Chapter Two: Literature Review

Overview

This chapter provides a conceptual framework for the study, along with a summary of the theoretical foundations. It summarizes the existing research base regarding creativity and classroom environment on which this study proposes to build. The idea of two instructional approaches: teacher-directed and project-based, is analyzed in terms of general constructivist theorems of educational research and studies into technology integration in the classroom. The chapter provides the rationale for the hypotheses, as well as the conceptual and theoretical underpinnings of the study.

Conceptual Framework

Media literacy in the classroom.

The fundamental purpose of schooling is to prepare students for the world beyond the classroom. “As the world changes, the expectations placed upon education shift to meet these changes” (Friesen & Jardine, 2009, p. 4). In today’s society, that statement has a profoundly different meaning than it did in generations past. More than ever before, the world is in a state of technological flux and societal change. To adequately prepare students we must acknowledge this change, while at the same time encouraging and modelling critical behaviours of awareness with them. By doing so, they will learn how to explore the conditions that have led to this current experience of reality.

There are several main concepts which form the basis of this proposed study, but at its heart, it begins with a need to create media literate students. In this way, students develop the cognitive and affective processes which allow them to be active, critical participants in the ever-changing world of technology. Media Literacy, for the purpose of this study, is defined as “the

movement to expand notions of literacy to include the powerful post-print media that dominate our informational landscape, helps people understand, produce and negotiate meanings in a culture made up of powerful images, words, and sounds" (Aufderheide, 1993, p. 2). The concept that we can be producers of media is a new phenomenon itself. As Seigel (2008) writes "for the first time in human history, we are all... producers as well as consumers. That is mass culture" (p. 76). The concept of self-expression and commentary is one that has grown in importance with the development of technological awareness and in particular, venues of shared expression such as the internet.

Livingstone (2004) expands on this concept with an analysis of the growth of the World Wide Web and the abundance of media texts. She contends that in a world where "almost anyone can produce and disseminate Internet contents, with fewer—and different kinds of—filters, the basis of critical literacy must alter" (p. 7). This notion is echoed by the writings of Domine (2009) who draws parallels between activism and media awareness when she states that media literacy "requires students, teachers, and administrators to go beyond a technical skill set toward a disposition of participatory citizenship" (p. 18). For a technology classroom, these efforts require educators to provide students with a learning experience that facilitates this level of active, rather than passive, engagement in students.

To begin, one must consider the research foundations of technology integration in the classroom and the ways in which that technology is taught by educators. There have been many studies that demonstrate the undeniably positive benefits of integrating technology. Brown (2003), Domitrek and Raby (2008), Domine (2009), Drage (2009), Kennewell and Beauchamp (2003), Livingstone (2004), Ruben (1999) and others all cite the positive benefits to technology-rich environments on student learning. Finn and Inman (2004), for instance, demonstrate the

positive outcomes of inclusive technology programs which they termed “digital unity” (p. 297). Their study found an increase in positive attitudes toward technology and a decrease in technological gender discrepancies in students who participated. Student experiences are, as a general rule, improved with the inclusion of technology into existing programs. This concept, however, only begins to scratch the surface of why literacy-focused technology integration is so important.

Research into the ability to work creatively with ideas (Scardamalia & Bereiter, 2003) and the evolution of “digital fluency” (Resnick, 2001a, p. 33) suggest that students who lack facility with technology will find it increasingly difficult to compete in tomorrow’s digital world as “flexible workers” (Drage, 2009, p. 32). We need to empower our students by encouraging an understanding of the medium. Students need to be critical consumers and conscientious creators rather than simply blind consumers of culture. As Domine (2009) points out, a classroom which supports media literacy can “balance students’ excessive consumer and social uses of media and technology with democratic practices that require responsible stewardship of local and global communities” (p. 51). The goal of media literacy in the classroom would then be focused on the preparation of students for an increasingly digital world through awareness and activism, rather than simply the mastery of a particular software program.

Supportive classroom climate.

When measuring human environments, Insel and Moos (1974), Fisher et al. (1986) and Fraser (1986) all suggest that there are a variety of elements which combine to produce the environments affective climate as perceived by its inhabitants. According to Insel and Moos (1974), the first of these is organizational structure; the second is the characteristics of the inhabitants and thirdly, the psychosocial characteristics and organizational climate. This

combination of factors in a classroom is what creates the students' perceptions of the learning environment and, in an ideal classroom environment, are what Holley and Steiner (2005) define as a "safe space". This doesn't specifically have to do with the physical environment, but "instead, classroom safe space refers to protection from psychological or emotional harm" (p. 50). It is within this supportive emotional environment that students feel capable of taking risks with their learning.

A student's perception of the classroom environment can be significantly different than a student's general view of the school. As Fraser (1986) states, "despite their simultaneous development and logical linkages, the field of classroom-level and school-level environment have remained remarkably independent" (p. 9). The student view of a classroom would involve such factors as "relationships between teachers and their students or among students, [while] school climate might involve a teacher's relationship with other teachers, senior staff and the school principal" (Fisher et al., 1986, p. 4). Overall, however, it can be generalized that "cooperation and trust should set the stage for effective student learning" (Hoy et al., 2006, p. 9).

An environment which facilitates creativity is something that doesn't always occur naturally but which must be fostered through classroom climate, educational approaches and project selection. A change to the overall climate of a classroom only occurs after a fundamental change to the way that a classroom is organized, and technology curriculum instructed. Part of this is in regards to classroom set up and ergonomics, (Zandvliet and Straker, 2001), though the more important aspects of this involves the instructional approaches. In this vein, Henderson and Honan (2008) emphasize that teachers must "move past taken-for granted assumptions and to address the challenge of preparing students to be literate in the 21st Century" (p. 95). Ames and Archer (1988) demonstrate that classroom goal orientation "is determined by what is actually

happening in the classroom, but, more important, it is defined by how these events and what motivational orientation he or she adopts" (p. 265). Teacher interactions with students, in the form of praise or negative feedback, also have a significant impact on student perceptions of the classroom environment (Burnett, 2002). Media literacy is a pressing example of the need for this void to be filled in student experiences with online culture and multi-media forums.

Current research by Domine (2009) and others demonstrates that "new learning spaces" (Johnson, 2009, p. 71) such as online environments, blogs, and messaging and the expertise that they require have significantly altered the way youth encounter and interact with one another and the world. As Prensky (2009) suggests, we must alter our belief that "the unenhanced mind and unaided thinking are somehow superior to the enhanced mind" (para. 34). If we don't adapt our schools to accommodate this reality, "we will be left in the 21st century with school buildings to administer—but with students who are physically or mentally somewhere else" (Prensky, 2005, p. 13).

The argument then becomes the creation of a space – both online and physical – which supports the creative process. Given that "it is easier to enhance creativity by changing conditions in the environment than by trying to make people think more creatively" (Csikszentmihalyi, 1996, p. 1), it becomes particularly salient to develop an atmosphere that supports the creative process. Online environments, open-concept classrooms, integrated learning communities and the expertise that they require have significantly altered the way youth encounter and interact with one another and the world. The danger is to assume that all new learning spaces are inherently dangerous, and to make blanket rules that negate the use of them, rather than making educated decisions based on the specifics of each (Domitrek & Raby, 2008, p. 11). To do so is to lose touch with the technical leaders of tomorrow; to negate "the social,

cultural, and cognitively rich experiences that these youth participate in [which] are largely taking place outside schools" (Geyer, 2009, p. 17): online and connected.

All of this research emphasizes the importance of creating a classroom climate to facilitate student exploration with and through technology. Once this educational environment is in place, students may begin to learn and explore; putting their media literacy to work as they deconstruct existing media texts and create their own. It's at this point, that the pedagogical practise of the educator becomes forefront to the process of creativity within the classroom.

Constructivism in practise.

The theoretical underpinnings of constructivism in education go back more than a century to John Dewey's (1897) Pedagogic Creed which emphasises the importance of "stimulat[ing] ... the child's powers" (para. 2). Dewey saw school as "a process of living and not a preparation for future living" (para. 8) and believed in introducing concepts and ideas "not as so much new subject-matter, but as showing the factors already involved in previous experience and as furnishing tools by which that experience can be more easily and effectively regulated" (para. 37). In the last century, though the terms have changed, the foundational basis of Dewey's educational theory has not. The same concepts can be found in Miller's (2002) writing which defines constructivism as "a philosophy that supports student construction of knowledge" (p. 1). Duffy and Cunningham (1996) expand on this notion when they state that in a constructivist classroom, learning "is an active process of constructing rather than acquiring knowledge, and ...instruction is a process of supporting that construction" (p. 171). This theory of "constructing" student understanding through metacognitive processes is echoed in the popular educational methods book *Beyond Money*, by Bennet and Rolheiser (2001) which expands on the notion of student awareness of their own learning. Even online education has been subject to research

regarding the impact of constructivism on instructional effectiveness. Participatory action research by Gazi (2009), demonstrated that “in a collaborative, constructivist learning environment, students have chance to develop higher order thinking, reflection, communication, research, team work skills through managing their own learning within learning community” (p. 76). At their heart, each of these researchers and writers follows the same philosophical belief system: since students construct their own knowledge, then instructional strategies that support constructivist approaches are a positive method to developing student understanding.

The relevance of Constructivist education in today’s rapidly changing field of educational technology has been the subject of numerous studies. Battistini (1995), Duffy and Cunningham (1996), Felder and Brent (1996), Gazi (2009), Gonen, Kocakaya and Inan (2006), Isman (2011), Motschnig-Pitrig and Holzinger (2002) and others demonstrate the importance of constructivism to higher levels of learning, and education in general. By definition, if we are intending to bring our students to a state of critical media literacy, we must embrace a teaching pedagogy which critically assesses, contextually analyzes and denotes new meaning to accepted educational truths. The question of whether or not “the curriculum should feature experiences in which teachers and students unpack, deconstruct, and resist the transmission of approved information and knowledge” (Gutek, 2003, p. 153), however, is a tricky one. Bastick (2002) encourages the use of in-course student evaluations to hone teaching methods to provide for better learning environments while Phillips (1995) warns of “the tendency within many forms of constructivist epistemology... towards relativism, or towards treating the justification of our knowledge as being entirely a matter of socio-political processes or consensus” (1995, p. 11). The challenge is heightened by the perception of technology as inflexible. Research by Taylor, Dawson & Fraser (1995) analyses the challenges of instituting constructivism in subjects which are traditionally

taught in an approach that espouses “cold reason” and “hard control” (p. 2). Taylor & Maor (2000) expand on this knowledge base when they investigate the challenges of integrating a constructivist approach into online learning environments. In the technology classroom, it leaves the educator in the situation of needing to transmit large amounts of data (which are ever-changing) while at the same time, attempting to encourage a critical analysis of the media by students.

This brings to the forefront the question of where in the spectrum of teaching approaches, one’s instruction falls. In the traditional, teacher-directed forms of schooling, “the burden of communicating course material resides primarily with the instructor” (Felder and Brent, 1996, p. 43). The teacher is the purveyor of information and the guide who assists students in developing an understanding of the curriculum. In this format, the teacher leads students through the process of creating knowledge for themselves; providing exemplars and sharing their expertise. The question, however, is how this might mesh with a technology-enhanced classroom where the students are often the ‘experts’ or, as Prensky (2006) describes them, “digital natives” (p. 1). Wehrli (2009) points out that “emergent technologies are not just tools... [they] are changing us, our culture, and our schools” (p. 3). Given that, we must consider how to adapt our teaching methods to best implement them in the classroom.

Palak and Walls (2009) research provides an interesting snapshot into teacher pedagogical basis of teaching methods in technology-rich classrooms. Their study found that “using technology to support student collaboration, project-based learning and problem solving is rare even among teachers who hold student-centered beliefs” (p. 437). Ironic as it may sound, the educational transformation is still in its nascent stages as we move toward a student-centered form of instructing technology. Palak and Walls (2009) found that most teachers still employed

traditional approaches to instruction despite the non-traditional subject matter. Research by Sandholtz and Reilly (2004) supports these findings and provides an even more paradoxical view of this phenomenon. They propose that by focusing professional development on creating technical expertise that teachers are inadvertently deterred from exploratory use of technology. Instead, they propose that the focus should start with "developing curriculum, evaluating learning materials, and thinking about how to provide better learning opportunities for their students" (p. 507). From a sound of pedagogical basis, expertise can then develop.

This concept of sound pedagogy easily extends to the theories behind student-centered learning experiences, which form part of the foundational basis of constructivism. In this scenario, the student becomes central to their own learning. One consideration, however, is that "the logistical problems associated with implementing [student-centered learning environments] is formidable" (Hannafin, 1997, p. 168) as they require students to have developed an ability to work independently for extended periods of time. In fact, as Hannafin (1997) points out, the student-centered learning approaches may not be the right choice in all situations, but they should be considered as "viable alternatives to direct instruction methods" (p. 197).

Perkins' (1991) research into constructivism within the technology classroom emphasizes that student-centered learning combine with technology produce a synergy of student understanding, through exploration. The use of "information processing technologies and the constructivist point of view fashion an image of education much more attentive to understanding and the active use of knowledge and skills" (p. 22) rather than simple transmission of information by the teacher to students. Along this same line of thinking, Potter (2004) compares the process of creating media literate students to that of developing language skills. He suggests that, like reading, media literacy is not an either or scenario: students must be able to both match

the meaning of existing media texts as well as construct new meaning of their own. In regards to the instruction of media literacy, Potter states that both understanding and constructing skills are "required for processing information from any type of media message" (p. 251).

This critical form of literacy connects to the Postmodernist goals of self-awareness through the conscious deconstruction of the world and its common conventions. Educators need to encourage students to question the inherent values and expectations for cultural constructs: What is the accepted mode of behaviour in our society? Why is this particular action acceptable? How do we interact with the world around us; as a person, as a participant, and as a member of any number of societal systems? What is the basis of false consciousness, and how can we step out of these unconscious behavioural shackles?

Queries such as these should found the basis of our educational system, as it is through the process of de-structuring culturally-accepted behaviour, episteme and ethnographic ideology that we create a conscious, free foundation to support the growth of students' real knowledge. The process of creation involves not only making things such as artwork, music, or projects, but also of crafting new ideas, philosophies and concepts. This theory is supported by Resnick (2001a) when he states, "learning is an active process in which people construct new understandings of the world around them through active exploration, experimentation, discussion and reflection. In short: people don't get ideas; they make them" (p. 33). Within the realm of technology instruction, we must assist students to generate their own understandings of media, rather than just providing examples of our own beliefs for them to follow.

Creativity in the classroom.

One of the key reasons to encourage this critical awareness is to assist students in creating their own conceptual understandings so that, as Potter (2004) asserts, they might create

their own meaning. Creativity, according to (Csikszentmihalyi, 1996) “is any act, idea, or product that changes an existing domain, or that transforms an existing domain into a new one” (p. 28). If students are encouraged to question and explore the conditions under which educationally-accepted theories arose, then they are better equipped to deal with the power-struggle inherent in this system. By doing so, students are able to deconstruct existing canon; avoiding spoken and unspoken societal value judgments that imbue every part of our educational system and society as a whole.

This requires, however, an environment where students are encouraged to do this. Research by Young (2005) identifies three elements which have a significant effect on student motivation. These are instructional design (planning), metacognition (self-awareness of the learning process) and choice as defined by “perceived autonomy, perceived competence, and/or task mastery goal orientation” (Young, 2005, p. 37). This is supported by other research which demonstrates how the classroom environment is interconnected. The classroom itself influences achievement goals, while at the same time, those same goals have an effect on students’ success and internal motivation (Church, Elliot & Gable, 2001, p. 53). Each of these factors is present within a constructivist approach to instruction.

By encouraging critical analysis of the issues, and a resistance to simply accepting the dominant code of behaviour with our students, we have empowered them in a way that helps them avoid domination under culturally-dominant norms. They are capable of critical forms of inquiry and media literacy, and do not blindly need to accept the so-called official knowledge of schooling. Students are then able to construct their own meanings through a myriad of experiences, through the lens of media awareness. As Resnick (2001a) states, to demonstrate true digital fluency, a student must make things with the language of technology. By doing this,

educators have the opportunity to engage students in an educational process which encourages personal experiences from a widely divergent number of groups.

> Creativity results from the interaction of a system composed of three elements: a culture that contains symbolic rules, a person who brings novelty into the symbolic domain, and a field of experts who recognize and validate the innovation. All three are necessary for a creative idea, product or discovery to take place. (Csikszentmihalyi, 1996, p. 6)

Critical consciousness and student freedom are essential for true learning to occur. By encouraging students to question the dominant power structure of all institutions and to encourage students to consider the power struggle inherent in the valuing of cultural constructs, we assist them in developing an ability to question, rather than simply accept given practices in culture. In doing so, we have the opportunity to bring about a critical awareness of existing false consciousness in society, leaving our students with the skills to make informed choices, and participate as equal members in cultural dialogue, thus ensuring that everyone's stories are included in the emergent narratives of tomorrow. This fits the argument by Duffy and Cunningham (1996) which states that by using a constructivist approach, "we do not assume that the learner will 'acquire' the expert's meaning... we seek to understand and challenge the learner's thinking" (p. 173).

The concept of all of these authors is that we must embrace creativity – literally to create with imagination – as it is connected to all forms of learning. Mihaly Csikszentmihalyi (1996) proposes,

> Creativity is a central source of meaning in our lives for several reasons… First, most of the things that are interesting, important and *human* are the results of creativity… The

> second reason creativity is so fascinating is that when we are involved in it, we feel that we are living more fully than during the rest of life. (p. 2)

The idea of creativity-infused teaching ties closely to his research and to the foundational basis of this study.

Following the concept of *backward design* (Wiggins & McTighe, 1999) where "one starts with the end – the desired results (goals or standards) – and then derives the curriculum from the evidence of learning (performances) called for by the standard and the teaching needed to equip students to perform" (p. 8), project-oriented instruction with an end result of creative use of technology by students should begin with the goals of creativity in the classroom by teachers. In *H. Sapiens Digital: From Digital Immigrants and Digital Natives to Digital Wisdom* Mark Prensky (2009) asserts that "digital wisdom is a twofold concept, referring both to wisdom arising from the use of digital technology to access cognitive power beyond our innate capacity and to wisdom in the prudent use of technology to enhance our capabilities" (p. 2). This is the true challenge of creating relevant learning experiences in the context of 21st Century Learners. This connection and collaboration between students of varying abilities becomes more challenging to coordinate at the high school level, simply based on the increase of class sizes and the streaming of students into academic and non-academic classes (Ercole, 2009, p. 4). It is not enough to simply use technology in the classroom, teachers must endeavour to find ways to use technology to engage students and digitally collaborate in complex ways that enhance understanding and build cognitive awareness. Where traditional schooling once had an expert transmitting knowledge, many fields beyond the school experience, especially those centered around technology, have very different notions of learning. In fact, the experiences of "teaching and learning outside the classroom are most often social, collaborative and peer based" (Ruben,

1999, p. 499). In the case of this study, the technology-focused setting and constructivist, project-based model of instruction that engages students creatively are key to providing students with a classroom climate that facilitates this sort of collaborative, social practise.

In contrast to these, Scott Waltz (2003) provides a through-the-looking-glass perspective on the relationship between technology, education and society in general. The author challenges the prevalent technological imperative which states that if you can integrate a technology, then you must integrate the technology. Waltz notes early on that, “the semiotics of the technologically new and improved blend seamlessly with more general futuristic visions” (p. 377). This is reiterated by Taylor and Maor (2000) who state that “we must be careful to ensure that technological determinism doesn’t overshadow sound educational judgement” (para. 21). Instead, one must determine the best practice possible, given all choices, including technology. In this study, these arguments demonstrate the need to carefully measure which of the two instructional methods: teacher-directed or project-based, are providing the best results with technology instruction. Given that constructivism and creative engagement have the potential to improve student learning, there is sound reason to consider it as an option, but, as Waltz (2003), Taylor and Maor (2000) all note, the focus should be on the overal results.

Since a creative individual is “someone whose thoughts or actions change a domain, or establish a new domain,” (Csikszentmihalyi, 1996, p. 28), they must have the freedom to create in an environment which encourages this. Waltz (2003) expands on this concept by noting that technology, like architecture, exists as part of a set of social relations. The freedom element of creation becomes paramount to its most innovative uses. Technology isn’t an entity unto itself, but a structure that is a response to the existing societal expectations, social history, conventions and expectations. The lines between the artefact (technology) and activity (education) are

innately blurred by its social context. In the field of educational technology, Waltz argues the importance, then, of establishing true best practises and to allow technology to develop in naturalistic, effective ways. By doing so, these technologies can alter "their social function even as their material form remains largely the same" (Waltz, 2003, p. 380). For Waltz this means that the most important technological advances will occur when people interact with new technologies, finding radical new ways to use them; ways that are not part of their original design or conceptualization, but suddenly make a leap from simple artefact to truly effective technology. These second-generation breakthroughs occurring through use of digital technologies are those changes that will truly transform educational technology. At present, we have an awareness of the importance of encouraging student interaction with all forms of media and all areas of study, but "there remains much important work to be done to translate these insights into common practice" (Ruben, 1999, p. 503) especially in regards to computer technology, gaming, interactivity and online social networking. By interacting with nascent technologies, we can begin to create truly new and innovative uses for them, thus revealing the hidden potential that exists in all. Within the technology classroom, this means allowing students the freedom to explore the many possible options, rather than following a pre-set, teacher-directed practise of instruction.

Collaboration, Constructivism and Scaffolded Instruction.

One particular reason that the New Media classroom works so well for the instructional approach of constructivism is that the format itself encourages collaboration via the online interface. Students who find it difficult to collaborate in a traditional classroom setting may find that the computer provides opportunities for interaction and engagement that otherwise may not occur. Research by Motschnig-Pitrik and Holzinger (2002) describes how New Media is capable

of “support[ing] the coach[ing role] of facilitator in numerous ways being particularly relevant to the Student-Centered approach” (p. 170). This is supported by the writings of Isman (2011) who proposes a four tiered approach to instructional design which includes an analysis of what needs to be taught, a determination of ‘how’ this should occur, attempting the instruction and then reviewing the results. This also ties into research by Duffy and Cunningham (1996) which emphasizes that constructivism is, at its heart, simply making sense of the world around us. They note that “individuals literally construct themselves and their world by accommodating to experiences” (p. 196) seems particularly relevant to a New Media classroom and the challenges of working in a project-based learning environment that focuses on technology.

That is not, however, to say that these things can (or should) occur in a void. Zydney’s (2010) research into the scaffolding of technology instruction provides several suggestions regarding technology instruction and project creation. The first is that scaffolding – as a method for increasing student understanding within a technology-rich environment – is a benefit to students when problem-solving. In the study, there was a statistically significant difference in the understanding of students who had been provided with the technology alone, and the students who had been provided with one or both scaffolding supports. As the research of Fahy et al. (2010) demonstrates, a teacher’s ability directly affects the classroom environment which they create for their students and this teacher’s “sense of efficacy is consistently and positively related to student achievement” (p. 5). Within a regular classroom, this result underscores the need to recognize technology as a tool, rather than a particular teaching method. In today’s society, where technology is so often touted as the answer to a problem, it is important to differentiate between what technology does and how it is taught.

This connects to the research of Ames and Archer (1988) which demonstrates the fundamental differences between “mastery” goals and “performance” goals. In their study, students in a performance oriented classroom saw failure in terms of their own abilities, rather than as a changeable attribute. “Conversely, perceiving a covariation between effort and success, as students who perceived a mastery-oriented climate did, reflects a more adaptive or success-oriented motivation” (p .265). Dweck (2006) describes this attitudinal approach as a “growth mindset” and it is key to student success in situations where the final outcomes are, as with technology, given to rapid change. A student’s ability to adapt is particularly salient to success and completion in this scenario.

Another implication that can be taken from the research of Zydney (2010), Ames and Archer (1988), Dweck (2006), and others is the importance of a teacher’s guidance within the process of problem-solving. Students do not automatically understand the process of coming to deeper understanding. The process must be modelled and taught in the same ways that core subjects and concepts are taught. Many students lack the skills to simply intuit the correct problem-solving approach. Zydney (2010) proposes that students do not necessarily know how they should go about the process of solving problems; they need, in effect, to be taught that skill, however, Zydney’s (2010) organizational guides and higher-order thinking framework emphasize the need for structured instruction in the process of learning. “Traditional linear models of instruction are particularly ill-suited for complex domains of knowledge” (p. 2). Research by Church, Elliot & Gable (2001) goes further by defining the connections between achievement goals and student motivation within the classroom. “Achievement goals serve the role of proximal predictor of achievement outcomes, thereby highlighting the prominent place of the achievement goal construct in models of motivated achievement behaviour” (p. 53).

The concept of scaffolding instruction to assist students in the development of problem solving abilities is strikingly similar to research by Spiro, Feltovich, Jacobson, & Coulson (1991) with their work into the *Cognitive Flexibility Theory*. Their research demonstrates that multi-media learning environment is simply the tool, while the organizational guide and the higher-order thinking framework (and the combined approach) are the actual scaffolding methods. This concept ties closely to Fahy et al. (2010) and their focus on a teacher's attitudinal beliefs and the achievement of students in their classroom. Teachers need to provide their students with the freedom to explore, but the teachers themselves must demonstrate a high skill level which will equip them to assist their student in gaining mastery as they do so. This factor of "Teacher Academic Optimism" explored by Fahy et al. (2010) links a teacher's attitudinal beliefs and the achievement of students in their classroom. Each of these studies demonstrates the importance of scaffolding, rather than assuming students have the ability to use intuition to select the best problem-solving method available.

Since the way that one approaches problem solving has significant impact on the way one develops an understanding of that topic, this study has particular importance for the use of technology in education. As Zydney (2010) notes, "traditional linear models of instruction are particularly ill-suited for complex domains of knowledge" (p. 360). A student's ability to problem-solve will have significant impact on how they process information and the ability to scaffold this process is of particular importance in the field of education. By providing students with technology structures that are supported by scaffolds such as organizational guides and higher-order thinking frameworks, educators can assist in the development of understanding by students during the problem-solving process.

The experience of creative flow.

Mihalyi Csikszentmihalyi's research into the creative process demonstrates that achieving creative flow in any field of study takes one to the highest level of understanding and performance. Flow, as Csikszentmihalyi (1996) defines it, is a state of "almost automatic, effortless, yet highly focused state of consciousness" (p. 110). It is the process of complete engagement and creativity which allows one to become completely immersed in the process of creation. Henderson and Honan (2008) found "the isolation of computer related tasks and teaching practices from the other literacy work completed in classrooms is... an area of concern and seems to disregard young people's complex integration of digital technologies in their out-of-school lives" (para. 94). Flow, on the other hand, embraces the idea that students must be immersed in the process of creativity.

For the process of creative flow to be achieved, two different attributes must be equally matched. These are the high challenge and high skill level attributes. (See chart below). Only then, according to Csikszentmihalyi (1996), can the creative potential be unleashed. This links to Young (2005) and the assertion that "students will be intrinsically motivated only for activities they find intrinsically interesting" (p. 38). Given that the process of flow and creativity are highly personal, a classroom must emphasize active student participation in the learning process and construction of personal understandings (metacognition). This is through the creation of a creative classroom environment.

Diagram of creative flow.

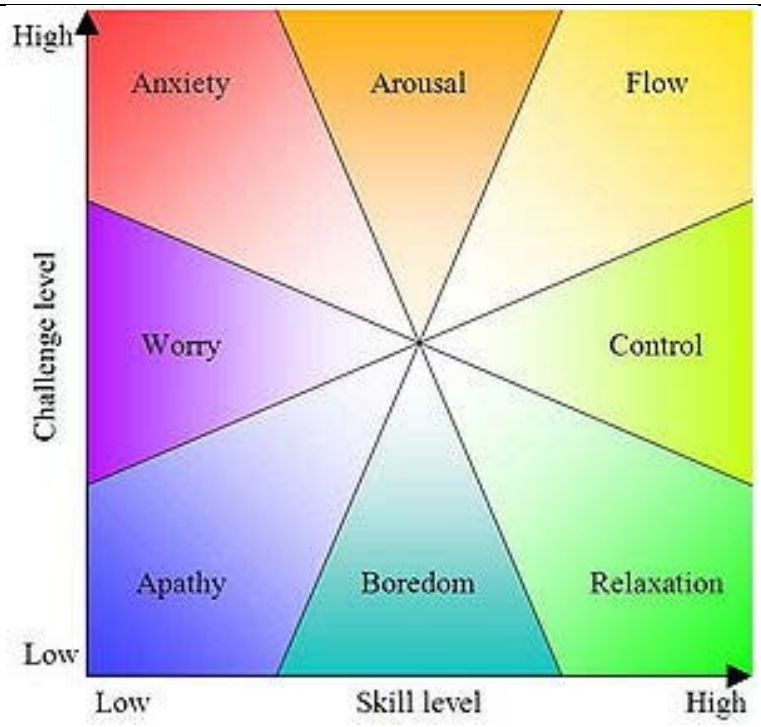

Diagram of Creative Flow: Chart

The Fine Art Theory.

So how do we get there? Through my many years of teaching in a variety of schools and levels I have been faced with two almost insurmountable truths. First, that I will never have enough time to learn / read / do everything I want in my classroom. Secondly, that despite these constraints, that I will be asked to teach more students, larger classes and far more divergent cognitive levels than ever before. The fact is, we must adapt to this paradigm by creating learning experiences that fully engage the participant. We must create an enthusiasm for learning which supersedes the most difficult challenges in every classroom. Price Pritchett (1993) writes that “as kids we did not dread the future, even though it was unpredictable, challenging and full

of problems we were unprepared for... We need to act like children again – create a culture that knows how to learn" (p. 35).

In practice, the technical side of New Media – software, hardware and technical expertise – is less important than the problem-solving aspect of a technology programme. While students must, of course, develop a certain degree of proficiency with the programs, the software itself is secondary to the creative process of developing vocabulary, analyzing existing visual texts and creating their own visual texts based on these models. The shifting nature of technology which is changing at an ever-increasing rate means that students, no matter what field they eventually find themselves in, need to be learners more that they need to be experts. In today's society, teachers need to prepare students to be flexible, to synthesize new information, to absorb and change conventions of communication. The International Society for Technology in Education (ISTE, 2009) states in its *Technology Leadership Standards* that teachers need to "promote student reflection using collaborative tools to reveal and clarify students' conceptual understanding and thinking, planning, and creative processes" (para. 4).

A Fine Arts approach to teaching New Media is to recognize the software programs as a tool rather than as an end. Resnick (2001b) makes the entreaty, "teachers need to change the way they think about the medium of computers, to start thinking of them like finger paint - tools of expression – rather than like television" (p. 33). Research has shown that the real learning occurs when students can enlarge their ideas of what can be created with these tools, and what messages can be best represented in any particular format. It is this digital fluency that will become a highly prized skill in the future. According to Resnick (2001b),

> Digital fluency will become a prerequisite for obtaining jobs, participating meaningfully in society and learning throughout a lifetime… But there is a real risk that only a small

> handful will be able to use the technologies fluently. In short, the ‘access gap’ will shrink, but a serious ‘fluency gap’ could remain. (p. 33)

At all levels the focus is on creating a media literate generation, but it is up to the individual classroom teacher to facilitate the development of higher level thinking required of these students. Project-based learning projects which instil passion, enthusiasm and engagement in the learner engender success because of the learner’s intrinsic involvement in his or her own learning experience. As Carol Dweck (2006) states: “great teachers believe in the growth of the intellect and talent, and they are fascinated with the process of learning” (p. 194). Students become active participants and creators rather than simply consumers of media. There is, however, still an essential element missing.

According to the ISTE (2008) *Technology Leadership Standards,* teachers must “design, develop, and evaluate learning experiences and assessment incorporating contemporary tools and resources to maximize content learning in context and to develop the knowledge, skills, and attitudes” (para. 2). Any change to teaching practise must be, at its heart, bound to the need for student learning and improvement in teaching practise. In the end, the effects must be tangible. The learning experience must go beyond theory in order to provide measurable effects on students’ performance.

Rationale for Study

Based on existent research into creativity and classroom climate, in conjunction with writings on media literacy and educational methodology, this study proposes to analyze the effects, if any, of classroom climate in regards to technology instruction. There are two hypotheses that form the basis for this study. The first is that students taught in a classroom with project-focused instruction will perceive the classroom climate as more open, as measured by the

nine subscales of Trickett and Moos' (2002) Classroom Environment Scale." The evidence that this may occur is founded in research on classroom climate by Trickett and Moos (2002) and by Arter (1987) who provide a framework of relationships between classroom environment and students affective outcomes. The first hypothesis, takes into consideration these affective outcomes.

The second hypothesis of this study is that students taught within a constructivist classroom, with increased creative freedom in projects, will perform differently than students taught in a teacher-directed classroom as measured by credits earned and by academic performance (grades). This study will compare student performance against their instruction type and either support or reject this hypothesis.

The analysis of the outcomes from these two measures (from both hypotheses) will compare student performance (credits and grades) against their instruction type and either support or reject these assumptions. The aim of this study is to establish the differences, if any, which exist between the two classrooms based on the type of instruction they have received.

Summary

This chapter focuses on the theoretical groundwork which forms the basis for this study. This research base encompasses work on creativity and media literacy as they pertain to student learning in the classroom, and on the constructivist approach to education. Through the writings of various educational writers and researchers such as Csikszentmihalyi (1996), Domine (2009), Dweck (2006), Prensky (2005, 2006, 2009), Scardamalia, and Bereiter (2003) and others, the premise of digital literacy through the creation of media texts is analyzed. The process of creation of meaning and of critical consumerism also becomes relevant in pedagogical underpinnings of this study.

It culminates with the observation that although constructivist methods of instruction and active learning engages the learner in the “flow” of learning, neither one is enough to warrant a change of teaching process. As teachers, we must see the real application of new ideas for it to inspire us to change our practice**.** To do this, student learning must demonstrate relevance based on research and salience. This, ultimately, is the proposal of this study: to find quantifiable data demonstrating that project-based learning in a creative classroom environment affects student learning.