

Learning and Personality

Learning and Personality:

*The Experience of Introverted
Reflective Learners in a World
of Extroverts*

By

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FOR LANDON

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INTRODUCTION

Students are now frequently exposed to active learning and group activity in the college and secondary classroom more than ever before. In the last twenty-five years there has been a growing awareness of constructivist pedagogy. The term constructivism is an umbrella for many terms and takes many forms (Mayer, 2004), but its overall mission is dedicated to the idea that learning is an active process (Duffy & Cunningham, 1996; Mayer, 2004). Many education scholars believe students learn better in collaboration or by active discussion. Social constructivists focus on student interaction within a social context (Duffy, 2009). At every level from elementary school to the university, there is no doubt we have improved our classrooms with more interactive, collaborative, and learning-centered approaches (Slavin, 2008). After all, the importance of engaging the student is critical to their success as a learner (Eggen & Kauchak, 2006). However, justified emphasis on interpersonal active learning may have led to neglect for intrapersonal, introverted students who learn better with teacher-directed instruction.

A socially active learning method such as a Socratic Seminar always has some students who excel in lively discussion, but there are always many more who remain quiet. There is a gross assumption that quiet students are not thinking about the work since they do not vocalize their thoughts. One reason these students remain quiet is because they may have different personality types. With a growing recognition of learning and personality theory, it is questionable whether every student truly benefits from teaching methods that demand real time responses from students in a social learning environment. For example, more introverted and reflective individuals would not benefit as much from collaborative, cooperative, and active learning pedagogies. This book seeks to document the thoughts and feelings of different students under both social-constructivist and reflective teacher-directed instruction.

Part of this book is based on a doctoral thesis (Lawrence, 2014). Original parts of the research design and pre-existing data deemed not critical to the broader findings have been omitted, while new observations and recommendations have been added. The research sought to determine how personality types and different types of learners respond to settings that promote both active collaborative learning as well as whole class

direct instruction. The active collaborative learning in this context consisted of classroom discussion through Socratic seminar and group projects. Peer review workshops, presentations, and seminars are among the most popular activities in English classrooms, and it is assumed that this kind of active collaborative learning appeals more to extroverted personalities. Whole class instruction consisted of instructor led lessons.

One aspect of the social classroom is the idea of cognitive dissonance. Roberts and Billings (2012) explained that learning takes place through cognitive dissonance resulting from mental disequilibrium, which is one result from social discourse in a classroom. They claim that mental disequilibrium leads to a heightened state of understanding. Burke (2010) also voiced a need to make learning uncomfortable at times. However, other possible results may include students who become alienated and drop out or become lost in the course. Cognitive dissonance does not recognize learning and personality differences, and the notion that we must be forced into a zone of discomfort in order to learn is concerning. By examining pre-existing data on the participants, the core study in this book also sought to distinguish any similarities or differences that might align between the self-identified learning preferences of students.

This book adds to the body of research concerning learning preferences in the role of teaching and learning, and to a small body of literature on reflective learners. This book is also a call for action. The book aims to show how students with more introverted and extroverted personalities are affected by different pedagogical methods, one socially active and the other teacher-led. If the two differing personality types have preferences for one learning experience over another, then learning will not be effective as it should be, and it would be unfortunate if an instructor only used one methodology without differentiating instruction for those groups. Since the research did not examine a large sample of the population, the goal was to document the experience more in depth and get closer to the student experience than a larger quantitative survey could. The hope in setting out on this research was to gain a sample of students from both sides of the spectrum in order to lend a voice to their experiences. What I found was a collection of problems in education. With over four years worth of interviews, surveys, and observations of students and instructors from seventh grade to community college, I had collected a massive amount of data. What follows is only a sliver of the big picture, which documents the experience and struggle of the introverted reflective learner in a world that values and rewards “fast talking” extroversion.

CHAPTER ONE

A growing constructivist movement that suggests a high level of student interaction begs the question whether this approach serves all students. If not, it would be beneficial to know whether there are some students who do not benefit from more socially active, constructivist learning. While there is a legitimate concern for interpersonal skills and learning-centered education, this may have unfortunately led to neglect for intrapersonal, introverted students who learn better independently or via direct instruction. In the context of my own English class, there are various ways we approach the teaching of writing. No one would advocate one method of teaching all of the time, but one must wonder how many methods we adopt without thinking about how the student feels. Students may withdraw or become alienated in a class or discipline that demands the opposite learning style (Kolb, 1984). English teachers naturally use many methods that support the constructivist philosophy, but to what degree are these forms of engagement beneficial to all students, and are there students who are not as well served under these conditions? This chapter lays out the problems with an unbalanced approach to teaching.

The Problem

Since “individuals vary in their preferred learning style” (p. 75) pedagogy should value variety and diversity (Osborne, 1996). Teachers should be flexible and take into consideration the different learning styles (Jilardi et al., 2011). However, teacher-led instruction is not the favored approach by scholars and has been “the particular target of disdain among educators” (Goeke, 2009, p 3). Even though students may be thinking, observing, writing, and questioning during teacher-led instruction, this type of learning is considered passive within the constructivist pedagogical framework (Hirsch, 1996). Education theorists believe teacher-led instruction is boring and rote (Goeke, 2009). According to Goeke (2009) less documented strategies are actually more popular. But Marzano (2007) noted that many teachers misuse the practice stage of instruction and instruction is mistaken for lecture, which could further damage the worth of more direct teacher-led instruction.

The importance of self-reflection has been well established, but students may not be provided enough time to do so in learning environments that are too fast paced and socially active. Through two studies, Barnard-Brak, Lan, and Paton (2010) determined that students who are self-regulated or have good forethought, performance control, and self-reflection performed significantly better than those who had little self-regulation and only possessed partial forethought and self-reflection. Certainly it is hoped we are not punishing those reflective students who perform better just so we may accommodate others. Perhaps we ought to be improving those who struggle rather than changing the expectations for everyone. Seventy-nine percent of the student population in one study by Gusentine and Keim (1996) proved not to be the type of learner who benefits from active learning. Judging by those numbers it would seem we are catering to just over one fifth of the population. It would seem our ambition to accommodate the extrovert or kinesthetic learner has swung too far in the other direction. The concern here is that teachers may be neglecting a large number of learners in an effort to meet the education field's expectations of "active" learning.

Extroversion Versus Introversion

The popular literature and media exploded with articles about introversion in 2012 after Susan Cain's best-selling book *Quiet* brought attention to the extrovert ideal, which she argued is hurting us more than helping us. Cain (2012) argued that Americans "see ourselves as a nation of extroverts-- which means we've lost sight of who we really are" (p. 3). Helgoe (2008) also argued that America is extroverted and as result introverts are forced into adapting, going underground, or going crazy. Cain (2012) explained how introverts living under the extrovert ideal are "like women living in a man's world" (p. 4). It seems that the more talkative people today are rated as smarter, to the point where even the word "introvert" has been stigmatized, but Cain (2012) pointed to the fact that "some of our greatest ideas, art, and inventions— from the theory of evolution to Van Gogh's sunflowers to the personal computer— came from quiet and cerebral people" (p. 5). Most scientists, engineers, accountants, doctors, writers and artists have been identified as introverted (Henjum, 1982). Some of the big names Cain (2012) identified as introverts are Eleanor Roosevelt, Warren Buffet, Gandhi, Rosa Parks, Bill Gates, Barbara Streisand, T.S. Eliot, Al Gore, and many other successful writers, leaders, artists, and thinkers. Cain (2012) pondered why we

wouldn't want more people like this? Moreover, the question is why would we want to stifle these kinds of individuals?

Today's contemporary society is designed to accommodate and reward only the extrovert, and this bias begins in our schools. Cain (2012) argued that American educators have been on a streak of favoring interpersonal extroverts. Many schools are now designed for left-brained extroverts (Laney, 2002). Senechal (2012) contended that there is a bias in favor of social activity. Cain (2012) reported how introverted children have been identified as problems and how "the vast majority of teachers now believe that the ideal student is an extrovert" (p. 7). Storr (1988) observed that this societal emphasis on interpersonal relations is rather recent in history. Part of this reason may be because introversion is so grossly misunderstood with harmful stereotypes and societal prejudice (Henjum, 1982). Storr (1988) pointed to a widespread assumption that introverts and thinkers are peculiar and abnormal. Storr (1988) also argued "learning, thinking, innovation and maintaining contact with one's own inner world are all facilitated by solitude" (p. 28). Galagan (2012) argued, "A disproportionately high number of very creative people are introverts...but schools and workplaces make it difficult for people to find time and space" (p.28). Despite these misunderstandings, many have pointed out the value of instructors having knowledge of learning styles and personality types to adjust methods and evaluation to match student needs (Chapman & Gregory, 2002; Gogus & Gunes, 2011; Wolfe et al., 2006). Rochford (2003) suggested community college instructors design lessons for different learning styles and involve students in the design for future use.

The literature on learning styles suggests that forcing all students to participate verbally in class has the potential to deter a good portion of otherwise capable and intelligent students. Yet I have heard individuals in the field of education speak as if active learning methods are the only way students learn and that any other approach is outdated. Although introverted learners may appear uninvolved, "they are actively listening and reflecting" (Zeisset, 2006, p. 15). To believe a learner is uninterested because they do not talk may be a gross assumption. While much attention has been devoted to accommodating extroverted students in recent years, little attention has been devoted to students who are more introverted because there is an assumption that all students learn through interpersonal activity. However, Duman (2010) found the most common learning style was comprised of "Assimilators," who are Reflective-Observation learners who learn best by reflecting and watching. For the purpose of this book, these learners will be referred to as introverted reflective learners.

Teaching and Learning

Certainly, there is a time and place for all methods of teaching, but there is only one right way according to many theorists. Education is a political mess of clashing beliefs engaged in a philosophical war that has been waging for over one hundred years now. One side, Constructivism, has dominated the sphere of teacher education prep programs and publications for decades now. The other “traditional” side has lost the verbal argument, but won in practicality, as many teachers resorted to traditional practices upon settling into their first jobs or to contend with the pressure of testing. The real losers of the battle though are the students, who would benefit from a hybrid of both philosophies. If we are to be the best teachers we can be in the classroom with the most impact, we should let go of the false dichotomy that has held us back.

Some of the most effective teaching and learning strategies discussed in education textbooks are completely passed over in graduate teacher programs and are replaced with discussion-based group strategies. Most teacher prep programs only provide one class for actual teaching models and many English methods and “recent developments in the field” courses can be criticized for wasting time and money with covering a variety of discussion-based “methods” which future teachers will be unable to use in many classrooms. The opposition to direct instruction has taken several approaches beginning with anti-knowledge-based teaching that began as early as the early 20th century. Newer direct instruction attacks include: “boring, old, traditional, non-democratic, wrong, inactive, passive, empty vessel” yet the opposition often fails to cite any valid research that proves the method ineffective. The opposition also confuses direct instruction with mere traditional lecture.

Group learning can be an excellent form of instruction when paired with whole class teaching methods, but some suggest it can be disastrous when applied alone (Hirsch, 1996). Cain (2012) acknowledged how cooperative learning can be effective when in moderation, but also concluded that the best teams are a mix of both personality types. The problem seems to be that schools of thought today, especially in the education field, do not acknowledge this healthy mix. Cain (2012) explained that a “shift from I to we” is being practiced in our schools with cooperative and small group learning where rows of individual seating have been replaced with pods of four or more desks pushed together. School leaders and policy makers now expect teachers to incorporate group work into their lessons on a daily basis. While collaboration is certainly important, not enough attention is being put on knowledge,

independent thought, and attentive listening. Many secondary districts are actually requiring small group activities that push students to talk (Senechal, 2012) because talking is what schools now value.

An open subject search in Education Research Complete by EbscoHost generated over 4,000 hits for “collaborative learning,” over 4,500 hits for “cooperative learning,” and over 7,000 hits for “active learning.” This is contrasted to only 855 hits for “direct instruction” and only around 30 hits for “teaching introverts.” The enormous number of hits for these topics suggests that there is a great deal of attention being put on these constructivist approaches by those in the education field in contrast to the alternatives, regardless of the logical and concerning results.

Despite popular opinion, other research shows that introverts do their best talking in anticipation and not on the spot (Helgoe, 2008). Pennington (2012) argued that group work is a system that excludes ideas and “is driven by personality and ego” (p. 39). Small group work does provide more opportunity for student discussion, but there is a danger that more extroverted students will dominate these activities (Nussbaum, 2002). Pennington (2012) observed an enforcement of group work in schools that can be physically and mentally painful for introverts. Dembling (2012) went as far as to argue that “there’s not an introvert alive who can think clearly in free-for-all brainstorming sessions” (p. 157), yet the majority of schools of education in America promote more extroverted and collective classroom activities as part of the constructivist movement (Al-Shamari, Al-Sharoufi, & Yawkey, 2008; Duffy & Cunningham, 1996).

Within the movement of constructivism, the argument for active learning has developed into a false dichotomy of active learning or no learning as defined with various buzzwords (Hirsch, 1996). Lattuca (2006) defined constructivist pedagogy as teaching that “emphasizes the active learner— who discusses, questions, debates, hypothesizes, investigates, and argues in order to understand new information” (p. 355). Anything other than constructivist is defined as “passive, rote, and sterile” (Duffy & Cunningham, 1996, p. 170). Marzano (2007) expounded that legitimate practice is too often mislabeled as drill. Hirsch (2009) explained that educators from a naturalistic philosophy are caught up in a rehash of the “activity movement” which argues how “all real learning is constructed” and direct teaching is unnecessary and unproductive (p. 44). Any approach that is concentrated on subject matter is demonized (Hirsch, 2009) and valuable time in schools is wasted on empty activities (Cuozzo, 2005).

A direct instruction method is not necessarily just a lecture, nor does it sacrifice the multiple learning styles. Both, visual and auditory, learners benefit from the lecture and modeling part of direct instruction (Farwell,

2000). Moreover, direct instructional methods are beneficial to those students who are introverts, which include artists, writers, sculptors, composers, inventors, and others. The pacing and balance of direct instruction allows students to adjust and reflect, something that constructivist methods often neglect. In fact, constructivist methods tend to alienate and shut down introverted children instead of helping them.

One of my most memorable university level students reminds me of a prime example of how constructivist methods can hurt college age students. We will call him “Elton” for the sake of protecting his privacy. Elton was in a wheelchair, and felt self-conscious about being in the spotlight during group activities or seminars. He struggled with some of the constructivist learning approaches I used, which appeal more to the interpersonal students. To be fair, another student in a wheelchair the same semester but different section did fine in these conditions, so this is more about individual personality. The constructivist methods, including the Socratic seminar, seem to pose problems with those introverted students who are intrapersonal, visual, or auditory learners.

Seminars also pose a bigger problem for students who do not have the background core knowledge. As an experiment, I assigned Jonathan Swift’s 18th century essay “A Modest Proposal” to a class and provided no background context before setting them loose in discussion. Hardly any of the students bothered to research the history, and without that knowledge Swift looked like just another hungry cannibal. But as Elton later pointed out in an extra credit written assignment, “why should he listen to everyone else’s confusion over a subject when there’s a teacher who should have at least some knowledge on the subject they are teaching?” Many students, including Elton, avoided these situations and were absent from class “discussions.” Even with practice, preparation, and after many semesters with different topics and texts, there remains a significant class population that is consistently left out of the dominated discussion simply because of a differing personality type.

No accommodations or modifications were needed for Elton’s writing assignments, but what was I supposed to do with participation grades that depended on an interpersonal basis of communication? As his assigned leadership session approached, he came to me with concerns and expressed his anxiety candidly. He didn’t think there was anything he got out of the seminars that was intellectually worth his attention, as compared to my lessons, which he says he benefited from. With the seminar he didn’t like the attention in the circle format, but he was also very critical of the quality of discussions. I welcomed his criticism of the method during our conversation and even agreed with him at times. Of course, I also

expressed to him the need for interpersonal communication practice. I ultimately decided to give him the option to opt out and write a piece expressing how the seminar hadn't done much for his learning style, yet I left it open for him to still participate for extra points if he should feel up to it. Elton ended up participating in a minimal way, but his written piece was much more productive where he expressed what it is to be...

in the shoes of a shy, male student who has an Autism Spectrum Disorder, such as Asperger syndrome or Nonverbal learning disability who also has any highly noticeable physical disability. Firstly, the biggest obstacle towards full participation for such an individual is the NVLD due to deficits in social skills. The student may have formed thoughts about the subject at hand but simply is unable to push past the awkwardness associated with being in a group setting and put his or her thoughts into words. This is not however a recommendation for pairing up students to talk rather than the larger setting and in fact may increase the pressure on a student.

Elton continued with perceptive analysis of the educational setting:

Equally problematic in a seminar setting is the unfortunate reluctance of students without disabilities to call upon or in any other way acknowledge a student who is noticeably different and outside of the social norm. A student can neither lead nor contribute if his/her peers do not accept the individual. Looking at the issue more broadly, the seminar structure is heavily skewed against guys no matter what they look like or how they act... While I can understand a teacher's desire to simulate real-world discussions, I would simply caution that this does not facilitate full participation...

Other student feedback through objective surveys I have given about group learning and seminars through the years have also shown mixed feelings. Constructivist strategies claim to differentiate, but many of those strategies ignore personality diversity as well as the zone of proximal development in practice. The examples of students negatively affected by group and social learning will require an additional whole book just to document the issues and explore the causal reasons why educators are so stuck on teaching one way or another. For now, read on to learn more about how introverts experience a classroom not designed for them. Chapter two in this book will outline the research behind the theories that guide my concerns and solutions. Chapter eight will offer recommendations on how educators can teach classes with a balanced approach without alienating any students.

CHAPTER TWO

This chapter provides background context for the theoretical foundation of my concerns. The two general areas consist of personality theory and learning theory. These theories informed me in my initial concerns and confirmed many of my suspected fears about how some students react to different teaching methods in the classroom. While theories should not dictate what we do in practice, they do provide a foundation, a context, and a lens to examine the issues.

Personality Theory

Various theories have been developed to shed light on various dimensions to learning, such as Howard Gardner's multiple intelligences (1993), David Kolb's learning styles (1985), and various versions of Jung's psychological types (1921). Carl Jung proposed a philosophy that people are of two different modes: introversion or extraversion. Jung further divided the two types into eight typological groups: (a) introverted sensors, (b) introverted intuitors, (c) introverted thinkers, (d) introverted feelers, (e) extraverted sensors, (f) extraverted intuitors, (g) extraverted thinkers, and (h) extraverted feelers. This study is concerned with only the general term of introversion and extroversion. Extroverts were defined by Jung (1921) as those who become energized by others. They tend to be assertive, talkative, and feel bored when they are alone. Introverts were defined by Jung (1921) as those who excel alone with their imagination and prefer reflection to activity. Research identifies 1/3 to 1/2 of the population as introverts (Cain, 2012; Dembling, 2012). Cain (2012) argued that we are neglecting this segment of the population with excessive group work.

Today's contemporary society is designed to accommodate and reward only the extrovert, and this includes our schools today. Cain (2012) reported how introverted children have been identified as problems and how "the vast majority of teachers believe that the ideal student is an extrovert" (p. 7). Introverts are misunderstood and castigated in western society (Cain, 2012; Dembling, 2012; Kagan, 1994; Laney, 2002). Introversion is far more respected in eastern cultures (Cain, 2012; Pennington, 2012). Kagan (1994) argued that "American society is

suspicious of the introverted isolate with one or two friends...” (p. 253). Some of this fear and confusion has been linked back to Sigmund Freud, who considered introversion a form of pathological neurosis (Dembling, 2012). Because of urban myths like the introvert being the lone gunman or a psychopath, introverts have been ostracized in western culture (Pennington, 2012). Parents even now worry about their children playing alone (Dembling, 2012).

Despite the myths and fears, the mistreatment of introverts seems odd in a nation that has traditionally celebrated self-reliance and individual rights. Sommers (2012) argued “we’re not as independent as we think we are” (p. 98). Sommers (2012) contended that we conform so often that it is a mindless default, and that this kind of adaptation to the collective can be dangerous. Studies also show a very different story. One study (Goleman, 1995) described an introverted reflective learner named Judy. This four year old would “hang back from the action at playtime” but Goleman (1995) later found that Judy was “actually a keen observer of the social politics” (p. 36). The child actually excelled in assessments that measured organizational skills, accuracy, and perceptiveness, but these strengths may have never been identified if she had not been a student in Gardner’s Project Spectrum (Goleman, 1995).

Jung (1921) wrote that “individuation is a natural necessity” (p. 448). Storr (1988) argued that the capacity to be alone is an important skill that enables people to learn, think, be innovative, change, and imagine. Storr (1988) suggested that solitude is therapeutic and includes practices like prayer and meditation, which have little to do with other people, but contemporary western culture is an obstacle for the peace of solitude. Too many people today fear solitude because they believe it is competitive or too individualistic (Senechal, 2012). But even Callero (2009), a critic of individualism, recognized that “modest expressions of individualism can be beneficial and constructive” and that some “social isolation can facilitate self-reflection and a sense of inner peace” (p. 18). To what degree individualism is defined by may be debated, but certainly the complexities involved with individualism should open up more inquiry into the group vs. individual crux.

Introversion and extroversion complement each other, but they are quite different (Myers-Briggs & Myers, 1980). The introvert is more subjective, reserved, and questioning, and they live when they understand (Myers-Briggs & Myers, 1980). Henjum (1982) explained two different types of introverts: Type A introverts are self-actualizing, able to work well with others, but reserved. Type B introverts are the shyer, timid kind with a disadvantage in society. Introverts seek understanding and meaning

while extroverts seek sensory stimulation (Pennington, 2012). Introverts seem to be far more reflective (Kolb, 1984), while extroverts are more active (Silver, Strong, & Perini, 2000). Kolb (1984) pointed out the stability of the personality type, “several longitudinal studies have shown introversion/ extraversion to be one of the most stable characteristics of personality from childhood to old age” (p. 76), though Jung (1921) acknowledged how we are able to change from situation to situation in order to adapt and often grow more introverted as we age.

There are legitimate biological differences between introverts and extroverts (Laney, 2002). Pennington (2012) reported the research of Debra Johnson and John Wiebe who used PET scans of the brain to show brain differences between the two personalities: Introverts have increased blood flow in the frontal lobes and anterior thalamus, while extroverts have more activity in the posterior thalamus and posterior insula. Dembling (2012) also reported research that shows how brain scans reveal how extroverts are faster in decision response and faster in translating thought to speech. Therefore, verbal participation in a classroom setting may not be as natural for more introverted learners.

Learning Styles

The theory of learning styles has multiple versions and diverse origins. The study of learning can be traced back to 1904 to Alfred Binet’s intelligence tests that sparked interest in student differences. Just a few years later in 1907, Maria Montessori began her Montessori method of education in order to enhance and accommodate student learning. In 1956 Benjamin Bloom introduced his taxonomy, which sparked greater interest in multiple levels of learning. In 1962, Isabel Myers-Briggs and Katherine Briggs developed the Myers Briggs Type Indicator based on Carl Jung’s theory of personality types. Myers and Briggs were the first to show the significant differences among different types of learners based on personality, particularly introverted and extroverted students.

David A. Kolb began writing about individual learning styles in 1971, and in 1976 he offered his first version of the Learning Style Inventory. Kolb’s Learning Style Inventory contains four quadrants of learning zones within a cycle that features four distinct learning styles on the inside. Rita and Kenneth Dunn introduced their version of a learning style in 1978, which brought in environmental, emotional, sociological, physiological, and psychological factors among the differences between student preference. In 1982 Anthony Gregorc introduced his own model, which applies two perceptual qualities of concrete and abstract and then two

ordering abilities of random and sequential. Later in the decade in 1987, Neil Fleming launched his own version known now as the VARK model, which simplifies learners into just four categories of preference: visual, auditory, reading/writing, and kinesthetic. Fleming originally had three sectors in what was known as the VAK, but later added the reading/writing quadrant to complete the model. The VARK model remains one of the most popular to determine student preferences. Bernie McCarthy also created his own model in 1990 called the 4 MAT model, which also has four categories: Imaginative, Analytic, Common Sense, and Dynamic. Several of these models are centered around quadrants, which is a concept that dates back to ancient times and has been seen in Hippocrates' four body liquids, Blake's four Zoas, and the medicine wheel in Native American wisdom (Silver, Strong, & Perini, 2000).

The Kolb theory (1976) in particular is an important theoretical base for all learning style theory. The theory was developed as a learning cycle based on Kolb's 1969 research on experiential learning theory. Kolb began by studying Jung's research that dealt with how people perceive and process information. Jones, Reichard, and Mokhtari (2003) explained how "Kolb based his theory of experiential learning on peoples' different approaches to perceiving and processing information, information integration, and nondominant modes of expression" (p. 65). Kolb then took learning style research and formulated a model of types based on the Jungian concept of development. The model presents an experiential learning process based on "adult learning and group dynamics" (Gogus & Gunes, 2011, p. 587). Kolb further analyzed the different learning styles of the types of learners. Kolb (1984) explained how "individual learning styles are complex and not easily reducible into simple typologies" (p. 68). Previous research has shown that learning styles are influenced by personality type, among a few other elements (Kolb and Kolb, 2005).

Kolb's (1984) Learning Styles Inventory classifies learning into a cycle of stages (see Table 1). The complete Kolb cycle of learning stages contains four learning process zones (or cycles) on the outside of a sphere and four learning styles on the inside. Little (2004) explained the categories, "Individuals prefer to input information on a sliding scale between concrete (specific) examples and abstract (holistic) concepts. They prefer to process information on a sliding scale between active (hands-on) experimentation and reflective (passive) observation" (p. 8). The focus of this book will be on those who learn best from reflecting and observing, as best compared to the sectors of Kolb's learners called Assimilators and Divergers. These learners, Assimilators and Divergers, are more often introverted than any other learning style. These reflective

learners learn best by reflective observation, reliance on an expert teacher, and often prefer to work alone. Kolb and Kolb (2005) have described these reflective learners as students who “prefer readings, lectures, exploring analytical models, and having time to think things through” (p. 5). Yet, as mentioned previously, today’s pedagogy seems more focused on active “student-centered” and cooperative learning (Hirsch, 1996).

Today’s teaching trends cater to Accommodators, who prefer problem solving and public interaction (Fahy & Ally, 2005). It is important to note that those students are in the minority of the overall population. Studies show how Assimilators are often the largest population and Accommodators are often the minority (Mohamed & Fahy, 2002; Jones, Reichard, & Mokhtari, 2003; Hai, 2005). This means we are adjusting our teaching to benefit only a select few.

Table 1: Learning Styles Within the Learning Stages

Learning Style	Diverger	Assimilator	Converger	Accommodator
Learning Stages	Concrete Experience	Abstract Conceptualization	Abstract Conceptualization	Concrete Experience
Learning Stages	Reflective Observation	Reflective Observation	Active Experimentation	Active Experimentation

Note. Table 1 shows how Kolb’s Learning Styles (1976) are situated.

The primary concern with active learning is with the middle of the scale from the Reflective-Observation to the Abstract-Conceptualizing stages, as in bold. Note both sectors of the Assimilator learning style. The learners who fall under Abstract-Conceptualization and Reflective-Observation, known as Assimilators, are the least accommodated with active and group learning strategies. In contrast, Active-Experimentation and Concrete-Experience are fully accommodated with active and group learning methods. According to Fahy and Ally (2005) Assimilators and Accommodators are “theoretically opposed” (p. 15).

This study is mostly concerned with reflective visual learners who might be classified on the right side of the sphere within the Reflective-Observation stage, particularly the Assimilators. My concern with oral participation begins with Divergers, is mostly concentrated with Assimilators, but also includes and ends with Convergers. Accommodator

learning style is completely untouched by the problem of practice being examined because these learners excel in active group learning environments (Nilson, 2003) and discovery learning (Little, 2004). Although the Kolb Learning Style Inventory was not used for collecting the prime data in this study, comparisons of the introverted reflective students can sufficiently be made to Kolb's Assimilators. The full Kolb cycle can be seen on the web at The Center for Teaching Excellence, Duquesne University (2012). Kolb's theory is important to this study because he found that the Assimilation style was parallel to introversion (Margerison & Lewis, 1979).

This book is concerned with reflective learners, those who learn through reflection and not right on the spot under the pressure of an on-demand performance. Ally's (2004) research found that reflective students learn by observation and reflection and prefer that "all the information be available for learning and see the instructor as the expert" and also "tend to avoid interaction with others" (p. 27). They prefer abstract concepts (Little, 2004) and thrive off of reflection and observation (Gregory & Chapman, 2002). These kinds of learners are less focused on people (Kolb, 1984) and prefer logical and factual lessons (Nilson, 2003). They read and listen actively and do not require active learning methods (Nilson, 2003). Assimilators who are naturally more introverted do not like team building exercises and brainstorming sessions (Dembling, 2012). They rely on an expert and learn from past experience (Gregory & Chapman, 2002). They learn by watching and thinking (Little, 2004). They prefer lectures and processing time to analyze different aspects of the information they have received (Kolb & Kolb, 2005). Based on the literature, reflective learners benefit from teacher-directed lessons.

Active learners, often compared to Kolb's Accommodators, rely heavily on other people and are defined as extroverts (Kolb, 1984). They strive in group work and hands on learning (Nilson, 2003). They do and feel (Ankerson & Pable, 2008). These individuals enjoy working in teams in order to accomplish tasks (Kolb & Kolb, 2005). They prefer concrete examples and active experimentation (Little, 2004). Discovery learning is a perfect match for these learners (Little, 2004). However, Duman (2010) found that active learners were the least common in one study with just 14.7% of the student population and with only 8.8% in the control group.

One research study (Duman, 2010) found that individuals learn differently and concluded that multi-dimensional teaching models should be used. It is important to note that Kolb and Kolb (2005) have reiterated that there is no such thing as a fixed learning style and that learning happens in a cycle. Wirz's research (2004) found that compatibility of

student learning styles with the teaching style of their instructors resulted in retention of more information when the styles match. For example, Wirz (2004) reported that poor first-year science instruction can be tied to failure to recognize learning styles. This failure results in the loss of over 200,000 science students each year who switch to other fields after their first college science courses (Felder, 1993). One study implied that “active learning is not a quick or easy fix for the current deficiencies in undergraduate science education. Simply adding clicker questions or a class discussion to a lecture is unlikely to lead to large learning gains” (Andrews, Leonard, Colgrove, & Kalinowski, 2011, p. 403).

In other studies, direct instruction has been found to be highly successful for increasing student success in multiple subjects (Al-Shammari, Al-Sharoufi, & Yawkey, 2008). Reflective learners, visual learners, and intuitive learners all benefit from direct lecture or presentation (Wirz, 2004), so the implications of this book are significant for a large number of students.

Reviewing various studies involving learning styles provides a context for this book. Kolb (1984) wrote, “there is a correspondence between Jungian concepts of introversion and the experiential learning mode of reflective observation via intentional transformation...” (p. 79). In other words, there is a strong parallel between reflective learners and introverts. Dembling (2012) noted that for introverts, “sitting and watching is a complete feast for [their] sensitive sensory perception (p. 45). Ally (2004) also found that learners within the Abstract-Conceptualization stage [the other dominant stage of Assimilators] preferred to work more with things and symbols and less with people and liked to work with theory and systematic analyses.

Gender. Past researchers of learning styles have considered gender. In one study, Ally and Fahy (2002) found differences between gender for learning style preference. An earlier study by Williams (2001) found that more males were found to be Assimilators than any other learning style [18 to Converger-13, Diverger-11, Accomodator-11, out of 49]. Philbin, Meier, Huffman, and Boverie (1995) also found that males were more likely to be Assimilators and females were more likely to be Accommodators with preference for non-traditional environments in the concrete experience mode. Other research (Gusentine & Keim, 1996) found that “women preferred to transform information into knowledge through active experimentation and that the men preferred to transform it using reflective observation” (p. 19). More recently, Jones, Reichard, and Mokhtari (2003) found no significant differences in preferred learning by gender. Learning styles may also have more significance for male

introverts and extroverts than it does for women who are less limited by their styles (Peters, Shmerling, & Karren, 2011). It would seem if we are catering to only active learners, we may be neglecting most males since they make up a large portion of reflective learners.

Majors. Kolb's research (1984) found that Divergers are often found in majors such as English, political science, history, and psychology. Convergents were often found in careers such as engineering and medical doctors (Kolb, 1984). Physics majors have been found to fall between Converging and Assimilating (Kolb, 1984). Foreign language majors have been found to be on the Diverging and Assimilating line (Kolb, 1984). Many business majors fall into the Accommodator category (Kolb, 1984). The largest number of art students in one scholarly study by Gusentine and Keim (1996) preferred the Assimilator learning style (44%), followed by Accommodator (22%), Converger (19%), and Diverger (16%). Other research (Tumkaya, 2012) found Assimilators to be the most populated group of learners. Once again, if we are catering to only the active learners, we may be neglecting the majority of college majors.

Community College Research. In the Gusentine and Keim (1996) study of community college art students, two hundred students from five community colleges were administered the Kolb Learning Style Inventory and a questionnaire. 100 students were from for-credit transfer courses and 100 were from non-credit courses. The non-credit courses had a more diverse age population but the transfer courses had a predominant age of 22 years. Nearly 73 percent of all the students were women, but 55 percent of the transfer course students were female. 34 percent of the men and just 9% of the women were identified as art majors. Gusentine and Keim (1996) found that "Both art majors and nonmajors preferred the Assimilator learning style." Because the Kolb's Learning Style theory indicates that students in the arts use the learning modes of reflective observation and concrete experience, it was hypothesized that most of the students would be Divergers. However, since Divergers represented the smallest number of students at 16 percent, the hypothesis was rejected. "A chi-square analysis revealed no statistically significant differences between art majors and nonmajors in their learning style preferences" (Gusentine & Keim, 1996), but they did find that age made a difference. Traditional aged students 23 and younger were more likely to process through reflective observation, while non-traditional were more likely to process through active experimentation. The breakdown for community college students of traditional age in this study (Gusentine & Keim, 1996), are as follows: Assimilator (47.2%), followed by Diverger (22.6%),

Accommodator (18.9%), and Converger (11.3%). Once more, reflective learners may be neglected with active learning.

In one study, Jones, Reichard, and Mokhtari (2003) found that most community college students' learning style preferences varied significantly across the four different subject-area disciplines of English, math, science, and social studies. The majority of the participants, 59%, were classified as being within the Assimilator learning style. 83% of the participants switched learning style modes for two or more disciplines. Only 19% of the students stayed within the same learning style quadrant throughout each of the five assessments. Of the twenty students who demonstrated a fixed learning style, there were 13 Assimilators (65%), 3 Divergers (15%), 2 Convergents (10%), and 2 Accommodators (10%). Jones, Reichard, and Mokhtari (2003) concluded that community college students' learning style preferences vary across different subject areas and that students are able to adapt to different learning situations.

Another community college researcher (Carthey, 1993) found that Convergents actually have the best grades for business, accounting, and law courses. A different study found that Convergents had the highest GPA scores overall (Carthey, 1993). Carthey (1993) also found that Accommodators had the second highest number of A's. Assimilators had the highest number of B's and C's in one study (Carthey, 1993).

University Research. By surveying 800 graduate students, Kolb (1984) found that business majors were mostly Accommodators (67). Nursing (13) and engineering (234) fell into the Converger category. Divergers had a mix of English (30), history (34), political science (24) and psychology (24). Assimilators had the most with economics (911), math (34), foreign language (16), sociology (15), chemistry (27), and physics (27). 65% of students in Hai's (2005) study were Diverging or Assimilating students, which shows a majority for those who learn by reflection and observation. Tumkaya (2012) found that more university students were Assimilators and less were Accommodators.

By these numbers, it appears if teachers only teach to the Accommodators, who are the more extroverted, it seems they would only be accommodating the business majors and the least number of students, while actually neglecting the majority. If we are favoring interpersonal extroverts as Cain (2012) suggested and favoring kinesthetic hands on learners (Murray, 2008), who both most likely happen to be Accommodators, where does this leave the other learners, especially the Assimilators who are of stark contrast? Gusentine and Keim's (1996) findings suggested different learning styles are being neglected as a result of teaching methods.

Theory in This Study

To emphasize the two contrasting stages of the learning, this book examines opposites: Introvert versus Extrovert and reflective learning versus active learning. Identified by observations and surveys, the subjects were interviewed in order to collect data on how different students prefer different teaching methods. The basis of personality type and learning style theory was used as a lens to view the data. The research study was examined through the theoretical lenses of Jungian Analytic Psychology and Learning Style theory, based on the work of Carl G. Jung, David A. Kolb, and others. The study relied on observations, interviews, and existing pre-study data established by a Jungian personality assessment (Cain, 2012), the VARK preference assessment (Fleming, 1987), and informal feedback surveys indicating activity preference. These assessments determined students' profiles and inclusion in the study by identifying students on the opposite sides of the spectrum— those that are introverted reflective learners and those who are extroverted socially active learners. Participants were also exposed to two different teaching methods that contrast the two opposing approaches of constructivist versus direct teaching.

Howard Gardner's theory of Multiple Intelligence should be noted as an important additional layer of comparison. Gardner's Multiple Intelligence (MI) theory is included in Table 2 and 3 to show this additional layer of comparison. At the bottom of the tables are the recommended teaching methods for each learning style. Although this study did not formally gauge any level of intelligence, it did make informed observations and comparisons to the theory.

Several key scholars have noted the similarities between introverted, reflective learners and intrapersonal thinkers (Armstrong, 2000; Fagella & Horowitz, 1990; Gardner & Walters, 1995; Gardner, 1995). Gardner and Walters (1995) noted how intrapersonal thinkers are the most private. Fagella and Horowitz (1990) noted how intrapersonal thinkers work alone and prefer individualized projects and having their own space. Armstrong (2000) acknowledged that more intrapersonal-minded students prefer individual instruction and independent study and more interpersonal minded learners do better with games and collaboration. Nolan (2003) described knowledge of multiple intelligences as a "better way for teachers to understand and accommodate different learning styles" (p. 119). Gardner's book *5 Minds for the Future* has been considered an "appeal for a new appreciation of introversion" (Pennington, 2012, p. 72). Gardner (1995) has warned how there is too little attention given to intrapersonal

intelligence and how “intrapersonal needs are unfortunately neglected in every area of education” (p. 16).

Tables 2 and 3 show the theoretical foundations for this study consisting of Jungian Analytic Psychology at the top. As mentioned, the Assimilators in the second row are of most concern within the context of the Constructivist movement for more active learning because they are neglected during active learning methods.

Table 2. Comparison of More Reflective Learners

Personality	Introvert	Introvert
Learning Style	Diverger	Assimilator
Type of learner as categorized by Kolb theory	Visual, & reflective learner watching (Reflective Observation - RO) feeling (Concrete Experience - CE)	Reflective learner watching (Reflective Observation - RO) thinking (Abstract Conceptualization - AC)
M.I. Intelligence	Intrapersonal/ Interpersonal	Intrapersonal
Teaching methods that appeal to each style	Direct instruction, lecture, small group work	Direct instruction, lecture, readings

Note: This matrix is based on previous comparisons conducted by Margerison and Lewis (1979), Kolb (1984), Gregory and Chapman (2002), and Nilson (2003).

As Tables 2 and 3 show, personality is cleanly divided between introvert and extrovert. Both learning style theory and multiple intelligence theory accommodate the two personalities evenly. The more introverted students are more intrapersonal, which coincides with their preference for observation and a need for reflection. These intrapersonal introverts mostly prefer direct instruction led by a teacher. Alternatively, the more extroverted students are more interpersonal, which is why these students are more active and sometimes more social. These interpersonal extroverts mostly prefer active and social learning. It is worth noting that no student should ever be boxed into any neat category and that there are always exceptions to every generalization. All students have the potential to work in different modes under different settings, and it is my belief that they should sometimes be nudged in new directions.

Table 3. Comparison of More Active Learners

Personality	Extrovert	Extrovert
Learning Style	Converger	Accommodator
Type of learner as categorized by Kolb theory	Kinesthetic & Action learner doing (Active Experimentation - AE) thinking (Abstract Conceptualization - AC)	Social & hands on Action learner doing (Active Experimentation - AE) feeling (Concrete Experience - CE)
M.I. Intelligence	Intrapersonal	Interpersonal
Teaching methods that appeal to each style	Labs, practicum, independent work	Cooperative & collaborative learning

Note: This matrix is based on previous comparisons conducted by Margerison and Lewis (1979), Kolb (1984), Gregory and Chapman (2002), and Nilson (2003).

Other learning styles have interesting parallels. Gregorc's (1982) Abstract Sequential thinkers need time to consider lessons and can be compared to Kolb's Assimilators. Gregorc's (1982) Concrete Sequential thinkers prefer lecture and teacher directed lessons and can be compared to Kolb's Convergers. McCarthy's (1990) Type III and IV learners are more student centered where the teacher is more of a facilitator, especially Type IV learners who prefer to share, present, and teach others. Type III and IV have much in common with Kolb's Accommodators. Type I and II are more teacher directed; the teacher is a motivator and provider of information (McCarthy, 1990). Type I learners, which emphasize reason, are most like Kolb's Divergers. Type II learners, which thrive off of facts, are most like Kolb's Assimilators.

The VARK theory was used as an additional layer of analysis in this study. It is important to note that VARK is more about learning preference