ms. Robin supplied a week-long mini unit.

CHAPTER FIVE FINDINGS

The combined 80 years of experience of the participants provided strong, applicable data with “thick description” (as cited in Lindlof & Taylor, 2002, p. 16) from each of the interviews. It was anticipated by the researcher that perhaps Ms. Kari might have had less of a tendency toward SDL since math might be perceived to be more of a teacher-led content area, however the interview showed connections to SDL. For Ms. Robin and Mr. Patrick, both middle school science and history teachers respectively, certainly proved that their subject area conveniently invites SDL activities, and it is apparent that both of those teachers embrace the incorporation of SDL in their classrooms wholeheartedly.

Each of the participants expressed a willingness to participate and an interest in this study’s subject area. Ms. Robin thought the overview of the study was, “very interesting...and that interviewing teachers is a great way to learn”. She did her homework before the interview and claimed to have learned a lot becoming familiar with the interview questions, which were emailed before the interviews. Mr. Patrick was “more than happy to help with the study”, and he said that he was glad to share his experiences that apply to my topic. Finally, Ms. Kari stated she was “fascinated by the study!” She did not demonstrate that math was not a subject that could easily allow teachers to incorporate SDL within the class, the researcher’s initial concern.

The teachers each claim to use multiple styles; their initial responses to that question were, “all different styles (Ms. Robin)”; “a variety of styles (Mr. Patrick)”; and “progressed from very traditional lecture, which is still a necessary component, to answering a question

with a question (Ms. Kari)". Ms. Robin referred to MS children "making a Piagetian leap" from concrete, operational thinking to formal, abstract thinking. Mr. Patrick also referenced Piaget when he talked about MS kids moving to conceptual thought from concrete thought. Finally, Ms. Kari discussed the children tapping into Piaget's schemes to "access the frontal lobe to allow for executive function of the brain". Piaget's development stages leading to Vygotsky's ZPD was inferred in each of the interviews with indirect correlations. Perhaps the most poignant, compelling characteristics of each participant's interview are as follows:

Ms. Robin

"Buy in! I love to facilitate and get them hooked...**create a disequilibrium** that creates a reason to learn – engaging, hands-on work. They appreciate knowing why they are learning it and how it will help them. They need a reason for learning, and once they **buy into** what they are learning, engagement follows. People need to buy into what they're doing rather than just [taking a] test...they become life-long learners and get inspired...excited and go beyond expectations. They bring in stuff (rocks and minerals) on their own [without being asked to]."

Mr. Patrick

"I teach with a variety of styles...**keep the kids off balance**...with humor, teasing [appropriately]...I believe you need to win the kids. For me, *trust* is

very important. Once they know that you care about what you are doing, they respond much better. Once independence is instilled with an activity, I see more interest and involvement.”

Ms. Kari

“I have recently started **modeling** in my classrooms. It falls right in line with SDL. I have completed two workshops and started using it. Modeling starts with an idea, like ‘exponent’...let them explore the origin of the word...the history behind it...put things together, like why it’s called exponent...three or four different concepts and build on those so connections are made. You can’t just give them something they cannot make connections to.”

Ms. Robin’s ‘disequilibrium’ (Fischer 1999) expands from Piaget to Vygotsky’s ZPD; Mr. Patrick’s “keep[ing] the kids off balance” also draws from Piaget, and then creates a ZPD; and finally, Ms. Kari’s modeling (Lesh, 2006) ties directly to Piaget, and then Vygotsky. Each teacher mentioned the importance of lectures, but more importantly stressed the tremendous advantages of pushing secondary education into Piaget’s abstract thinking and Vygotsky’s ZPD; this is where they say that learning occurs at its best, and the theorists concur. In order to reach this point, however, the participants also had opinions about another necessary component to consider: motivation.

Ms. Robin said that she cannot force every child to learn, and that she really wants for each student to experience success in her classrooms. She spoke extensively about the creative ways in which she gets learners motivated. She believes that students respond better when they comprehend the way something is done rather than the end accomplishment. She also stressed the importance of culture and family; she attributed diversity to much of the successes of her teaching. She feels that the accountability of teaching falls on her, the individual students, and their parents. Ms. Robin acknowledged that highly motivated students tend to have much better success with SDL than do those that come from homes with minimal support or families who do not place value on education. Mr. Patrick also looked at family as being important to his students' successful learning. His comment about the destruction of family really hurting education speaks volumes and supports Ms. Robin's beliefs. He felt that some teachers just possess an instinct to be good teachers, but some do not. Those that are good teachers can often help students in various ways, but the bad teachers may not be able to help struggling kids. He was optimistic that most of his students "make it just fine", even with minimal parental support. He said that as a teacher, "You can't give up on our kids." Finally, Ms. Kari discussed motivation from a different perspective. She feels that it is linked to success and that it is earned. She compared it to a drug and said that when they experience some success, they want more. She likes to scaffold by offering constant interjections including praisings to encourage students when they are on the right track. Zion & Slezak (2005) discuss the importance of teachers encouraging and supporting their students at critical milestones throughout an inquiry process. This, Ms. Kari believes, ultimately forges motivation within the young students. Her immediate focus with her

students is to continue to push them in SDL to develop independence, confidence, and learn to use resources. Each participant has substantiated, but in a unique manner, the advantages of incorporating SDL classroom activities into his or her teaching. Many preliminary steps, however, must be taken to establish the necessary trust and comfort level in the students before introducing them to these worthwhile activities. Table 2 represents a very generalized synopsis of each participant’s important practices that were determined within the data to achieve the above-mentioned objectives.

Table 2: Participant’s Important Practices Found in Data

<u>Ms. Robin</u>	<u>Mr. Patrick</u>	<u>Ms. Kari</u>
Get “buy-in”!	Establish trust.	Answer questions with questions.
Motivate through family and culture.	“Win” the kids.	Teach kids to make connections with learning.
Establish reason to learn and apply learning experiences to real world.	Provide choices to promote interest and involvement.	Provide constant interjections and praisings to promote confidence.
Create life-long learners!	Don’t ever give up on kids!	Allow choices and create collaboration.

CHAPTER SIX DISCUSSION AND CONCLUSION

Affirmations

The purpose of this study was not to seek out theoretical or participant validation that andragogy should replace pedagogy; moreover, the findings of this study were hoped to support the hypothesis that the incorporation of SDL would supplement nicely for teachers the traditional pedagogical teaching methods which would lead to improved student engagement, motivation, and eventual learning. Just how a teacher teaches, or how teachers teach within a school can dramatically affect learning for students. The results of this study are indeed that some components of andragogical methods, such as SDL, involve a much more student-involved, collaborative learning scenario rather than the more traditional pedagogical teacher-led instruction, and it provides for an overall better result including deeper learning (See Figure 5). Through these modifications, teachers and entire schools can improve their efforts and experience more success.

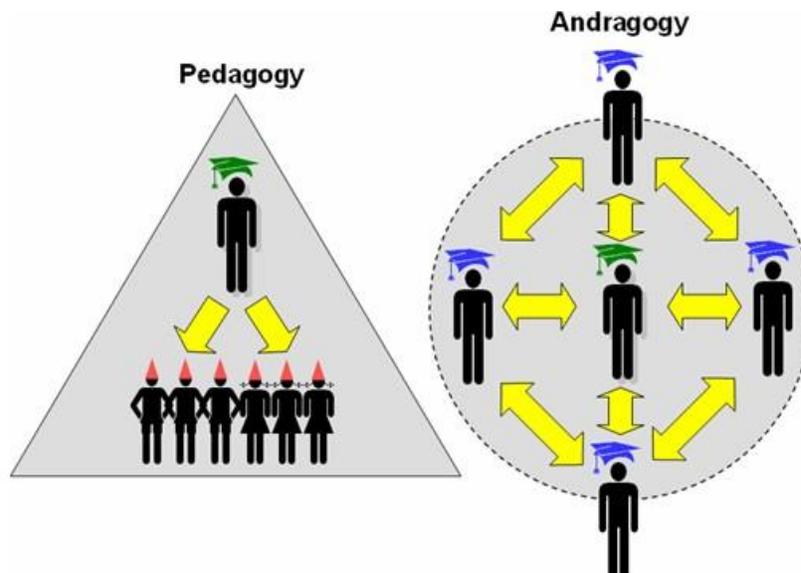


Figure 5: *Pedagogy vs. Andragogy* (Rao, 2008)

Andragogy is not exclusively a learning method for adults, nor is pedagogy an exclusive term for K-12 education. Gehring (2000, p. 159) states, “The differences between children and adults are not so much real differences, I believe... the fact is that many of the new developments in the curricula of our elementary and secondary schools have some of the flavor of andragogy. The ‘new math’, ‘new biology’, and linguistics programs start with the concerns of the students and engage them in a process of largely self-directed discovery. Some of the products of today’s schools, who become adults in the future... will therefore, presumably be better equipped to continue a process of life-long learning than are today’s adults.” Ms. Robin actually used the words, “create life-long learners” as the ultimate goal of her teaching, Mr. Patrick discussed creating more “interest and involvement” through providing choices, and Ms. Kari focused toward helping kids “find confidence, independence, and use resources”. These are each a result of their successful efforts to incorporate SDL techniques within their classrooms.

Each participant contributed a lesson plan to this study (See Appendix D), which, in their opinions, is an example of ways by which they have actually used SDL with their students. Ms. Robin’s soil testing week-long activities include the comparison of data collection of up to eight different groups within the classroom. She noted the heterogeneous groupings, formation of leadership, and the discussion of outliers that help the kids to learn. In day two of her mini unit, she referenced Bloom and his Higher Order Thinking, and later in day four, she listed objectives for the students to analyze, synthesize, and evaluate their results. Ms. Robin’s hard work, preparation, and efforts to promote SDL are soundly present

within this week of learning. Mr. Patrick provided many choices to the students in the two projects, which he expressed in the interview are important to “winning the kids”. He referred to this being a necessary component for creating interest and involvement. He gave plenty of guided assistance within the written instructions, but the projects require self-directed hard work by the students. He knows that by providing those choices, he can get them excited to work. Ms. Kari also motivated her students by naming her assignment, “It’s All about Choices”, and immediately, she inspired them by asking them to only use their intuitions to answer various questions that relate to the lesson. That type of challenge and inferred confidence that she has in her students gets them motivated to work – ultimately, it builds confidence and independence. Without actually stating it, each of these three teachers introduced a precursor to the incorporation of SDL in their classrooms... They established that they do it, they discussed some of the methods by which they do it, and they referenced why they do it. The lesson plans are exemplary to this precursor: **it takes hard work, preparation, and ultimate integrity to add SDL activities to their teaching.** In a study that Zion & Slezak (2005) performed, the hard work that teachers needed to anticipate during facilitation of learning included the importance of the stages of planning the study and helping the students to develop logical connection to the inquiry questions. In certain heterogeneous groupings, these connections were made easily, but in others, the study discusses how the teacher needed to be aware of other groups’ progression toward making these connections and guiding them to that goal. Other areas of teacher preparation included that teachers need to provide students with the opportunity to analyze their mistakes and make corrections as well as constantly monitor progress throughout the entire project.

The creativity for teachers to design these projects, lesson plan instructions, and experiments cannot be easy. Then, the guided steps to facilitate learning without simply giving the answers must be challenging for teachers. It seems that preparing teacher-led lesson plans to be delivered by lecture nearly every day would be a simpler style, and many teachers have made successful livings using that traditional methodology, but working harder, thinking creatively, and facilitating learning along with those traditional pedagogical styles is a more effective manner by which to teach, and the ultimate beneficiary is the children. Perhaps an additional supplement to this study might include a connection to HRD in instructional design for SDL in secondary education.

Conundrums

Numerous unclear conundrums emerged in this study. Participants seem to have, in their own ways, confirmed the value of incorporating SDL in their secondary education classrooms, but Bolhuis & Voeten (2000) stress how critical it is to teach children ‘how to learn’ in SDL and not just expect the process to occur naturally. Knowles, Holton III, & Swanson (2005) teach that adults possess a readiness to learn, and that it would come naturally, but many children are not even willing to sit down in a classroom, let alone learn. This study established that the responsibility to educate falls on the collective shoulders of the teachers, students, and learners’ parents, but what is a teacher to do with perceivably unteachable, non-cooperative kids?

Ms. Kari seemed to pose a conflicting opinion... She stated in the interview that she was thoroughly in favor of the incorporation of SDL activities in her math classes, and that she was a proponent of modeling, but she said, “SDL is less work for me since I just oversee

while they learn. I have the confidence to let them go rather than explaining it all to them". As discussed in depth, using SDL activities in the class properly requires enormous preparation, planning, and involvement from the teacher. Perhaps she was not considering this prerequisite or perhaps her SDL and modeling is still in need of further development and understanding. Indeed, her lesson plan examples included the least sophistication and hard work.

Since this study is intended to assist schools, educators, and administrators to consider modifications to teaching, another disconnect emerged with regard to connections to Human Resource Development. SDL works in secondary education, but takes a huge effort by teacher to make it successful. Would teachers be willing to do it? Would leadership promote it, especially with recent funding challenges facing public schools? A committed change process within an entire school would take massive organizational development. For now, it would appear to be solely up to individual teachers.

Strengths and Limitations

Strengths

1. A combined 80 years of experience by the three participants is viewed as a strength to the validity and reliability of this study, as well as the depth in which data was provided.
2. The participants each approached this study wholeheartedly as though it was an opportunity for them rather than a burden.

Limitations

1. Using Wlodkowski as a theorist for motivation is viewed by the researcher as a limitation since his work is more applicable within adult learning and higher education rather than that of secondary education.
2. The case study using only three participants was sufficient based upon the limited amount of time to conduct this study, however the addition of a more diverse group of participants would perhaps add significantly to the data and subsequent findings.
3. The amount of time allotted for this study was insufficient as much emerged as additional research topics (See additional study below).
4. Current research in secondary education incorporating andragogy or SDL is quite limited.

Additional Study

1. The challenges for incorporation of SDL activities in inclusive classrooms with children possessing learning disadvantages, behavior disadvantages, and other marginalized students is of interest to the researcher. These challenges could affect the teacher, as well as the other students in the classroom.
2. The option of home schooling might present both a challenge with regard to incorporating some SDL plans, yet the whole concept of home schooling demands that the learner(s) develop confidence in SDL. Also, motivation of home schooled kids would be an interesting additional area of study.
3. Technology driven techniques for SDL incorporation add another dimension of motivation and interest; perhaps more study here could supplement even more the advantages of SDL in the classroom.

4. Ms. Kari introduced *modeling* to the researcher, and she seemed to have confidence in its potential benefits. Additional research in modeling might also add to this study's findings.
5. A branch of study referred to as Neo-Piagetian beliefs suggests that more levels to Piaget's cognitive development theory (Case, 1987) could perhaps credit children with more potential than Piaget postulated. These additional stages of development might overlap into Knowles' model depicted in Figure 3, thus further validating the hypothesis of this study.
6. A more child-focused theorist on motivation might provide more useable information for this study.
7. As the researcher enters the secondary education environment, a tremendous opportunity exists with the knowledge gained in completing a Master's of Science in Human Resource Development. An interesting tangent might be to investigate just how HRD might coincide with K-12 needs, in particular the implementation of SDL techniques within entire grade levels, schools, or even states. Instructional design theory would apply to this study and the manners by which SDL could be a supplement to traditional pedagogical teaching. One potential overlap is the increasing popularity of a K-12 teaching strategy known as *Sheltered Instruction Observation Protocol (SIOP)* – HRD and SIOP could be a significant part of the researcher's future, and additional study would be warranted.

REFERENCES

Abdullah, M. H., (2001). *Self-directed learning. ERIC digest*. Retrieved from <http://search.ebscohost.com.www.lib.ncsu.edu:2048/login.aspx?direct=true&db=eric&AN=E459458&site=ehost-live&scope=site>

Anfara, V.A. & Mertz N. T. (2006). *Theoretical frameworks in qualitative research*. Thousand Oaks, CA: Sage

Award for distinguished contributions of applications of psychology to education and training. (2009). *American Psychologist*, 64(8), 756-771. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=EJ862535&site=ehost-live&scope=site>

Barak, M., & Shakhman, L. (2008). Fostering higher-order thinking in science class: teachers' reflections. *Teachers & Teaching*, 14(3), 191-208.

Bolhuis, S., & Voeten, M.,J.M. (2001). Toward self-directed learning in secondary schools: What do teachers do? *Teaching and Teacher Education*, 17(7), 837-55. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=EJ640152&site=ehost-live&scope=site>

Booker, M. J. (2007). A roof without walls: Benjamin bloom's taxonomy and the misdirection of American education. *Academic Questions*, 20(4), 347-355. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=EJ813025&site=ehost-live&scope=site>

Bransford, J., Brown, A. L., Cocking, R. R., & National Research Council. Committee on Developments in the Science of Learning. (1999). *How people learn: Brain, mind,*

experience, and school. Washington, D.C.: National Academy Press. Retrieved from <http://www.nap.edu/books/0309065577/html/>

Case, R. (1987). Neo-Piagetian theory: Retrospect and prospect. *International Journal of Psychology*, 22(5), 773. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=5777161&site=ehost-live&scope=site>

Creswell, J W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches, third edition*. Los Angeles: Sage.

Dailey, K. (1997). Sharing centers: an alternative approach to show and tell. *Early Childhood Education Journal*, 24(4), 223-227. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=11426113&site=ehost-live&scope=site>

Davis, E. A. (2000). Scaffolding students' knowledge integration: Prompts for reflection in KIE. *International Journal of Science Education*, 22(8), 819-837.

Estes, C. A. (2004). Promoting student-centered learning in experiential education. *Journal of Experiential Education*, 27(2), 141-160. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=16513639&site=ehost-live&scope=site>

Fischer, G. B. (1999). Developing students' adaptive learning skills. *College Teaching*, 47(3), 96. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=2116064&site=ehost-live&scope=site>

Forehand, M. (2005). Bloom's taxonomy: Original and revised in M. Orey (Ed.), *Emerging perspectives on learning, teaching, and technology*. Retrieved February 11, 2010, from <http://projects.coe.uga.edu/epltt/>

Gayman, C. (2007). Whose rights, and what's the difference? A critique of Beth singer's "human rights: some current issues". *Metaphilosophy*, 38(4), 431-439.

Gehring, T. (2000). A compendium of material on the pedagogy-andragogy issue. *Journal of Correctional Education*, 51(1), 151-163. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=11089284&site=ehost-live&scope=site>

Ginsberg, M. B. (2005). Cultural diversity, motivation, and differentiation. *Theory into Practice*, 44(3), 218-225.

Hill, J. (2006). Brush up your Dewey... start quoting him now, or John Dewey for teaching artists. *Teaching Artist Journal*, 4(1), 4-11. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=EJ832020&site=ehost-live&scope=site>

Hines, M. B., Conner, J., Campano, G., Damico, J., Enoch, M., & Nam, D. (2007). National mandates and statewide enactments: Inquiry in/to large-scale reform. *English Teaching: Practice and Critique*, 6(3), 76-91. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=EJ832195&site=ehost-live&scope=site>

Hobgood, B. (2007). Connecting curriculum and culture through culturally responsive teaching. Retrieved from www.learnnc.org website:

http://soe.unc.edu/news_events/news/2009/090917_esl_workshop/3_Culturally_responsive_teaching_Hobgood.pdf

Holmes, G., & Abington-Cooper, M. (2000). Pedagogy vs. andragogy: a false dichotomy? *Pedagogy*, 26(2).

Jennings, S., Dunne, R., & McShea, J. (1997). Designing a telematic learning environment in a social constructivist paradigm. *Education and Information Technologies*, 2(4), 307-325.

Jordan, M., Jensen, R., & Greenleaf, C. (2001). Amidst familial gatherings: Reading apprenticeship in a middle school classroom. *Voices from the Middle*, 8(4), 15-24.

Knowles, M. (1980). *The Modern Practice of Adult Education: From Pedagogy to Andragogy*. Englewood Cliffs, NJ: Prentice Hall Regents.

Knowles, M., Holton III, E., & Swanson, R. (1998). *The adult learner, 5th edition*. Gulf Publishing Co.: Houston, p. 63.

Knowles, M., Holton III, E., & Swanson, R. (2005). *The adult learner: the definitive classic in adult education and human resource development, sixth edition*. Sage: Burlington, MA.

Lesh, R. (2006). Modeling students modeling abilities: The teaching and learning of complex systems in education. *Journal of the Learning Sciences*, 15(1), 45-52.

Lindlof, T.R. & Taylor, B. C. (2002). *Qualitative Communication Research Methods*. Second Edition. Sage.

Louie, J., Brodesky, A., Brett, J., Yang, L., Tan, Y., & Regional Educational, L. N. (2008). *Math education practices for students with disabilities and other struggling learners: Case studies of six schools in two northeast and islands region states, issues, & answers*. Retrieved

from

<http://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=ED506343&site=ehost-live&scope=site>

Loyens, S. M. M., Magda, J., & Rikers, R. M. J. P. (2008). Self-directed learning in problem-based learning and its relationships with self-regulated learning. *Educational Psychology Review*, 20(4), 411-427. Retrieved from

<http://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=EJ817571&site=ehost-live&scope=site>

McColl, A. (2001). *Leandro: The merging of adequacy and standards-based reform*.

Washington DC: SERVE: SouthEastern Regional Vision for Education. Retrieved from:

<http://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=ED456556&site=ehost-live&scope=site>

Merriam, S. B. (2001). Andragogy and self-directed learning: Pillars of adult learning theory. *New Directions for Adult and Continuing Education*, 2001(89), 3.

Mink, A., & O'Steen, B. (2003). Reaching beyond the choir: Taking experiential education down from the mountain and into the public school. *Journal of Experiential Education*, 25(3), 355. Retrieved from

<http://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=10293756&site=ehost-live&scope=site>

Nieto, S., & Bode, P. (2008) *Affirming Diversity*. Boston: Pearson.

Ortiz, H. & Plunkett, S. (2003). Assessing the cultural dimensions of the los niños bien educados parenting program. *Journal of Extension*, 41(6).

Ozuah, P. O. (2005). First, there was pedagogy and then came andragogy. *Einstein Journal of Biology & Medicine*, 21(2), 83-87. Retrieved from

[http://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=18391501&site=ehost -
live&scope=site](http://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=18391501&site=ehost-live&scope=site)

Papert, S. (1999). Jean Piaget. (cover story). *Time*, 153(12), 104. Retrieved from

<http://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=1658743&site=ehost-live&scope=site>

Peters, R.S. (1970). *Ethics and Education*. London: Allen and Unwin.

Pintrich, P. R. (2002). The role of metacognitive knowledge in learning, teaching, and assessing. *Theory into Practice*, 219-225.

Rao, R. (2008, October 13). Reflections on HR trends in training and development, learning challenges and strategies. Image posted in

http://images.google.com/imgres?imgurl=http://leanlearning.files.wordpress.com/2008/08/pedagogy-andragogy.jpg&imgrefurl=http://leanlearning.wordpress.com/&usq=__DkjBXaevILM5_91q4tXjEjRtUVs=&h=357&w=561&sz=36&hl=en&start=6&itbs=1&tbnid=llc9YMGigmHp9M:&tbnh=85&tbnw=133&prev=/images%3Fq%3Dlearn%2Bandragogy%2Bknowles%26hl%3Den

Robins, J. (2005). Beyond the bird unit. *Teacher Librarian*, 33(2), 8. Retrieved from

<http://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=EJ728104&site=ehost-live&scope=site>

Webb, P. K. (1980). Piaget: Implications for teaching. *Theory into Practice*, 19(2), 93.

Retrieved from

<http://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=5203607&site=ehost-live&scope=site>

Wlodkowski, R. J., & Ginsberg, M. B. (1995). A framework for culturally responsive teaching. *Educational Leadership*, 53(1), 17. Retrieved from

<http://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=9509246472&site=ehost-live&scope=site>

Wuenstel, M. (2002). Participants in the Arthurdale community schools' experiment in progressive education from the years 1934-1938 recount their experiences. *Education*, 122(4), 759. Retrieved from

<http://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=7004879&site=ehost-live&scope=site>

Yang, O. S. (2000). Guiding children's verbal plan and evaluation during free play: An application of Vygotsky's genetic epistemology to the early childhood classroom. *Early Childhood Education Journal*, 28(1), 3-10. Retrieved from

<http://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=11305155&site=ehost-live&scope=site>

Zion, M., & Slezak, M. (2005). It takes two to tango: In dynamic inquiry, the self-directed student acts in association with the facilitating teacher. *Teaching and Teacher Education*, 21(7), 875-894.

Zmeyov, S. I. (1998). Andragogy: Origins, developments and trends. *International Review of Education*, 44(1), 103-108. Retrieved from

<http://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=639165&site=ehost-live&scope=site>

Zuckerman, G. (2007). Child-adult interaction that creates a zone of proximal development. *Journal of Russian & East European Psychology*, 45(3), 43-69.

APPENDICES

APPENDIX A

Informed Consent for Research

Title of Study: A Teacher's Pedagogy through Andragogy: Facilitating Learning in Secondary Education Students Incorporating Self-Directed Learning

Principal Investigator: Darren Masier Faculty Sponsor: Dr. Julia Storberg-Walker

What are some general things you should know about research studies?

You are being asked to take part in a research study. Your participation in this study is voluntary. You have the right to be a part of this study, to choose not to participate or to stop participating at any time without penalty. The purpose of research studies is to gain a better understanding of secondary education teaching (grades 6-12). You are not guaranteed any personal benefits from being in a study. Research studies also may pose risks to those that participate. In this consent form you will find specific details about the research in which you are being asked to participate. If you do not understand something in this form it is your right to ask the researcher for clarification or more information. A copy of this consent form will be provided to you. If at any time you have questions about your participation, do not hesitate to contact the researcher(s) named above.

What is the purpose of this study?

The purpose of this exploratory study is to understand more about the role of self-directed learning (SDL) in secondary education.

Brief Overview: The study will interview three current secondary education teachers to understand the extent to which SDL influences their teaching philosophies, strategies, and ultimately their student's learning. By using a case study approach, each teacher will be

considered a ‘case’ and each case will be compared and contrasted. The analysis will generate a narrative description of the role of SDL in teaching and learning for these three teachers. These findings may then inform future studies about how SDL matters in contemporary education environments.

What will happen if you take part in the study?

If you agree to participate in this study, you will be asked to participate in one or two audio recorded interviews with the researcher for a total of approximately 1-2 hours. The research (interviews) will take place at a convenient location of your choice and should be a place where you feel comfortable to speak freely without being overheard.

Risks

The researcher anticipates only minimal potential risk for participation in this study. Names will be immediately coded as pseudonyms for the study, no names of respective schools will ever be identified with the study, and only grade numbers of classes will be mentioned (e.g.: seventh and eighth grades). Every effort will be made to keep the meetings completely confidential from anyone who might see and know any parties participating in the interview.

Benefits

Although there may be no direct benefit to you in participating, the benefits of this study are to provide a research-based analysis of successful teaching of three teachers. Additional benefits may include that new teaching techniques could be developed that may help the respondents reflect on their teaching practices. Perhaps the study may help the larger teaching community.

Confidentiality

The information in the study records will be kept confidential. None of your responses or identifiable data will be discussed with anyone from your school including school officials. Data will be stored securely in the researcher's personal, password-protected personal desktop computer. No reference will be made in oral or written reports which could link you to the study. Once participants are determined, the master list of possible participants, a folder of corresponding emails, and any other information with true names of candidates or participants will be destroyed and deleted. Other emails, transcriptions of interviews, and notes taken during interviews will not contain any identifiable information of any of the participants. Pseudonyms will be used for any and all recordkeeping.

Compensation

For participating in this study you will receive no compensation, except for a free lunch during the initial consultation if you choose to meet at a place where this would be possible.

What if you have questions about this study?

If you have questions at any time about the study or procedures, you may contact the researcher, Darren Masier at djmasier@ncsu.edu or 919-623-3377. You may also contact the researcher's thesis advisor, Dr. Julia Storberg-Walker at Julia_swalker@ncsu.edu or 919-513-1658.

What if you have questions about your rights as a research participant?

If you feel you have not been treated according to the descriptions in this form, or your rights as a participant in research have been violated during the course of this project, you may contact Deb Paxton, Regulatory Compliance Administrator, Box 7514, NCSU Campus (919/515-4514).

Consent to Participate

I have read and understand the above information. I have received a copy of this form. I agree to participate in this study with the understanding that I may choose not to participate or to stop participating at any time without penalty or loss of benefits to which I am otherwise entitled.

Subject's signature _____ Date _____

Investigator's signature _____ Date _____

IRB Approval

Project Title: A Teacher's Pedagogy through Andragogy: Facilitating Learning in Secondary Education Students Incorporating Self-Directed Learning

IRB#: 1262-10-01

Dear Mr. Masier,

The research proposal named above has received administrative review and has been approved as exempt from the policy as outlined in the Code of Federal Regulations (Exemption: 46.101. b.2). Provided that the only participation of the subjects is as described in the proposal narrative, this project is exempt from further review.

NOTE:

1. This committee complies with requirements found in Title 45 part 46 of The Code of Federal Regulations. For NCSU projects, the Assurance Number is: FWA00003429.
2. Any changes to the research must be submitted and approved by the IRB prior to implementation.
3. If any unanticipated problems occur, they must be reported to the IRB office within 5 business days.

Please forward a copy of this letter to your faculty sponsor, if applicable. Thank you.

Sincerely,

Carol Mickelson
NCSU IRB

APPENDIX B

Selection criteria for participants

Using a modified snowball sampling technique, three current secondary education teachers (grades 6-12) were selected via referrals of personal colleagues. The first three experienced (over 6 years teaching) candidates to agree to email invitations were selected to participate. By using a case study approach, each teacher is considered a 'case' and each case was compared and contrasted. The analysis generated a narrative description of the role of SDL in teaching and learning for these three teachers.

APPENDIX C

Semi-structured interview protocol (open-ended questions)

1. Please describe your teaching experience, content area(s), grade levels, styles, etc.
2. Although self-directed learning (SDL) has its roots in adult and higher education, have you used any SDL techniques within your secondary education classrooms?
 - a. Have you noticed a difference in students' motivation in SDL situations?
 - b. Have you witnessed an emergence of independence within SDL scenarios?
 - c. How has the SDL learning experience concluded with regard to success?
3. Please provide any commentary with regard to your teaching and the following theorists/theories/concepts:
 - Wlodkowski – Motivation;
 - Piaget/neo-Piaget – Cognitive Development;
 - Vygotsky – Behaviorism / Zone of Proximal Development;
 - Knowles – Andragogy;
 - Dewey – Experiential Learning / Experiential Education
4. Do you have any concluding or additional thoughts that you would like to add to the research topic?

APPENDIX D

Lesson Plans

Ms. Robin:

Day One Lesson: “What is soil?” (Time: 60 minutes)

Content Objective: Our main purpose in the first day is to identify, create, and begin to answer through hypotheses, as an introduction to what soil is, why it is important, and what the students know about it.

Language Objective: To provide, discuss, and teach a list of vocabulary words for application throughout the mini-unit. Students will pronounce each word multiple times alone and as a group. Additional conversation through group work will promote verbal application of introductory discussion.

Materials: Transparencies, dry-erase markers, 5 poster boards, vocabulary worksheet.

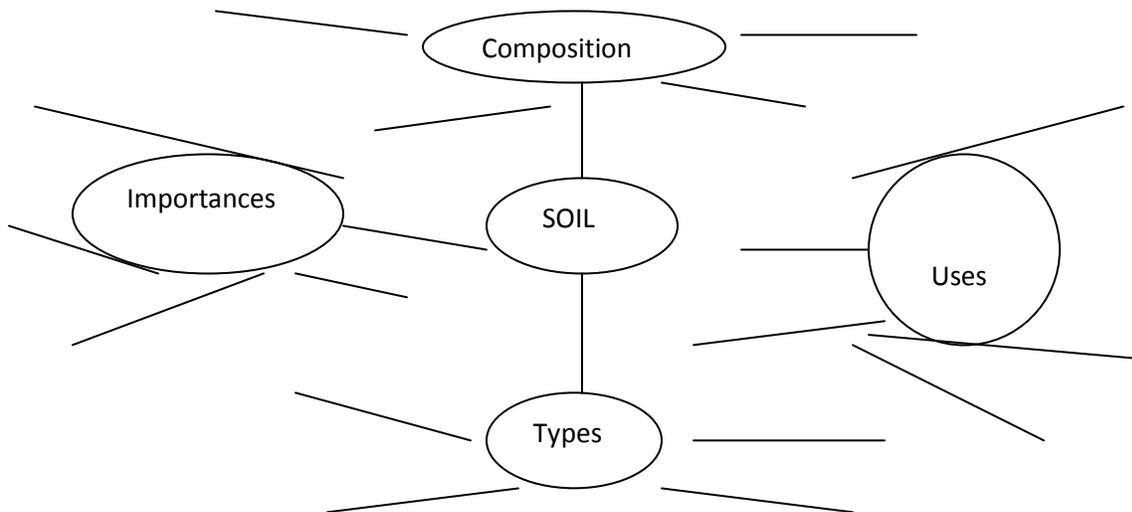
Lesson: Teacher will compile a list of vocabulary words, and as any of the words are mentioned in this discussion, teacher will define it for them on a vocabulary list posted on the wall for this section on soil. After teacher says each word, the classroom will repeat it. To finish the initial discussion, teacher will be sure to discuss each word of the Vocabulary List: Percolate, Soil, Texture, Topsoil, Sand, Clay, Silt, Gravel, Fertility, Dust Bowl, Erosion, Cycle, Infiltration, Structure, Moisture, Particle, and Absorb.

Next, students will be grouped into heterogeneous groups of three or four, but each group will include one or two ELL students each (formed groups will be numbered and asked to remember with whom they are paired for this entire five-hour lesson plan). The groups will

then work together to build Concept Maps to illustrate their knowledge of soil. Concept Maps can be designed in one of two ways, depending on resources:

1. On large poster boards to be posted on one of the walls in the room illustrating the subject matter in the current lesson.
2. On transparencies to share with the class on the overhead when finished.

A skeleton Concept Map is given to each group and should consist of the following:



Evaluation of activities: Through teacher-led classroom conversation, the students were introduced to the soil topic and given applicable vocabulary words, their definitions, and practice in pronunciation with repetition for deeper learning, as well as a deliberate effort to assist ELLs with repetition and annunciation. After the introduction, the Concept Maps allowed the students to both illustrate their understanding of the material (assessment) and begin to predict, or hypothesize about soil.

Day Two Lesson: “What is soil? Are all soils the same?” (Time: 60 minutes)

Content Objective: In today’s lesson, the students will conduct analytical experiment procedures to observe differences in soils. Materials and equipment will be manipulated and observations will be explained with inferences and predictions.

Language Objective: Students will be encouraged to listen for, retell, and define many of the vocabulary words from the day before and begin to recognize the main idea of what soil is.

Materials: Four hand lenses (magnifying glasses) or stereoscopes, “Observing Soils” prepared Word doc. below this lesson plan, and four soils prepared by teacher: *Lowes* potting soil, Sunset Beach sand, Cary, NC yard soil, and Aurora, NC limestone (these samples must be saved for Day Four experiment).

Lesson: Students will work in previously established groups with each person given a lens, or at least one distributed per group. Groups will share their soil samples and they will observe four bags of soil. After discussions about comparing and contrasting the different soils, (how they are similar and how they are different), teacher will distribute four prepared bags of soil for each group (*Lowes* potting soil, Sunset Beach sand, Cary, NC yard soil, and Aurora, NC limestone) for observation. For Higher Order Thinking, teacher will distribute “Observing Soils” data work sheet (attached following this day’s lesson plan) to each student to be completed while observing soils. Teacher will lead them into a universal definition of soil based upon their observations, and then look for predictions and hypotheses in questions at bottom of “Observing Soils” work sheet. With reference to *Bloom’s Taxonomy*, in this activity, the students will be analyzing and evaluating while applying the information

supplied in the previous lesson, which they remembered and understood. Teacher will float and support as needed.

Homework for next day: Read Chapter 4, Section 2 (Soil Composition and Particle Size) in textbook.

Evaluation of activities: The following chart below will be used to guide the students in conducting the scientific investigation and recording the data in order to develop proper explanations of the data. The application of the vocabulary words in the chart below also makes a deliberate effort at promoting the comprehension of the words through application.

OBSERVING SOILS

Name _____

Type of Soil:	Lowes Potting Soil	Sunset Beach sand	Cary, NC yard soil	Aurora, NC limestone
What is the soil made of? Name three specific things you see in the soil.				
Describe the <u>color</u> of the soil.				
Explain why you think the soil is the color that it is.				
Squeeze each soil sample in-between your fingers. Describe how it feels (<u>texture</u>).				

*Observe the soils with a hand lens or stereoscope. Complete the chart based on your observations.

- Teacher potting soil purchased at *Lowes* Home Improvement.
- Teacher retrieved sand from beach condo at Sunset Beach, NC.
- Teacher dug up yard soil at home in Cary, NC.
- Teacher retrieved limestone from Aurora, NC near Pamlico Sound.

1. Do you think the four soils would grow bean seeds the same way?

2. Explain: _____

3. Do you think bean seeds would **germinate** in all four soils?

Explain: _____

4. List the soils in order from best to worst for plant growth.

5. Do you think the soils will **percolate** (drain) at the same rate or the same way? _____

6. List the soils in order of fastest to slowest in order of **draining** water.

7. Do you think they will all **absorb** (retain) water the same way?

Explain: _____

8. List the soils in order from absorbing the most water to the least.

Day Three Lesson: “How does soil relate to our everyday lives?” (Time: 60 minutes)

Content and Language Objectives: The students will build an understanding of the geographical cycles, forces, processes, and agents, which shape the lithosphere through a teacher-guided classroom discussion utilizing various new vocabulary words and their respective definitions. The homework assignment will ask for them to develop appropriate experimental procedures for given questions.

Materials: None

Vocabulary List: Percolate, Soil, Texture, Topsoil, Sand, Clay, Silt, Gravel, Fertility, Dust Bowl, Erosion, Cycle, Infiltration, Structure, Moisture, Particle, and Absorb.

Lesson: With seventeen vocabulary words, each classroom student will be required to verbally define one word aloud and elaborate to further explain the concept. A few students may not get a word, but since the teacher will decide who defines and describes them, the more gifted students may be skipped. After reviewing vocabulary words, we will continue the classroom discussion and brainstorm from reading assignment given previous day with the following questions initiated and controlled by the teacher:

1. How does soil relate to our everyday lives?
2. How do we measure soil quality?
3. What test can be done to help us understand the quality of the soil?
4. Do you have city water or well water, and what is the difference?
5. What is a percolation test?
6. What is a septic tank and how does it work.

Homework for next day: Students are asked to design a simple experiment that would test how well soils percolate in water. They are to include steps and basic drawings or props to illustrate their experiments, but they are not required to be prepared to conduct any experiments as they are only a written design plans. Suggest that they ask their parents for assistance if possible.

Evaluation of activities: In this activity, teacher helps students to think and share. As the discussion unfolds, it will be critical for the teacher to guide and lead the discussion for each question. In an effort to promote student-generated questions, teacher will encourage interaction. If a student is off the subject, teacher must redirect and appropriately stay on the topic of discussion.

Day Four Lesson: “Do soils percolate and absorb water at the same rates and in the same amounts?” (Time: 60 minutes)

Content Objective: To serve as a climax of the mini-unit, today will be a fun day for the students to use mathematics to gather, organize, and present qualitative data resulting from a scientific experiment. The students will analyze the data and prepare models to test hypotheses.

Materials: Box of coffee filters, 5 funnels, 5 beakers, timer or stopwatch, water, the four soils used in Day 2 lesson plan (*Lowe's* potting soil, Sunset Beach sand, Cary, NC yard soil, and Aurora, NC limestone), Instructions for experiment below in this lesson plan, and “Soil Testing” Data Sheet (prepared Word doc below in this lesson plan).

Lesson: The day will begin with the teacher asking if anyone has completed the homework assignment of preparing a complete experimental design to test different soils percolation in

water. The teacher will go around the room asking for the students to volunteer describing their designs to the classroom. After classroom has had an opportunity to share their ideas for the experiment, students will return to their previously established groups and teacher will explain to the classroom the prepared experiment and reference any similarities with students' experiments. Students will then carry out the planned experiment using the four different soils and collect data.

Percolation / Absorption Experiment

Directions:

1. Fold the coffee filter into a cone. It should fit into the funnel with no holes.
2. Place the coffee filter in the funnel.
3. Measure 100 ml of soil in the beaker---lightly pack it.
4. Place 100 ml of soil into the filter paper in the funnel.
5. Get timer ready.
6. Start the timer/stopwatch when you pour 100 ml of water through soil.
7. Time how long it takes for the first drop to percolate through the soil. Record the data.
8. Time how long it takes for the 100 ml to completely drain through the soil. Stop timing when it takes 30 seconds for a drop to fall through the soil. Record this piece of data.
9. Read the graduated cylinder to see how much water percolated through the soil. Record the data.
10. Calculate the amount of water that was absorbed by the soil. Record the data.
11. Repeat the above steps for the other three soils.

*Amount of water absorbed = 100 ml – the amount of water percolated.

Homework for next day: Write down three things that you learned from today's experiment.

Evaluation of activities: This experiment has progressively taken the informative introduction of the unit and demonstrated an understanding of scientific inquiry, allowing the students to analyze, synthesize, and evaluate.

SOIL TESTING

Name:

PERCOLATION & ABSORPTION OF WATER

1. If soil percolates water very well, what does that mean?

2. If soil does not percolate water very well, what does that mean?

3. If soil absorbs water, what does that mean?

4. Name two reasons why it would be important to know how well the soil in your yard percolates water.

5. Name two reasons why it would be important to understand your soil before building or planting.

6. You will test four soils to see how well they percolate water. Write your prediction below on which soil percolates the fastest to slowest.

Type of Soil:	<i>Lowe's</i> Potting Soil	Sunset Beach Sand	Sunset Beach Sand	Aurora, NC Limestone
Amount of water poured into soil:				
Time taken for 1 st drop to percolate:				
Time for water to stop percolating:				
Amount of water that percolated:				
Amount of water that was absorbed:				

7. Write your prediction below on which soil percolates the most water to least.

8. Which soil percolated the most water? Explain why you think this soil percolated the most water.

9. Which soil percolated the least? _____

10. Explain why you think this soil percolated the least water.

11. Which soil percolated water the fastest (which soil had the first drop of water run though the fastest)?

12. Write three things that you learned from doing this experiment.

Day Five Lesson: “Analyze experimental results and graph the average of the class data”

(Time: 60 minutes)

Content Objective: As a conclusion, students will further present quantitative data resulting from scientific investigations as a graph. This process will test the earlier hypotheses and evaluate how the data fit.

Materials: Two pieces of graph paper per student (plus a few extra sheets) for graphs.

Lesson: After collecting the data from the experiment the previous day, the groups will reconvene and average the data. Teacher will then teach students how to set up a bar graph to show the average amount of water percolated and the average amount of water absorbed by each soil (Percolation Graph & Absorption Graph). Groups should be guided by teacher to graph in a descending order and provide a key to each graph. Once graphs are completed, teacher will initiate a classroom discussion to conclude the five-hour lesson by asking them to answer the original question from the beginning of day four: “Do soils percolate and absorb water at the same rates and in the same amounts?” The answers should be directly related to the experiment, the collected data, and the graphs. Further discussion will continue as teacher asks students why they think the soils differ in amounts percolated and absorbed. Teacher will wrap up conversation reiterating results from observations, experiments, and data collected. After teacher prefaces the lesson with an introduction and explanation on how to compile bar graph, in groups, students will analyze data and compile bar graph. Finally, the entire lesson will conclude with discussion headed by teacher.

Evaluation of activities: In the final day, the teacher can intervene with all groups to ensure that the graphs are completed correctly. Teacher wraps up the mini unit by reiterating the conclusive experimental processes completed by the class.

Mr. Patrick (2 lesson plans)

I. THE WAR IN VIETNAM

Over the next several days, you will be working to produce a project demonstrating an understanding of the Vietnamese War and the involvement of the United States. You may choose what type of technology that you like for your production of this Vietnam project. From power point, to a podcast, to using word to create a booklet or diary, to using the software "Pages" to create a flyer/brochure or broadsheet, to Keynote, to a movie or even a collection of songs created from Garageband, or another type of technology, your work needs to answer specifically assigned questions on the Vietnam. If you choose a podcast, movie, songs or even a power point presentation, you need to produce a script before beginning production. I want to see your research before you begin production of this work on the US and its involvement in Vietnam. In your Vietnam project, whatever the form, the following questions need to be answered and topics need to be covered:

- 1) What happened at Dien Bien Phu and why is it significant to the United States and their future involvement in Vietnam?
- 2) What happened in the Gulf of Tonkin (in 1964) that changed the way the US would respond in Vietnam? And, what was the Gulf of Tonkin Resolution? Why was it controversial?

- 3) What difficulties, tactical and otherwise, did we have fighting this war?
- 4) What vital American interests were at stake in the Vietnam War?
- 5) The Anti-War movement was a significant factor as the US fought this war. How did each of the following impact the antiwar movement: the counterculture of the 60's? the draft? the popular music of the time? the media?
- 6) Identify and state the significance of each of the following: Tet Offensive, My Lai, Vietcong
- 7) "We used mass to compensate for the absence of brains, somewhat reminiscent of the dinosaurs." Assess the validity of this statement.
- 8) What was Vietnamization and did it work? Explain.
- 9) What similarities were there between the American Revolution and the war in Vietnam?
- 10) What were the lessons learned from the Vietnam War? Did we learn them? Explain.

We will be going to the lab beginning Thursday, May 7, and will be working on this assignment thru Friday, May 15. When you come to class on Monday, May 18, your Vietnam project is due.

Make sure that:

- ✓ your mechanics of writing are correct
- ✓ you use some appropriate and informative pictures with your work
- ✓ you explain and carefully answer each of the 10 questions
- ✓ you site your sources for information and the pictures that you use.

You can get much information about the Vietnam through the use of the ALL the people or other books and information from a variety of resources, either on the web or in material

from our library. This is your final significant assessment before your Final Exam. This is an important assignment so be sure to read and write carefully and clearly as you describe the history and events of the war in Vietnam. This is a 65 point assignment. Five points per each of the 10 questions/topics that I have identified and asked that you address. Five points for the appearance / presentation aspect of this work and five points for your correct usage of the English language. And, five points for citing your resources properly. You may work with a partner (I have to approve your choice). In doing this work, I will reserve the right to add to your assignment if you don't use your time correctly. Please make sure that you list which partner did which work as it will be helpful in grading this assignment fairly. I also recommend that you talk to me and keep me informed on the progress of this assignment and so that I can see the level of your understanding. These "e projects" must be uploaded to a folder instructions on this to follow later. Good luck and may your understanding of the Vietnam War and its impact on the United States grow with this work.

*I have uploaded a series of what I think would be helpful and appropriate websites for you all to use for your research and completion of this project.

II. The Great Depression: Photo Essay on Voice Thread

The Assignment: Gather depression-era photographs on the Internet and then put them together into a story of the Depression. This Voice Thread allows for you to record your story, picture-by-picture and then do some illustrations or notations on the pictures you are talking about.

*Assume the role of a Works Progress Administration (WPA) writer, a person who lived through the Depression, an ancestor of one who lived through this period of time, or someone else of your creation who might be commented on these photos in the form of a story.

*Choose a minimum of 6 selected photos.

*Provide photo captions to complete a work that fits a thematic title.

What you will do:

- Review historical photographs and information on the Great Depression.
- Relate images and text in order to communicate a theme.
- Write a script of what your narration will be.
- Create and present a historically-based narrative using period photographs.
- Make sure to properly site your sources.
- Upload your VT onto the Moodle site.

What you will need:

Note: The blue links below direct you to external web sites on the Internet.

Web Sites:

- Great Depression Pictures:

<http://history1900s.about.com/od/photographs/tp/greatdepressionpictures.htm>

Features images of farms for sale, migrant workers, breadlines, and the Civilian Conservation Corps.

- The New Deal: <http://newdeal.feri.org/>

Provides documents and photos online from the FDR Library, among other sources, on a wide-range of relevant material.

- Surviving the Dust Bowl:

<http://www.pbs.org/wgbh/americanexperience/dustbowl/>

Provides photos, audio clips, and historical data.

- Walker Evans Photos: <http://xroads.virginia.edu/%7EUG97/fsa/welcome.html>

Includes photos taken for the Farm Security Administration.

Documenting America: <http://memory.loc.gov/ammem/fsahtml/fadocamer.html>

Features the work of Farm Service Administration photographers such as Dorothea Lange and Walker Evans.

WPA Projects: <http://rs6.loc.gov/wpaintro/intro01.html>

Features photos and captions dealing with WPA projects.

*You may use photos or paintings that are in folders on my Moodle site. or, you may find your own photos from the web. Make sure you cite them properly.

The steps to follow:

- 1) Using the suggested web sites, find and study photographs from and related to the era.

- 2) Choose a title after viewing enough photographs to give you a sense of the possible range of available material. Suggested titles include the following:

The Dusty Old Dust

Heading to the Promised Land

Small-town, US

Were the Golden Gates Really Open?

In the City

Back on Their Feet Again

Brother, Can You Spare a Dime?

Working Men and Women

Changing Landscape

Taming the Land

*You may come up with your own title if you so desire.

- 3) Select photos from the web and save them to your computer. Order them in a way that tells a story (you must credit photo sources in the appropriate manner).
- 4) Playing the role of a WPA writer (one who is part sociologist and part journalist), tell the story that the photos suggest. Choose photos that allow for the inclusion of factual material. While you may not know the exact details of a photograph (who the subject is, where it was taken, etc.), you should be able to use the photos as a prompt to discuss appropriate facts and relevant situations and people represented by the picture. Captions should be believable if not

specifically accurate.

- 5) Organize the pictures and captions into a final product...a Voice Thread describing these Depression days.

*****Be prepared to share your work in a class presentation*****

Ms. Kari

Chapter 9 – Discrete Mathematics

It's all about CHOICES! Using intuition only, answer these questions:

1. Determine the number of two-digit numbers possible from the set $\{1, 2, 3\}$.
2. Determine the number of results possible when rolling two die.
3. How many different ways can a group of 5 people, select a different president & VP?
4. Find the number of three-digit numbers that can be written using digits from set $\{1, 2, 3\}$.
5. Find the number of three-digit numbers that can be formed from the digits in the set $\{1, 2, 3, 4\}$ assuming that repeated digits are not allowed.
6. Joe, Sam, Mary & Dawn have tickets for four seats in a row at a concert. In how many different ways can they seat themselves so that Joe & Sam will sit next to each other?
7. How many two-digit numbers are in our base 10 counting system?
8. In several states, auto license plates contain three letters followed by three digits.
9. How many different licenses are possible before a new scheme is necessary?
10. How many more are available if you open it up to three digits followed by three letters?
11. How many more are available if you open it up to 6 letters? 7 letters? Any combination of letters and numbers, taking up seven slots?
12. How many different ways could I rearrange the seating in this class?

Example: A store sells team jackets with the following optional features:

Feature	Choices
Size	S M L XL
Basic color	Blue, gold, red, white, green
Color of trim and lettering	Blue, gold, red, white, green, black
Fastener	Velcro, Zipper, Buttons
Material	Rayon, Leatherette, Fleece
Lettering style	Script, Block

Lettering finish	Glossy, Non-glossy
Insulating lining	Yes, No

1. How many jackets would the store need to stock in order to have one of every kind available?
2. How many choices does a customer have if she requires a medium, red, rayon jacket with white trim?
3. How many choices are available for an extra-large person who wants gold block lettering on blue non-lined fleece?
4. How many choices are open if the size must be small, buttons are not acceptable, and the colors must be either green trim on gold or gold trim on green?

Examples:

- In how many ways can the letters in the word COUNT be arranged?
- In how many ways can 5 people be grouped in to 3?
- How many three-digit numbers can be written using digits from the set {3, 4, 5, 6, 7, 8} if repetitions are not allowed (order is important since 345 is different from 453)?
- In how many ways can a contractor build different model homes on four available lots if there are six models to choose from?
- How many ways can you arrange the letters in the word ZOO?
- How many 5-card hands of poker are possible?

- You want to buy 5 shirts but can only afford 3. How many combinations are there?
- In how many different ways can a poker player be dealt a full house with three 7s and two 5s?