

**Effects of students' multiple intelligences on participation rate of course components in a  
blended secondary family and consumer sciences course**

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## DEDICATION

This is dedicated to the ones I love~

To my DAD who is jolly and oh so wise,  
He tells lots of stories and smiles with his eyes.

To my MOM who is gentle and know all my wishes,  
She's loving and helpful and doles out the kisses.

To my SISTERS and BROTHERS who supported me too,  
I'll love them forever - it's honestly true!

To my HUSBAND, big John who is mighty and bold,  
He is handsome and giving with a heart full of gold.

To my little SON, JJ such a sweet, tender boy,  
His chatter and laughter brings me so much joy!

To my BABY, young Tobey who cuddles and wiggles,  
My heart overflows just hearing his giggles.

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I feel such big pride that my goal has been met,  
My future awaits – you've seen naught of me yet!

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**ABSTRACT**

This study investigated students' learning style participation rate within a blended Family and Consumer Sciences Exploring Childhood constructivist secondary course using an exploratory quantitative approach with descriptive analysis, ANOVA testing, and contingency tables. Howard Gardner's multiple intelligence inventory was used to determine students' learning styles. The learning styles were compared with the participation rate of four course components: individual assignments, group projects, assessment, and discussion. Students' perception of the course components were also examined for the opportunity of the students to use prior knowledge to build concepts. The literature review brought insight on studies focusing on learning style participation rate within course components.

The data analysis indicated students participate more in the group projects course component than assessment, individual assignments and discussions. Findings determined there was no significance to students' learning style and the participation rate of the course components. Learning styles were not related to student participation in various blended learning course components. Further research is recommended to determine factors of students' participation within a blended course.

## CHAPTER 1. INTRODUCTION

### Overview

Distance education is now an established method of teaching and learning in the K-12 setting. A report from the Sloan Consortium found that in the 2007 to 2008 academic year, more than a million public school students were utilizing distance education (Davis, 2009a). Internet courses have several interchangeable names; distance education, distance learning, web-based instruction, e-learning, virtual schools, online education, and flexible and distance learning. However, distance education could be defined as: “Institution-based, formal education where the learning group is separated, and where interactive telecommunications systems are used to connect learners, resources, and instructors” (Rice, 2006, p. 426). Distance education is not the same as self or independent study because distance education must be institutional based. There must also be a separation between the instructor and students; this separation could be time or geographical. A survey of administrators reported that some schools are not simply using online classes but offer a hybrid course. These schools blended face-to-face instruction with online interaction (Davis, 2009b). Courses are referred to as hybrid, blended, or a mixed method approach. With the new and rapid growing trend of distance education, it is imperative that educators understand the techniques for online components and the needs of the students enrolled in distance education or blended courses.

There is criticism that educators are not applying pedagogical principles to the process of online learning (Cavanaugh, Barbour, Brown, Diamond, Lowes, Powell & et al, 2009). A blended course should be organized to build new knowledge onto a pre-existing schema. Theories of cognitive development began with Jean Piaget (Berger, 2009). The understanding that students gain new concepts and knowledge by building onto what they already know is

known as the constructivist approach to teaching and learning. There needs to be a focus on the individual learner. Using a variety of instruction in distance education would incorporate different learning styles and create more opportunities for learners to build upon prior knowledge and experiences. The majority of current educational reforms focus on teaching to individuals and their needs, interests, and abilities. Therefore it is important for educators to identify and differentiate their instruction to address the various learning styles whether in face-to-face classes, online, or blended interactions. This research presented implementation of a Career and Technical Education Family and Consumer Sciences blended learning instruction and how a constructivist approach to teaching to various learning styles would increase students' participation within the online components.

#### Purpose of the Study

Secondary teachers need guidance and mentoring in designing, developing, and implementing successful quality online courses. This research utilized these resources to create a blended approach for a secondary Career and Technical Education Family and Consumer Sciences Exploring Childhood course that met the needs of a wide range of student characteristics. The research study compared the students' learning styles to the participation rate within the course components; group projects, individual assignments, discussions, and assessments. The study attempted to determine if there was a relationship between multiple intelligence characteristics and participation rate within the course components. The study exhibited a pedagogical background for teaching blended learning to meet the needs, interest, and abilities of the various learning styles. The main focus of the study was to determine whether students' learning styles have an effect on their participation rate of coursework in a blended class with a constructivist approach to learning.

The research furthered not only various studies and literature on the use of a constructivist approach to teaching a blended Family and Consumer Sciences course but also the various components of distance education. The main focus of the study was to determine the participation rate of the learning styles within group projects, individual assignments, discussions, and assessment components of a secondary blended course. The study also contributed leadership and innovation to the Family and Consumer Sciences profession. The results explored the relationship between certain course components and learning styles. Distance education courses that utilize a variety of instruction would be more beneficial to all learners.

### Significance of the Study

Distance education has been a debate and on center stage within educational systems for quite some years. Many secondary schools are moving toward distance education because of facility capacity, more avenues of education for students per the No Child Left Behind Act, and/or educational reform. There is a thirty percent annual growth in K-12 distance education (iNACOL, 2009). Utilizing blended learning or a mixed method approach has become more common than distance education. Blended learning has not received as much media attention but the approach has received equal criticism. It is under investigation for the quality of education, maintaining a student-centered learning, integrating technology, and meeting the needs of students' learning styles. If Career and Technical Education is undertaking the challenge of implementing any form of online learning then these approaches must not only prove their worth for content and skills, but must also address the criticism of blended learning approaches to survive in the educational arena. Career and Technical Education must utilize teaching practices that have been researched, studied, and evaluated for student success.

According to a follow-up report by Sloan Consortium, seventy-five percent of the responding K-12 public school districts reported having one or more fully online or blended course in the 2007-2008 academic year (Picciano & Seaman, 2009). The report indicated a 47% increase in student engagement with distance education from the original report on the 2005-2006 academic year. The research by the Sloan Consortium provided quantitative findings but also explored important issues such as planning, education policies, and student's characteristics. The Sloan study provided insight to the main reason distance education and blended courses were viewed as essential: "meeting the needs of specific groups of students" (Picciano & Seaman, 2009, p. 11). It also indicated the major issue of course quality as the number one concern for the respondents.

Many studies suggested that distance education or blended courses allowed for more diversity in delivery to support different learning styles. There are mixed findings in regard to the impact of distance education on students' learning styles with achievement levels or attitudes. When comparing distance education to traditional face-to-face classrooms there was no statistical evidence that learning styles were a good predictor of success in distance education or a face-to-face course (Neuhauser, 2002). The evidence examined the final outcome or final grade compared to the learning styles. Research by Neuhauser (2002) suggested improvements to the study by examining a relationship between learning styles to the learning activities. . Exploratory studies investigate an issue prior to any known concern. This proactive approach could be used to identify whether students participate in course activities based on learning styles and further Neuhauser's research.

### Working Assumptions

For the purpose of this study, it was assumed that the participating students represented a general high school population. It can also be assumed that the participating students completed the survey honestly. Lastly, the secondary Career and Technical Education Family and Consumer Sciences Exploring Childhood course has been evaluated for quality based on the Kent School District Instructional Services Rubric for Evaluating Online Courses in Appendix A (Kent School District, 2008).

### Research Questions

The data for this study were gathered during a six-week period. Collection of the data required tallying, coding, and recording. The researcher maintained a normal learning environment without risk, consequences, or external rewards to the students. The following research questions were addressed in this study:

1. What is the rate of secondary family and consumer sciences students' participation within the different components (discussions, assessments, group projects, and individual assignments) of a blended course?
2. Is there a relationship between students' learning style and the participation rate within the different components of a blended course?
3. Do different learning styles influence student perceptions of course activities that provide opportunities for them to utilize prior knowledge to gain new concepts?

### Definition of Terms

The following terms were defined for the purposes of this study:

*Asynchronous communication:* Discussions allow learners to read, reflect, and compose without regard to others' status (Blomeyer & Cavanaugh, 2007, p. 144).



*Achievement*: The quantity of a student's work (Merriam-Webster's Online Dictionary, 2010).

*Blended Learning*: Blend of face-to-face interaction with online interaction (Davis, 2009b).

*Career and Technical Education (CTE)*: Assists students to become workers and lifelong learners. The curriculum focuses on real-world application, employability skills, job skills, workplace etiquette, career training, and helps students explore pathways (ACTEOnline, 2008).

*Course Management System (CMS)*: An Internet-based software application that can be used for managing and distributing online resources and Web-based courses. Many content management systems offer a suite of tools, including enrollment management, student tracking, threaded discussion, chat, internal e-mail, file distribution and student Web page creation (Distance Education, 2006).

*Distance Learning*: Institution-based, formal education where the learning group is separated, and where interactive telecommunications systems are used to connect learners, resources, and instructors (Rice, 2006, p. 426).

*Face-to-Face (F2F)*: Often refers to a type of instruction in real time and place (Distance Education, 2006).

*Family and Consumer Sciences*: An academic discipline that combines aspects of social and natural science. Family and Consumer Sciences deal with the relationship between individuals, families, communities, and the environment in which they live. The field represents many disciplines including consumer science, nutrition, parenting, family economics and resource management, human development, interior design, textiles, apparel design, as well as other related subjects. Formerly referred to as home economics (American Association of Family and Consumer Sciences, 2010).

*Hybrid Learning*: see Blended Learning

*Intelligence*: Ability to solve problems that face you in life and produce things that are of value to your culture (Washington State Teachers Recruiting Future Teachers Task Force, 2002).

*Multiple Intelligence*: A theory proposed by Howard Gardner to define intelligence (Brualdi & ERIC Clearinghouse on Assessment and Evaluation, 1996).

*Rate*: Number of times a student makes an input to discussion forum, group projects, assessment score, and individual projects. “To set an estimate on” (Merriam-Webster’s Online Dictionary, 2010).

*Washington Assessment of Student Learning (WASL)*: Standardized educational assessment for Washington State consisting of reading, math, science, and writing in a variety of question formats given to students from third to tenth grade (Office of Superintendent of Public Instruction, 2008). The assessment has been reformed to the present High School Proficiency Exam (HSPE) (Office of Superintendent of Public Instruction, 2010a).

## CHAPTER 2. REVIEW OF LITERATURE

### Overview

This study was designed to identify students' learning style participation within a blended Family and Consumer Sciences course. Several themes were dominant in this study: constructivism theory, distance education/blended learning, and learning styles. Each theme is addressed in this chapter.

The main idea of the constructivism theory of learning is to build new concepts by using prior knowledge to meet the needs, interest, and abilities of the learners. "Research on learning styles has found that students' learning styles affect performance in a learning environment" (Yilmaz-Soyly & Akkoyunlu, 2009, p. 184). Constructivism is a theory of learning researched and proven to positively impact the learning environment. Whether electronic, face-to-face, or a blend of the learning environments, instructors need to plan and design courses for high performance. Such classes in secondary education would prepare students for the future, maintaining on-track status for graduation requirements, assist in passing state proficiency test, and enhance programs. Without achievement and retention of students, career and technical education programs will not survive.

Career and technical education's focus is on preparing students with 21<sup>st</sup> century skills. Distance education is a commonly used learning technology. Colleges, work force, and military use distance education. Introducing distance education or blended learning into secondary education would allow students the opportunity to experience a different learning environment without consequence. Distance and blended learning environments should be designed, developed and implemented to address findings on online components such as social connections, motivation, and instructional and curriculum designs. As in a traditional face-to-

face environment, distance education would have individuals with a variety of learning styles. The course management system used to implement a distance or blended course would foster a variety of activities to incorporate learning styles. Both the environment and learner would need to be considered when designing and planning a course.

There are several learning style inventories: Multiple Intelligence (Washington State Teachers Recruiting Future Teacher Task Force, 2002), Keirsey's Temperament (Neuhauser, 2002), and Kolb's Learning Style Inventory (Diaz & Cartnal, 1999). Providing a variety of challenging and applicable activities when designing, developing, and implementing a blended course would not limit the range of learning and teaching techniques to one or two types of learners. Different learning styles are represented in any type of learning environment. In order to have courses with high achievement and retention, the way individuals process and comprehend knowledge must be considered. Kent Meridian High School's philosophy is "Achieving Excellence: Whatever it Takes...Every Student...Every Day" (Dr. Barringer, personal communication, June 12, 2010). The education environment and instruction must be designed to plan for all learners to have a chance to achieve.

### Constructivism Theory of Learning

Jean Piaget was the recognized theorist who established constructivism theory of learning (Huitt, 2009). "Constructivism's central idea is that human learning is constructed, that learners build new knowledge upon the foundation of previous learning" (Hoover, 1996, ¶ 2). The two concepts associated with constructivism are that learners build new understanding using what they already know and they are active learners (Hoover, 1996). Teachers who use the constructivist approach to learning take a sideline role in guiding the students through the educational process that provide them with opportunities to engage the students' current

understandings. This theory of how students learn has influenced teaching methods and reforms for years such as Goals 2000 Educate America Act (Lunenburg, 1998), Differentiated Instruction (Cook, 2009), and Technology Integration (Keengwe, Pearson, & Smart, 2009). Many of the teaching methods relied on guided discovery (Beeth, 1996). Constructivism theory of learning could be applied to any and all learning environments. For example, discussions could be geared around a new concept but related to the individual's prior experiences or knowledge whether in face-to-face or electronic communication. Teaching is like building a house. The students begin with a solid foundation, and then construct walls of ideas and doors of exploration, and a roof as closure of realization. Not all houses are identical nor are learners or the environment in which they are taught.

Constructivist theory of learning could be very broad. It was present in the K-12 environment with applying theory to practice. "At the heart of the work of these new architects in designing learning solutions is the strong influence of the seminal works of the proponents of a constructivist theory of learning" (Fogarty, 1999, p. 3). These architects were Jean Piaget, John Dewey, Lev Vygotsky, Howard Gardner, and other theorists. Piaget's view of constructivist theory of learning was associated with discovery learning. Dewey's focus was on learning experiences. Vygotsky attention was on social interactions. Gardner's definition of multiple intelligence also related to the constructivist theory of learning. "Piaget theorized that the learners' interactions lead to structural changes in how they think about something as they assimilate and accommodate incoming data" (Fogarty, 1999, p. 5). Discovery learning was best viewed as hands-on learning. A learner constructs meaning based on their interpretation of the data. Discovery learning capitalized problem-based learning, case studies, and environments rich in sensory incentives. Dewey "advocates field studies and immersion in the experiences

itself to stimulate learning” (Fogarty, 1999, p. 4). The design embeds learning in experiences. Dewey’s concept has greatly impacted career and technical education programs with the instruction going beyond the classroom. This incorporated community and service learning, field trips, and real-world applications. It has provided a foundation to career exploration and inquiry in real-life problematic situations (Owens, 1974). “Vygotsky’s theory suggests that one learns first through a social setting of person to person interactions and then personally through an internalization process that leads to deep understanding” (Fogarty, 1999, p. 6). The elements of the theory were student engagement, interactive classrooms, discussions, and reflective inquiry. “The influence of Gardner’s genius is felt not only in the understanding that there are many ways of knowing about the world and making personal meaning, but also in recognizing that there are many ways of expressing what one knows and is able to do” (Fogarty, 1999, p. 8). His focus was on conceptualization of intelligence. Multiple intelligences contributed to the area of authentic evaluations (performance assessments) and differentiated instructional approaches. Piaget, Dewey, Vygotsky, and Garner were theorists who built structure and elements to the constructivist theory of learning. The structure and elements bond with empowering the learner to construct knowledge and make meaningful realizations within the learning environment.

### Types of Learning Environments

According to the Sloan Consortium, the type of course was determined by the amount of online delivery of the content. Table 2.1 describes four types of learning environments from the traditional face-to-face interaction with no content delivered online to a full online course with more than 80 percent of the content delivered through the internet.

Table 2.1  
Types of Learning Environments

Portion of Content Delivered Online	Type of Course	Typical Description
0%	Traditional	Course with no online technology used- content is delivered in writing or orally.
1 to 29%	Web Facilitated	Course which used web-based technology to facilitate what is essentially a face-to-face course. Used a course management system (CMS) or web pages to post, for example, the syllabus and assignments.
30 to 79%	Blended/Hybrid	Course that blended online and face-to-face delivery. Substantial proportion of the content is delivered online, typically used online discussions and some face-to-face meetings.
80+%	Online	A course where most of the content was delivered online. Typically have no face-to-face meetings.

(Allen, Seaman, & Garrett, 2007, p. 5)

Traditional face-to-face courses have been inspected for years and continuously adapted to meet the newest code. The advances in the internet-based technology have its challenges and opportunities. Online learning has become the newest rapid growing learning environment and requires detailed inspections.

#### *Distance Learning (Online)*

Distance learning has progressed into the K-12 setting. Similar to distance education, distance learning is defined as “A term for the physical separation of teachers and learners that has become popular in recent years, particularly in the United States. While used interchangeably with distance education, distance learning puts the emphasis on the learner and is especially appropriate when students take on greater responsibility for their learning as is

frequently the case when doing so from a distance. (2) The desired outcome of distance education, that is, learning at a distance” (Distance Education, 2006, p. 67). This separation requires telecommunication referring to “communication at a distance” (Rice, 2006, p. 426). These forms of communication could be electronic or non-electronic such as through the postal services. Distance learning must promote experiences and learning through an instructional environment with resources. There are many systems that run courses offered through the Internet. Some of the course management systems (CMS) are Blackboard, WebCT, Angel, Scholastic Track, and Moodle. Teachers that plan to use any form of distance learning need to be trained by a professional in the course management system that is contracted with the school district.

Distance learning is regulated by legislation. The influential legislative movement of the No Child Left Behind Act of 2001 (Taylor, Stecher, O’Day, Naftel, Le Floch & Office of Planning, 2010) has greatly impacted distance learning. The No Child Left Behind Act mandated four pillars: stronger accountability; more freedom for states and communities; proven education methods; and more choices for parents (No Child Left Behind Act, 2008).

School districts satisfied the No Child Left Behind Act by utilizing online education to provide alternative learning environments for students. Virtual schools are considered a school of choice within the No Child Left Behind Act (Rice, 2006). There are five types of K-12 online programs described in Table 2.2. “Schools try to keep the online programs within the district so not to contract out and keep the funding and student body in house” (David Bilyeu, personal communication, September 22, 2009). There are options for districts in what type of online program is best suitable for the district needs.



Table 2.2  
Five Types of K-12 Online Programs

Types	Description
Statewide supplemental program	Students take individual courses but are enrolled in a physical school or cyber school within the state. These programs are authorized by the state and overseen by state education governing agencies.
District-level supplemental programs	Are typically operated by autonomous districts and are typically not tracked by state agencies.
Single-district cyber schools	Provided an alternative to the traditional face-to-face school environment and are offered by individual districts for students within that district.
Multi-district cyber schools	Are operated within individual school districts but enroll students from other school districts within the state. This represented the largest growth sector in K-12 online learning.
Cyber charters	Are chartered within a single district but can students from across the state. In many cases they are connected in some way to commercial providers.

(Rice, 2006, p. 427)

States and school districts have more flexibility in how federal education funding should be spent. By integrating online education, the school districts can transfer up to 50 percent of the grant under Educational Technology or Innovative Programs; this does not require separate approval. These funds could also be used to hire teachers, increase teacher pay, or improve training and staff development.

Many people begin teaching with little training. Since the early 1900's there has been a need to prepare competent people to teach in Occupational Programs (Pucel & Stertz, 2005). Many people are hired to teach high school or college then later received in-service teacher education. In-services were commonly offered through land grant institutions. These

Institutions received subsidized funds from the Smith Hughes Act (Pucel & Stertz, 2005). There was a move to develop modules to support occupational teachers. Training sessions were provided through a form of Internet education using interactive television.

When schools or districts utilized online courses, there was an indefinite number of openings for students to enroll in the course compared to a regular class that may only house the number of students to fill the desks and capacity of the room. However, a challenge faced by distance education is budgets. With larger enrollment in high schools, fewer resources, and smaller budgets, many schools turn to online education. A policy on workload for online instructors needs to be developed (Mupinga, 2005). Some concerns with distance education courses are instructors being overloaded with online students, the perception of using online classes to remove troublesome students, and disappearance of personal interaction and socialization. Colleges and universities have created a formula for defining the workload for online instructors. One simple formula remains the same, the instructor will teach the same number of students online as they would for a face-to-face course. Based on the regulations from the No Child Left Behind Act, online education is a source that parents could choose for their students if the secondary school failed to be effective. Internet courses would be a form of an alternative setting.

Online learning approaches were originally thought as incorporating independent self-directed learners. More recently, online education approaches were often associated with collaborative constructivist views of learning often referred to as “new learning” (Martens, Bastiaens and Kirschner, 2007, p. 81). Instructional designs allowed for learners to be engaged over time and space that provided for collaborative learning activities. “It was Otto Peters who provided the unique theoretical framework that described the administrative and pedagogical

practices in distance education” (Garrison, 2009, p. 94). “Other scholars such as Holmberg and Moore have raised important issues such as conversation and dialogue” (Garrison, 2009, p. 84) to the practices of distance education. Peters viewed online learning as a method of developing independent and self-directed learners. Holmberg and Moore’s concerns were providing social interaction to distance education with the use of emerging communication technologies.

Understanding on a deeper enriching level could be aided by collaborative exchanges with other people (students) who may question your interpretations and another person (teacher) who has a wider more balanced view of the context. This brought an increased focus of collaborative constructivist approaches to learning intermingled with new and emerging communication technology. “Constructivism is not an approach to or a model for instructional design, but rather a philosophy of learning based on the idea that knowledge is constructed by the learner through activity” (Martens et al., 2007, p. 82).

Research suggested there were two fundamental approaches to online learning. The first was accessible tools and techniques for students to organize information that maximizes the practices of learner independence. The second was to use the full capacity of the environments to create meaningful communities that promote collaborative constructivist principles (Garrison, 2009). Most of the new learning environments were based on constructivism (Martens, Bastiaens & Kirschner, 2007). The central foundation of the constructivist theory of learning was the learners and how they processed information.

Students and teachers may not fully be prepared to indulge into a full online program. Having a combination of online and traditional face-to-face instruction could ease the transition

and provide for an optimal learning environment. This combination of integrating traditional physical classes with virtual education is a learning environment known as hybrid or blended learning (Yilmaz-Soylu & Akkoyunlu, 2009).

### *Blended Learning*

The major objective of a blended course is to mix the best of both worlds. Take the benefits of working in a classroom, combined with the online interaction and this makes for an optimal learning experience (Starenko, 2008). It is common for blended instruction to combine the hands on activity of face-to-face interactions with discussions or reflections as the online component. This allowed for asynchronous communication empowering time for the students to reflect.

When deciding on implementing a blended learning course there are three dimensions and four concepts to consider. The dimensions are the audience, the content, and the infrastructure. Educators need to be familiar with the learner's prior knowledge, the different levels of comprehension, and the individual's learning process. Content could be delivered in many ways. Some is appropriate for online delivery while other content required more complex and detailed procedures that would be best delivered in a face-to-face environment. Physical space could be limited, online instruction could allow for ample use of that space. Accessibility could also be a hindrance to a blended course. Access to high speed internet is not available in all areas or all homes. Delivering video streaming may also not be optimal (Singh & Reed, 2001).

Dr. Margaret Driscoll suggested four concepts for blended learning. The first concept is defined as combinations of mixed modes of web based technology. The second concept is a combination of pedagogical approaches such as constructivism, behaviorism, and cognitivism.

Her third concept is a combination of instructional technology with face-to-face instructions. Lastly, Dr. Driscoll defined blended learning as combining instructional technology with real world applications (Driscoll, 2007).

The University of Central Florida completed a seven-year study on the impact of blended learning. “Our research has found that blended courses have the potential to increase student learning outcomes while lowering attrition rates in comparison with equivalent fully online courses” (Dziuban, Hartman, & Moskal, 2004 p. 5). The study also found blended models to be parallel or even better than face-to-face instruction. The success of blended courses in the University of Central Florida’s study was credited to the support of teachers and students. Blended courses have less online instruction time than a full online course requiring a similar support structure found in a face-to-face class. The faculty involved in the study was encouraged to focus on student centered learning, engaging students in discussion and other forms of communications. The faculty participating in the study had an 88% satisfaction rate with their blended learning courses (Dziuban et al, 2004). There are several factors that make online courses effective.

#### *Major Findings on Online Components*

The following section presents major findings of the effectiveness of distance learning, design structures of web based programs and curriculum, and implementation techniques of a successful web-based instructional or blended course. It has been determined that student motivation and social connection or discussions are two major factors that impacted distance learning effectiveness (Cavanaugh, 1999). The focus on the design structure of the program examined tools or links that needed to be available within an effective course. The curriculum design must complement the structure of that program. “Holmberg’s theory of distance teaching

(1985) states that distance teaching will support student motivation and promote learning pleasure and effectiveness if learners are engaged in discussions and decisions, and the program provides for real and simulated communications to and from the learners” (Cavanaugh, 1999, p. 5).

*Social connection or discussions.* Social interaction within a distance learning course is an essential component to online education. It is beneficial to the learner in that they feel there is a connection between them, the instructor and other students. Online discussion could be enriching because the learner has time to reflect and comment when they feel it appropriate. The online discussion format reduced interruptions, pressure, and allowed for a written record of the conversation. A disadvantage of an online discussion is the inability of a learner to read verbal and body language cues. Written speech could be misinterpreted. Research is still needed for the relatively new world of online education. However, there are techniques and tips that could be utilized for effective discussions.

There are three types of discussions. Synchronous discussions require learners to be online and converse at the same time. Asynchronous discussions allow learners to read, reflect, and compose without regard to other’s status. Scheduled asynchronous discussions occur when courses direct timelines, for example, within a particular week or series of days. No matter the type of discussion the following tips should be implemented for successful dialog. 1) Ask yourself questions about the discussions. What is the outcome? What is the intent? How will you motivate the learner? 2) Manage the discussions. Establish rules and clear expectations before discussions begin. The facilitator maintains the discussion environment. 3) Control postings. Personalize threads and group into topics (Blomeyer & Cavanaugh, 2007).

Online discussions could become overwhelming and time consuming if one read all the postings. There is also a chance of miscommunication or misinterpretation. Online discussions lack body language. The positive side of online discussions has a richer communication dialog with less social pressure. There was time to reflect on readings, others' comments and personal opinions. Participants established a tone of voice and personal rhythm in their individual postings. Discussions are the key essential element of distance learning courses of all kinds: a workshop, training, a self-paced course, or a semester course.

Online discussions allowed for learners to feel a sense of connection to the class. It reduced the concerns of students feeling isolated and disjointed. Instructors who utilized any form of discussion provided the students with technical skills and social connection. Distance education or blended learning pedagogical practices of collaborative constructivism approaches support students as engaged learners emerged in communication technologies (Garrison, 2009). Collaborating and reflecting on the content and experiences encouraged students to be actively engaged in the learning environment. Students who feel connected to the class through discussions could be more motivated to participate within the class.

*Student motivation.* *Student* “motivation appears to be the heart of the matter in constructivist learning” (Martens et al., 2007, p. 82). The challenges of motivating students must be conquered to provide for an effective and active learning environment. Communication is a factor in web-based instruction. One advantage of online interaction versus face-to-face instruction is the removal of psychological and social barriers between the students and instructor (Beard, Harper & Riley, n.d.). The disadvantage of learning through the Internet is the lack of direct interaction

and involvement. Some students lack the technological skills required for distance education. Students have noted other areas of concern such as: privacy issues, technological difficulties and a focus on technology rather than content.

Other research showed that some students have a positive learning experience and demonstrate attributes of constructivist learners. “Learners who described their experience as most successful reflected higher levels of independence and responsibility for their learning” (Howland & Moore 2002, p. 187). Distance learning students must be self motivated and disciplined. They are solely responsible for their learning and deadlines. Student’s negative learning experiences were due to the perceptions or expectations of the instructor. “Frequently, students interpreted the need for self-responsibility in learning as abandonment, and felt isolated” (Howland & Moore, 2002, p. 187). These students expected the instructor to provide more package materials and feedback. Colleges have even gone as far as having “ghost students” enrolled in a distance learning course to encourage student participation and reduce drop out rates (Parry, 2009). Will this be the next trend in secondary schools? Will distance learning programs help decrease the drop out rate and increase student success and interactions?

*Web-based instruction design.* The movement from acquired knowledge to constructivist, problem based learning (PBL) has become a popular and useful technique in web-based instruction. Problem based learning has five features that can be identified.

1. The problem serves as a route to learning.
2. Students work together in small tutorial groups.
3. Problems are contextualized in the real world.
4. Problems are used to develop metacognitive strategies/self-directed learning skills.



5. PBL requires a shift in focus from teaching to learning (McLinden, McCall, Hinton & Weston, 2006).

With the trend toward web-based instruction, there is a strong link between the characteristics of problem-based learning and e-learning. Technology allows for activities that encourage these things: individual research projects, communication and collaboration, and assessment of learning. Social interaction is one of the most challenging tasks when facilitating learning through the World Wide Web (McLinden et al., 2006). The design and management of the course could increase student interaction with each other, tutors, and learning communities. Course management systems could be intermingled with additional online resources. Some additional resources are wiggio, googledocs, pbwiki, ning, and phpbb (WebSculptor forums). Many of these resources are social networking systems that help individuals work together on group projects.

A study was conducted to address the gap in research with regard to instructional goals and design features (Ausburn, 2004). The subjects were 67 adult students at a large state university. These students ranked the course announcements and reminders from instructors as the first essential design feature. The second important feature was the course information documents, such as schedules, outlines, grading, syllabi, and policies and procedures. The lowest ranking feature was email linkage to classmates and instructors (Ausburn, 2004). This study was conducted with adult learners but the results should be considered when implementing distance learning in a secondary setting.

There are recommendations to reduce the barriers within web-based instruction (McLinden et al., 2006). The six potential barriers are student expectations, availability of technology, experience, time management, non-participation, and technical issues. 1) Students

may not be fully aware of the requirements of an assignment or the course. The requirements should be clearly determined and posted in advance for both the student and instructor to understand. This could be through a syllabus or within a chat room. 2) To reduce concerns about accessibility, students could explore access points such as home, work, or public libraries. 3) The instructor should design induction tasks to familiarize the students with the web-based program. This allows students with limited distance learning experience to feel comfortable navigating the system. 4) Concerns on time management were the students often find themselves spending excessive time engaged in online activities. It is recommended that instructors provide realistic timeframes for the assignments or projects. 5) Contacting non-participating students early as well as regularly monitoring the program would encourage participation. 6) Technical issue resolutions are to supply contact information for technical support and open an area in the bulletin board to provide space for facts and questions (McLinden et al.). Removing roadblocks for web-based instruction would encourage a friendly and productive environment where learning could occur.

Constructivist learning environments often provided authentic learning, experiences in many perspectives, as well as encouraged ownership in the learning process. These characteristics fit within the design structure of web-based instruction. The traditional form of verbal interaction conducted in face-to-face instruction was a common form of scaffolding (McLoughlin, 2002). Scaffolding is an instructional technique in which the teacher models the desired learning strategies. With support of reflective thinking and dialogue, discussion forums allowed the students to share ideas and feedback.

According to McLoughlin (2002) the ten dimensions that support online products are goal orientation, adaptability, accessibility, alignment, experiential value, collaboration, constructivism, learning orientation, multiplicity, and granularity.

1. Goal Orientation: Could range from highly focused to non-specific. Must focus on independent learning and task performance. In order to have successful scaffolding, there must be a high level of focus on the support and the support should be goal orientated and specific. For example: Instructors assisted students with locating web resources for a learning goal or objective. This provided the students with the skills needed to complete the task while promoting independent learning.
2. Adaptability: Flexibility would allow the diverse online population to achieve a greater competence. For example: Provided students new to the online learning environment with tools for socialization. The tool should be “adaptable to group size, learning styles, pedagogy and task” (McLoughlin, 2002, p. 157).
3. Accessibility: Assistance and support needs to be immediate. For example: Frequently asked question tools allowed web-based students to have access to support at anytime. This tool would aid in developing self-directed learners.
4. Alignment: Learner outcomes and task goals should match the assessment designs. For example: If teamwork was the objective, the learning environment must provide a workspace such as googledocs or wiggio that allow the group members to share thoughts, ideas, and perspectives.
5. Experiential value: The program structure should be designed to allow the students a smooth learning experience. Students should be able to plan, act, and reflect on information. Students should not regurgitate information and learning should not just be

for fact. For example: Students should have the opportunity to apply knowledge to their personal interest, needs, and real world practices. Instructors should provide a variety of meaningful activities and workspace for reflection.

6. Collaboration: The Internet allowed students to collaborate and social dialogue. For example: Students could communicate through chat rooms, emails, social networks, and course management system tools. Collaboration has been an emphasis in constructivist theory of learning and distance education pedagogical approaches (Garrison, 2007).
7. Constructivism: Students should not memorize information but build on prior knowledge. For example: “Technology-based scaffolding supports knowledge construction by representing learners’ ideas, beliefs and understandings, and by offering tools for accessing needed information so that the learner can create new knowledge” (McLoughlin, 2002, p. 158). Tools consist of hyperlinks and remote feeds.
8. Learning orientation: The role of the instructor facilitated independent and self-regulated learning. For example: The emphasis of learning turned from the instructor and content to the learner. The instructor supported and challenged the learners as an active participant in the environment. The learners gained ownership and became effective thinkers in their own understandings.
9. Multiplicity: There should be various forms of scaffolding to support different activities. For example: The course activities should not limit to one aspect of learning such as a lecture and assessment design.
10. Granularity: Referred to the size of resources. For example: Resources must be concise and meaningful allowing the students to select and reconstruct components. Too many resources make for an overabundance of information creating low granularity.

Instructional designers must provide support for learning environments to be effective. “A greater deal of research has indicated that learners need to be given more control over their learning environment and the activities they undertake” (McLoughlin, 2002, p. 159). With the new roles of the learners and instructors in distance learning, the instructional designs must nurture social connections, engaging tasks, reflection, and a variety of learner-centered activities. Courses that utilized these scaffolding models would enhance the effectiveness of the course by supporting dialect, and encouraging student motivation to participate in the learning environment.

*Curriculum design.* Effective curriculum design must link cohesively with the design of the program. The most widely recognized framework for developing curriculum is Tyler’s model. This model suggested four starting points. The four points are the “purpose(s) of the school, educational experiences related to purposes, organization of experiences, and evaluation” (Chou & Tsai, 2002, p. 624).

The curriculum needed to be specifically developed for the target audience. This was accomplished by first identifying instructional goals within the three domains; cognitive, affective, and psychomotor. Once the goals or objectives are established the instructor determined the scope of the subject. This subject needed to be in organized and sequential manner. Presenting the content in a variety of methods and media would assist in accomplishing the instructional objectives as well as engaging student learning. Assessment activities should be based on the stated objectives. A formative evaluation of the curriculum should be conducted prior to its implementation to determine any weaknesses.

Instructors need to have the course well planned and completely researched. “A good teacher should provide guidance for online resources, encourage students to search widely, and

build strategies for sharing resources. Active student-centered techniques and constructive learning experiences are integral to the online class” (McIsaac & Craft, 2003, p. 43). A detailed syllabus is key to a successful web-based course. It establishes the expectations. Having a clear and concise syllabus would reduce misunderstandings, establish expectations and anticipate students’ needs. There are four components to successful online syllabi:

1. Dates that readings are due, and what topics will be discussed,
2. Readings with imbedded links and active resources lists,
3. Discussions with procedures detailed, and
4. Assignments and tests explained, procedures for help in place. (McIssac & Craft, 2003, 44)

The syllabus is a tool to promote the course as well as an information source and should be available to students prior to the first class session.

Another concern with online curriculum is improving interactivity. Most instructors find it effective for students themselves to discuss the readings online and to post questions about the topic; discussions would be more vigorous when moderated by students rather than the instructor. On occasion, though, instructors should provide input. To be an effective online instructor, the strengths of the program must be utilized. Instructors should use discussion folders, chat rooms, and online office hours to promote interactive learning. “Based on observations of the kinds of content that contribute to effective comprehension, instructors or content designers can engineer many technological limitations out of online coursework” (Schwartzman, 2007, p. 113). Many course designs could be improved in order to reach full capacity of student engagement and delivery of content. These course management systems are

open sources providing more user control of design and functions. The design features of the management system and curriculum of web-based instruction may have an impact on the students' attitudes and perceptions of web based instruction.

### *Course Management System*

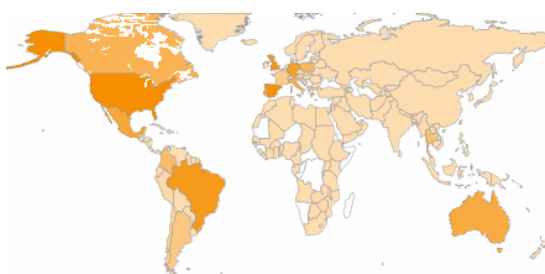
Course management systems were an Internet-based software application that could be used for managing and distributing online resources and Web-based courses. Many systems offer a suite of tools, including enrollment management, student tracking, threaded discussion, chat, internal e-mail, file distribution and student Web page creation (Distance Education, 2006). The course management system was the virtual classroom environment where knowledge was transferred and activities were engaging to support learner centered designs. There were several course management systems. One of the emerging virtual learning environments was Moodle.

Modular Object-Oriented Dynamic Learning Environment (MOODLE) is an online course management system created by Martin Dougiamas (CR Hosting Training Support Themes, 2010). It was first released in August of 2002 (Moodle Background, 2009). Moodle was designed to help teachers create a rich interactive learning environment. The software is an open source platform allowing the organization complete access to the source code thus giving them the ability to make changes as needed. The pedagogical approach to Moodle was that the students and teachers contribute to the educational experience through the constructivist and social constructionist approach to education (Fisher, 2007). "Your job as a 'teacher' can change from being 'the source of knowledge' to being an influencer and role model of class culture, connecting with students in a personal way that addresses their own learning needs, and moderating discussions and activities in a way that collectively leads students towards the

learning goals of the class” (Moodle Philosophy, 2009. ¶ 9). The design and development of Moodle was guided by social constructionism but further research and support for pedagogical support is planned as Moodle develops.

In just under eight years after Moodle’s release, the learning platform is world wide. Moodle is used in 205 countries (see figure 2.1) (Moodle Statistics, 2009). The Kent School District in Washington State is one of many school districts which utilize Moodle as a course management system.

Figure 2.1  
Moodle Locations



Country	Registrations	Country	Registrations
United States	8,256	Portugal	1,834
Spain	3,976	Mexico	1,454
United Kingdom	2,957	Australia	1,184
Brazil	2,753	Italy	1,053
Germany	2,101	Canada	996

Moodle must operate to meet the unique needs and diversity of the individuals’ world wide. The course management system is centered on the learner. Moodle offers a variety of activities and features to support different learning styles.

### Learning Styles

Learning style is the way in which each learner begins to concentrate, process, and retain new and difficult information. Intelligence is the ability to solve problems that face you in life



and produce things that are of value to your culture (Washington State Teachers Recruiting Future Teacher Task Force, 2002). There are many surveys and tests to identify learning styles and/or intelligence. The commonly used theory in Washington State's Family and Consumer Sciences curriculum is Howard Gardner's Multiple Intelligences. The purpose of the theory, proposed in 1983, was to explain how each learner is an individual. The multiple intelligences were divided into eight categories (Table 2.3) (WSTRFT Task Force, 2002).

Table 2.3  
Summary of Multiple Intelligence

Multiple Intelligence	Description
Verbal/Linguistic	Consisted of the ability to think in words and to use language to express complex meanings.
Logical/Mathematical	Made it possible to calculate, quantify, consider propositions and hypotheses, and carry out complex mathematical operations.
Visual/Spatial	Instilled the capacity to think in three-dimensional ways. It enabled one to perceive external and internal imagery, to recreate, transform, or modify images, to navigate oneself and objects through space and to produce or decode graphic information.
Musical	Evident in individuals who possessed sensitivity to pitch, melody, rhythm, and tone.
Bodily-Kinesthetic	Enabled one to manipulate objects and fine-tune physical skills.
Interpersonal	The capacity to understand and interact effectively with others.
Intrapersonal	The ability to understand yourself, know who you are, what you can do, what you want to do, how you react to things, which things to avoid or gravitate towards and use this knowledge in planning and directing one's life.
Naturalist	Consisted of observing patterns in nature, identifying and classifying objects, and understanding natural and human-made systems.

There was limited research in learning styles and distance education in secondary education. The focus of existing studies was on the relationship between learning styles and student achievement (Diaz & Cartnal, 1999). The research compared learning styles with course final grades, drop out rate, and attitudes or perceptions. Much of the research was at the post secondary level. There were several learning style inventories used in research. Two separate

studies, one written by Diaz and Cartnal (1999) and the other by Manochehr (n.d.) used the Kolb Learning Inventory to measure learning styles in college level distance education. Both studies suggested further research and that the results of those studies be used as support for instructors to design distance education based on student's learning styles. "If optimal student learning is dependent on learning styles, and these styles vary between distant and equivalent on-campus students, then faculty should be aware of these differences and alter their preparation and instructional methods accordingly" (Diaz & Cartnal, 1999, p. 131). Both studies showed a significant relationship between learning styles and student knowledge performance for web-based instruction.

### Summary

Research showed a correlation between integrating technology and the constructivist teaching style (Nanjappa & Grant, 2003). It suggested that teachers who utilize technology are more inclined to use student-centered instruction (Judson, 2006). Educational technology leaders supported the movement from direct instruction to student centered constructivist classrooms (Berry & Center for Teaching, 2010). The guidelines for constructivist learning indicated a need for authentic learning, encouragement of ownership in the learning process, and the provision for experiences in many perspectives. These guidelines fit within the design structure of web-based instruction. Educators identifying their students' strengths should reach and teach to the full potential of the class. Because all people understand and process information differently, the best way an educator could accommodate learners was to address a variety of learning styles.

The traditional form of verbal interaction conducted in face-to-face instruction now also exists in virtual communication. With support of reflective thinking and dialogue, discussion

forums allowed the students to collaboratively converse. The Internet allowed students to reflect, collaborate, and have social dialogue. The role of a constructivist instructor was to facilitate independent and self-regulated learning. There should be various forms of scaffolding to support different activities. “What matters is that we foster environments in which all learners can and do learn. Such environments seek the right balance between the activities and constructing and receiving knowledge, given that not all aspects of a subject can or should be taught in the same way” (Miller, 2002, p. 4). Research suggested that students could have a positive learning experience and demonstrate attributes of constructivist learners. “Learners who described their experience as most successful reflected higher levels of independence and responsibility for their learning” (Howland & Moore, 2002, p. 187).

“Blended learning focuses on optimizing achievement of learning objectives by applying the right learning technologies to match the right personal learning style to transfer the right skills to the right person at the right time” (Singh & Reed, 2001, p. 2). The focus in education was for student learning, growth, and success. This was achieved through the incorporation of a constructivist based theory, use of appropriate technology techniques, and a focus on individual needs and interest through preferred learning styles.

When teachers are designing, planning, and implementing courses, effective strategies would prove for high achievement and retention of students. Teachers planning to implement successful programs must be knowledgeable on the concepts, experts in the content, and trained in the skills. Specifically, when development of a blended course is considered for secondary career and technical education there remains a focus on the student as a learner, integration of technology, and real-world applications. In the secondary education arena, many teachers believed to “not reinvent the wheel” and “use what is tried and true” (Kent School District Staff,

personal communication, October 6, 2009). Research and studies provided insight and reliability to concepts such as the effects of learning style's participation to encourage high achieving and sustainable programs that used technology and meaningful context.

The study was designed to explore students' learning style participation within a blended Family and Consumer Sciences Exploring Childhood course. Designing, developing, and implementing a quality course was essential to retain students and provide quality programs. The main focus of this study was on the learner. The Exploring Childhood course was based in the constructivist theory of learning which embeds technology. It was a proven theory of learning that focused on the learner not teaching and embeds real-world applications. This concept was key to career and technical education and other quality programs. Quality career and technical education programs would prepare students for the future, maintain on-track status for graduation, and assist in passing state proficiency tests. Distance education and/or blended learning shares the same pedagogical background of collaborative constructivism. A blended learning approach was used as the learning environment through the Moodle course management system. This approach was used to integrate technology, offer alternative opportunities for student learning, is the newest rapid growing trend in education, provided 21<sup>st</sup> century skills, and combines the best of both learning environments of traditional face-to-face and online. Instructors or teacher must understand the new learning environment in order to facilitate learning. Factors impacting the learning environment must be considered for the goal of understanding student participation. Social connection, student motivation, instructional and curriculum design would play a role in the effectiveness of a course.

Learning styles focus on learning not teaching. Learning was the ability of students to process, retain, and reflect on new concepts and ideas. If there were a better understanding

whether the process students used to gain new knowledge would impact their participation within course components, then teachers could provide for modifications or changes to update the program, personalize context, and make the course interesting and relevant to the students. If students were not participating within the course components the course would have a limited chance for success or retention of students and quality programs.

Blended learning associates with constructivist views of learning in a virtual learning environment that all focus on learning. Remaining attentive to the learner not teaching would encourage effective courses with higher student participation for quality programs with retention.

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### CHAPTER 3. METHODOLOGY

The purpose of this exploratory quantitative study was to determine if students with specific learning styles have higher participation in the four course components: individual assignments, group projects, discussions, and assessments. An exploratory design was used for this study because the researcher was identifying insight to a possible issue. There was no clear indication of a problem concerning the relationship between participation in course components and individual student learning styles. This methodology was taken as a proactive approach.

#### *Course Context*

The content of Kent Meridian High School Family and Consumer Sciences Exploring Childhood course included self-esteem, prenatal development, child development theorists, ages and stages, child safety, lesson planning and curriculum, and guidance and discipline. Students learned about pregnancy and how children from birth to age five develop. Students mentored a child, became a reading buddy, were a positive role model, and planned and taught an activity. Students worked with children at a daycare, preschool, or kindergarten to gain practical experience.

Regulated by the Office of Superintendent of Public Instruction of Washington State, all career and technical education programs must be re-approved on a four year rotation. The Kent School District Family and Consumer Sciences program is scheduled to be re-approved again in the 2012 to 2013 academic year (Office of Superintendent of Public Instruction, 2010b). During the last re-approval process, all four high school family and consumer sciences teachers, including the teacher/researcher, worked together on a program review process to create curriculum guides for the courses taught. Creating curriculum guides provided for re-approval needs as well as common objectives, assessments, and verification courses were meeting state

and national standards. The Exploring Childhood class was taught based on the curriculum guide re-approved in the 2008 to 2009 academic year. The curriculum guides provide teachers with student standards and example course activities. The curriculum guides were created to keep the teachers on the same page but allow for flexibility to meet the needs, interest, and learning styles of the student body.

At the beginning of the Exploring Childhood course, an online introduction survey was conducted to determine students' experiences, interests, needs, and abilities. The introduction survey viewed students' experiences working with young children whether siblings, church, camps, or volunteer work. The survey questioned why the students enrolled in the class and what are their future life and career goals. It also inquired about what they expected to learn or take from the course. These surveys were completed online and used by the teacher to facilitate course activities and units to have meaningful context. The Exploring Childhood course was a modern constructivist learning environment that had technology based learning and engaging, collaborative interactions. The curriculum was student-centered learning. The students were active learners where ownership occurs. An example of a student-centered learning group project in the Exploring Childhood class during the child safety unit was groups of two to three students were assigned the task to educate new parents or child care providers about a child safety concern. The students were to think about new parents or babysitting, what would someone or themselves need to know to keep the child safe. The groups of students were to identify an age range and a safety topic of choice. The students could choose any method of technology or presentation format to share information, findings, and preventive techniques for that safety concern. Groups of students addressed the problem by presenting the information through power point presentations, jeopardy games, brochures, and essays. The group projects

were presented online through the Moodle course management system. Weekly reflective questions were geared around the group projects. Students were to reflect on their growth and how they might use the new ideas and information in the future. Much of the curriculum provided students with opportunities to pick a topic of interest and a variety of activities. These characteristics of learning represent a model of both Jean Piaget's constructivist theory of learning and John Dewey's the child and the curriculum.

The teacher/researcher for this study is a member of the Kent School District Career and Technical Education Online Course Development Task Force. The teacher/researcher was piloting online education through a blended learning approach within the Exploring Childhood course. In order to implement a blended or online course, the teacher/researcher must first design and develop the course on a sample Moodle course management system platform. The course was then reviewed by fellow career and technical education teachers and director. Next, the course was evaluated and passed with satisfaction using the district instructional services rubric for evaluating online courses (Appendix A).

The Exploring Childhood course used a blended learning approach by combining the best of both learning environments, face-to-face and online. All course documents were available through the Moodle course management system for the purpose of student absences, making up missing work, and time conservation.

Activities that were solely available online were reflective questions and journal entries for the discussion component. Reflective questions allowed for students to respond to the content delivered and reflect on real-world applications. An example of a reflection question was:



Describe Abraham Maslow's Hierarchy of Needs theory. Do you agree or disagree with the theory? If you agree, give a valid explanation for your reasoning. If you disagree, give a theorist and the theory that you do agree with. (Explain why you disagree with Maslow's Hierarchy of Need and agree with that theorist.) How has the theory you agree with impacted your childhood or how you will use the theory in your future? *Consider your practicum experiences working in the elementary schools or day care settings for this class.*

Students responded to reflective question postings of their peers. The students were encouraged to ask clarifying questions or post comments. The reflective questions became an enriched classroom conversation that occurred online. Journal entries provided the students with an opportunity to reflect on their knowledge and growth for the week. Students were prompted to write about new concepts they learned and how they would apply the concepts to their personal lives, careers, or needs and interests. Journal entries were only shared between the teacher and author.

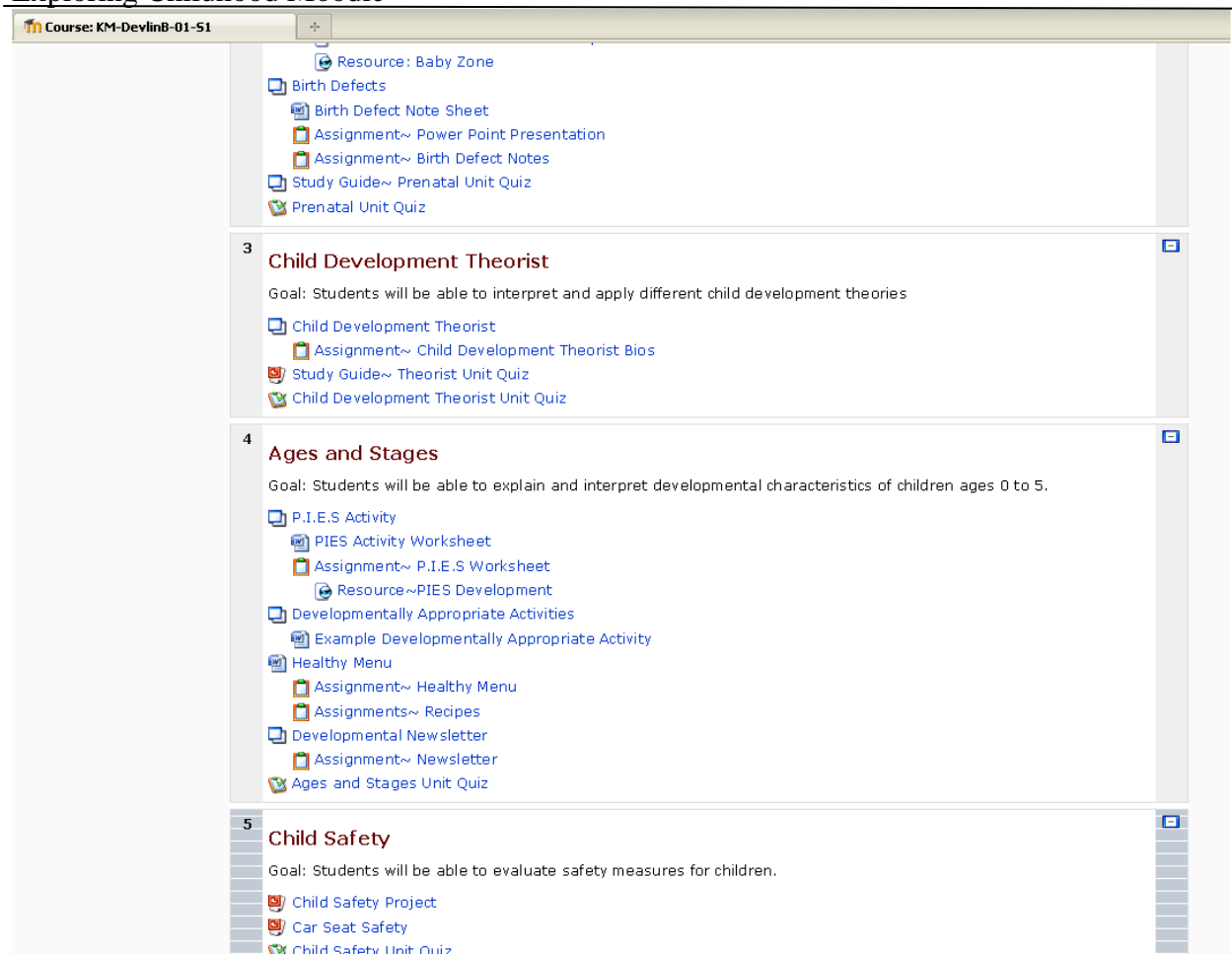
Other components were utilized in both environments such as assessments. Quizzes and tests were administered in the face-to-face setting, however students were given the opportunity to re-assess online through the Moodle course management system outside of the class environment and time. The Moodle course management system allowed students to work collaboratively on group projects whether in the physical classroom or home or the library. Having students work on group projects through the internet reduced student's excuses for not working on the project because their partner has all the information or work. All the work was available online even if the partner was absent.

Students completed video notes as an individual assignment component by viewing several video clips of Life's Greatest Miracles online. The clips were available through the Public Broadcasting Services (PBS) and supported by NOVA online at <http://www.pbs.org/wgbh/nova/Miracle/program.html>. Once the students logged onto the Moodle course management system, they were able to read the instructions and access the questions for the assignment, then click on the hyperlink to the clips. The students must have QuickTime or Real Video to view the clips. Implementing the video notes as an online component of the Exploring Childhood course allowed for the non-visual or English Language Learners to review the clips at their convenience. It allowed the students the chance to pause and rewind in order to answer the assignment questions without regards to fellow peers.

Another online component of the Exploring Childhood course was a worksheet on the Physical, Intellectual, Emotional, and Social (P.I.E.S.) development of children. The students were to choose two age ranges and investigated developmental milestones of the four categories. The first age range must include the age in which they were working for the practicum experience and the second range was their choice. The worksheet asked the students to first write about what they already knew about that age range then within a graphic organizers document at least four milestones for each category (P.I.E.S.).

Resources were available through hyperlinks. Figure 3.1 is a screenshot from the Exploring Childhood Moodle environment. By offering coursework online, students were able to learn and process new information at their own pace at home while increasing the time spent working with the young children during the practicum experience.

Figure 3.1  
Exploring Childhood Moodle



By Sloan Consortium's definition of a learning environment this course was considered a blended approach because 30 to 79% of the content was delivered online. A benefit of using a blended approach in the Exploring Childhood course was time conservation. Students were able to focus on the content through online delivery allowing more face-to-face interaction time for the early childhood practicum experience to apply their knowledge, concepts, and ideas. At the time of the study, the researcher was the sole educator teaching Exploring Childhood at Kent Meridian High School creating a challenge in sample size.

### Population and Sample

The population of interest was from a high school in Kent, Washington. The City of Kent is the fourth largest city in King County (City of Kent Washington, 2007) with a school district enrollment of 26,861 students (Kent School District, 2008). Kent Meridian High School opened in 1951 in an urban area. It has been recognized as a National School of Excellence by the United States Department of Education, a recipient of the Gates Achievers Grant in 2001, and host of the Technology Academy (Kent School District, 2008). In the 2008 to 2009 academic year, there were 98 classroom teachers at Kent Meridian High School and 62% of those teachers hold at least a master's degree. The high school enrolls approximately 1,800 students each year (Office of Superintendent of Public Instruction Washington State Report Card, 2007) with about 16% of the population being transitional bilingual. This highly transient area consists of 54% males and 46% female students with more than half the student body receiving free and/or reduced meals. (Office of Superintendent of Public Instruction Washington State Report Card, 2009). Kent Meridian prides itself on the diversity of the student body. (See Table 3.1)

Table 3.1  
Kent Meridian High School 2009 Ethnicity (n = 1,868)

Ethnicity	Percentage
American Indian/Alaskan Native	1.8
Asian	20.6
Black	19.3
Hawaiian/Pacific Islander	10.8
Hispanic/Latio	16.9
White	30.6

The sample for this study was a high school class of 29 students enrolled in “Family and Consumer Sciences Exploring Childhood” at Kent Meridian High School, Kent School District in the state of Washington. Convenience sampling was used in this research due to the population being readily at hand and available.

#### Instrumentation

The demographics were taken from the Kent School District’s school management system, Skyward. Skyward is an administrative software program for the K-12 setting that provided real time information through the web portal which allowed for better communication with the students and parents/guardians. Within Washington state 280 school districts utilized the Skyward system (Skyward, 2010). The demographic information that was collected by the researcher from Skyward concerning the participants was gender, age, grade level, special programs, and ethnicity. The demographic data collected were gathered solely for the population description.

The information concerning percentage of the participation rate within the four components: discussions, assessments, group projects, and individual assignments were also taken from the Skyward system. The percentage of participation rate was derived from the number of times the components were recorded in the grade book system (Skyward) compared to the number of times the student completed those components. Participation rate did not factor whether the participants’ mastered or did poorly on a given component.

The data collected from the Skyward grade book system were collected and recorded by the researcher/teacher in an Excel document.

To determine the dominant learning style of the participants a test from the Washington State Teachers Recruiting Future Teachers Family and Consumer Sciences curriculum (see

Appendix B) in combination with a multiple intelligence test based on Howard Gardner's MI model from businessballs.com (see Appendix C) was used. The multiple intelligence inventory from the Family and Consumer Sciences curriculum was developed by the Washington State Teachers Recruiting Future Teachers Task Force. The purpose for the Washington State Teachers Recruiting Future Teachers curriculum was due to teacher shortage. It is a "grow your own" model (WSTRFT, 2002, ¶ 1). The material for the curriculum was compiled from lessons and resources that have been passed from teacher to teacher. Therefore, the curriculum guide has no authors or background information for materials such as Howard Gardner's Multiple Intelligence inventory. The curriculum guide was field tested and approved by the state in the 2001-2002 academic year and continuously updated and modified. All teachers planning to teach the curriculum must be trained. The curriculum has articulated with state universities. Since these tools were aids to understanding a person's learning style, care and interpretation must be taken into consideration. A second multiple intelligence inventory tool was used to verify the student's dominant learning style. The two inventories provided common results. Both inventories consisted of series of statements for the students to rank how likely the statement holds true. For example, "I like to convince others and play with words" (WSTRFT, 2002, ¶ 1) and "I can play a musical instrument" (Chapman, 2009, ¶ 1). The statements were categorized and tallied to determine the dominant learning style.

The nominal variables measured by the participant demographics were gender, age, grade level, special programs and ethnicity. These variables were gathered solely for description of the Exploring Childhood sample. These sample variables were comparable to the Kent Meridian High School population description.

**Gender:** referred to the sex of the participant. This information was gathered by the participants' school district enrollment packet made available to the educator via Skyward software.

**Age:** referred to the age of the participant. This information was gathered from the participants' school district enrollment packet made available to the educator via Skyward software.

**Grade Level:** referred to the minimum credits required for class designation: Freshman 0, Sophomores 5.5, Juniors 11.0, and Seniors 17.0 (Kent Meridian High School, 2009).

**Special Programs:** referred to whether the participant qualified for Special Education, had a 504 plan or received English Language Learner services. These notations were made available to the educator via Skyward software.

**Ethnicity:** referred to the self-identified ethnicity of the participants. This information was gathered from the participants' school district enrollment packet made available to the educator via Skyward software. Data were derived from enrollment packet completed prior to the revision of the new federal and state ethnicity and race categories.

The categorical variable was measured by learning style tests. The quantitative variables were measured by tallying of discussions, assessments, group projects, and individual assignments. The variables are defined as followed:

**Learning Style:** referred to the results of two different Howard Gardner's Multiple Intelligences tests.

**Discussions:** referred to the number in percentage form of times the individuals participated in course online discussions, such as reflective questions and journal entries. Percentage rates were calculated by the participant's number of attempts at their assigned

discussion coursework. For example: Student A attempted 8 discussion out of 10 assigned, calculating an 80% participation rate for this particular component.

**Assessments:** referred to the number in percentage form of times the participants partook in the course quizzes and/or tests. Percentage rates were calculated by the participant's number of attempts at their assigned assessment coursework.

**Group Projects:** referred to the number in percentage form of times the participants partook in the course projects that required working with at least one other student. Percentage rates were calculated by the participant's number of attempts at their assigned group project coursework.

**Individual Assignments:** referred to the number in percentage form of times the participant completed an individual course assignment. Percentage rates were calculated by the participant's number of attempts at their assigned individual assignment coursework.

A survey used in the study was offered through the Course Management System, Moodle. The survey was used to evaluate online learning environments implemented based on constructivist pedagogy. The Constructivist On-Line Learning Environment Survey (COLLES) comprises 24 statements grouped into six scales to help address the quality of the learning environment (see Appendix D). The six scales are: relevance, reflection, interactivity, tutor support, peer support, and interpretation. These scales were developed from the theory of social constructivism. The scales were new to learning environment research specifically for the quality of web-based education. The scales were concerned with students' perceptions of the virtual classroom environment that supported reflective and collaborative learners (Taylor and Maor, 2000). The relevance scales referred to the student engagement of the environment were related to real world practices. Reflection scale examined the extent to which critical reflective



thinking occurred with peer discussions. Interactivity scale focused on communication and interaction between fellow students, tutors, and instructor. The tutor support also known as cognitive demand focused on the challenges and communicative role modeling. Whereas, peer/affective support examined that sensitivity and encouragement were provided and the interpretation scales viewed the extent students co-constructed and connected meaningful context. Students were to rank four statements for each scale from almost never, seldom, sometimes, often, and almost always. The scales provided an overall measurement of the learning environment reflecting a constructivist approach. The COLLES survey was developed through a 2000 ARC Small Research Grants Scheme award (Taylor and Maor, 2000). The survey has established interpretive validity with a limited sample of mature-aged students in a postgraduate course (Taylor and Maor, 2000).

#### *Four Course Components*

Individual assignments, group projects, discussions, and assessments were the four components used in this study. Due to the high transient area and students requiring special program support, not all students were assigned the same amount of coursework for each component. For this reason, the data entered for each student on the four course components was in percentage format for accuracy of data collection.

The individual assignments component was categorized by any work completed solely by the student. Coursework such as handouts, book work, movie notes, projects, essays or papers, and other activities were individual assignments. Group projects consisted of only the coursework where two or more students worked together to accomplish the assigned tasks. Some group projects assigned were prenatal calendars, birth defect presentations, child safety concern, and the consumer awareness project. Within the group projects, students were given

the task to work together to research the provided topic to present to the class either physically in class or through the Moodle course management system. For example, the birth defect presentation, students were to identify a birth defect and research the causes, treatments, risks, prevention, and available resources for parents and children with that birth defect. The two students worked on the presentation in the physical classroom as well as using googledocs to share a power point presentation from home. In this project, the students presented the defect to peers in the classroom through their power point presentation. Within the prenatal calendar project, three students worked together on creating a monthly calendar from conception to three months after birth. The calendars provided information on infant and mother milestones, nutrition, and vocabulary words. Similarly to the birth defect presentation, students worked in class and from home with googledocs. The calendars were shared through the Moodle course management system only. During group projects, the teacher facilitated the learning by providing expectations, probing students for prior knowledge, prompting critical thinking questions, and allowing the students to be actively engaged with the research and dialogs.

Discussions were categorized by the students responding to weekly reflective questions provided by both the teacher and students and weekly journal entries. The reflective questions were geared toward the content delivered. Another example of a reflective question was:

During your practicum experience working with young children, what have you experienced or observed (either activities or behavior of the children) that related to a topic covered in class? Was the activity or behavior negative or positive, explain? What did you learn from that experience or observation?

This reflective question allowed students to think about the content delivered and reflect on their own experiences. It encouraged students to share and collaborate with each other because some

students had the same experiences and observation working with different children. Students were given the opportunity to write their own reflective questions for others to respond. The students were able to communicate and ask further questions to gain insight to a concept. Journal entries provided the students with opportunities to personally reflect on their knowledge and growth for the week. These entries required the students to reflect as well as apply the knowledge toward their own personal lives, career goals, and/or interest.

Assessments were categorized by quizzes and tests. The assessments ranged from summative to formative. Quizzes and tests formats varied with multiple choice, true or false, short answer, matching, and essay. There were weekly quizzes and unit tests. For the purpose of the study, the coursework was categorized into the four course components; individual assignments, group projects, discussions, and assessments.

The data for the components were entered as percentage rates based on the number of pure attempts out of assigned coursework for all participants in each component. The components were tallied based on yes or no as the number of times the student had a score for the assigned coursework. The yes tally total was calculated with the assigned number of coursework. Students' scores for the individual coursework were not considered, tallying did not factor whether the students did poorly or achieved mastery.

#### Data Collection

The researcher was the main instrument used in the collection of the data. The data were collected from two sources: Skyward Administrative Management and Moodle Course Management Systems. The participants were not asked to complete any more requirements than what is normally required for the secondary Exploring Childhood course.

The researcher counted the number of times discussions, assessments, group projects, and individual assignments were uploaded into the grade book, and then tallied the number of times the participants completed each component. The two figures were compared creating a percentage rate for the participants. The purpose of converting the four components into a percentage form was for accuracy in data collection. Accuracy needed to be considered due to the fact that not all students were assigned the same amount of course work for a given component. Students were not enrolled in the course or were pulled out of class for mandatory special programs testing during the period of data collection.

For example, student A was enrolled in the class the entire period of the study and was not removed from the class for testing. She/he was assigned six reflective questions and six journal entries with a total of 12 items uploaded to the Skyward grade book system. These 12 items were categorized as the discussion component. Student A attempted six reflective questions and five journal entries calculating 11 attempts out of 12 assigned. This created a 92 percentage rate for that student's discussion component. Whereas, student B was not enrolled in the course for the first week of the study period. This student was assigned five reflective questions and five journal entries. Only 10 items were uploaded to the Skyward grade book system for this particular student. Student B attempted all items calculating 10 attempts out of 10 assigned. This created a 100 percentage rate for the student's discussion component. If the components were not converted to a percentage rate the data would not be accurate. Student A would have an input of 11. Student B would have an input of 10. Student A would show a higher participation rate compared to student B when converted for accuracy student A had a lower participation rate.

This percentage conversion was used for all student participants with each of the four course components. Scores were not a factor in the study, simply whether the item was completed or not. As part of the course curriculum, the students completed multiple intelligence surveys to understand learning styles. Those results were used in the data collection. As part of exiting online or blended courses, students were asked to complete an online survey through Moodle. These results were used as guides to help improve not only the student learning environment but also the researcher's teaching practices.

Demographic information such as gender, age, grade level, ethnicity, and special programs were gathered from the Skyward system school records. Data were collected from a six-week period in the second semester grading period of the 2009 to 2010 academic year for the Kent School District.

### Data Analysis

The steps to complete the study began with the researcher teaching the class as usual. Human subjects were involved in the study requiring Institutional Review Board approval and obtaining consent from participants. Upon consent, the researcher gathered demographic information from Skyward system. Further data were collected on the four course components and tallied from participants' prior work. The researcher administered the COLLES survey as part of exiting the course. Data were prepared for statistical analysis. SPSS statistical software was used for analyzing. The following summarizes the analysis performed using SPSS software for each research question:

Question 1: descriptive statistics

Question 2: descriptive statistics by learning style; traditional and nonparametric

ANOVA

Question 3: contingency tables testing for associations between learning style and survey responses (using Fisher's Exact Test)

Results need to be viewed with care and interpretation due to the small sample size.

Descriptive statistics is a description of general characteristics of the distributions of scores. The distribution of scores is the “shape of data that includes a mean, median, and mode” (Salkind, 2003, p. 305). It provided for a basic understanding of the data. Descriptive statistics was used for the research question addressing in general the participation rate of all the students between the four course components. The analysis for question one “tells the story” (Dr. Kevin Saunders, Personal Communication, July 12, 2010) of the data for the sample. Descriptive statistics combined with frequency distribution provided for an introduction to students’ participation rate within the four course components. The data analysis provided a general idea if students were participating in the course components without factoring their learning styles. This foundational knowledge helped to describe further analysis.

To address the differences between the different learning styles and the course components, analysis of variance (ANOVA) test was completed. This analyzed whether or not the means of several groups are all equal. A simple one-way ANOVA test is the process to identify if there are any statistical differences. In addition to the ANOVA test, a nonparametric Kruskal-Wallis test was used as an alternative technique to overcome assumptions. Due to the small sample size, equality of variance assumption was not met. The data groups (learning styles) were not equally distributed. This technique does not require the violated assumptions. This type of test transforms the initial data to their associated ranks before submitting to the ANOVA process (Agresti & Finlay, 2009). Use of ANOVA and Kruskal-Wallis test supplied results for the small sample. It provided a basis of learning style participation within the

population. The results could infer that any student at Kent Meridian High School would have the same outcome as the sample results of this study. The results could be used for further design, development, and implementation of blended courses. Structuring courses around the learner so that there would be higher participation rates would aid in student motivation to build quality programs.

Fisher's exact test is a statistical significance test used when studies have small sample sizes. Fisher's exact test was useful for categorical data in two different classifications, learning styles and answers to the survey. The test measured the association between the two classifications. In this study, was there an association between learning styles and the answers to the COLLES survey?

Fisher's exact test leads under null hypothesis. Thus the null hypothesis claims there was no difference between the classifications until proven otherwise. The null hypothesis in this question was that there was no association between students' learning style and their perception of the constructivist approach to learning. The alternative hypothesis predicted there was an association between learning styles and students' perception of using prior knowledge to gain new concepts.

Fisher's exact test is a contingency table that displays categorical variables by "the number of subjects observed at all combinations of possible outcomes" (Agresti & Finlay, 2009, p. 221). A contingency table was appropriate to identify if students' learning style and their responses to the survey questions had any relationship. The study focused on a relationship between two variables in the sample and how confident that relationship holds true to reflect on the population rather than by chance. In this study, the focus was on the relationship between students' learning styles and their perception of the course providing opportunities to utilize prior

knowledge to gain new concepts. The study also determined how confident the results hold true that the same outcome would occur with a different sample from the population.

The study attempted to determine if students' learning style had a statistical significant effect on participation in four different course components and their perception of a constructivist course.

#### Institutional Review Board

The Institutional Review Board (IRB) is a committee responsible for all research completed through Iowa State University involving human subjects. All research must receive prior approval in accordance with federal, state, and local regulations. The purpose of the IRB is protection of the participants, to ensure their rights and safety. This study was exempt by the Iowa State University Institutional Review Board on March 25, 2010. Copies of the IRB approval and consent documents appear in Appendix E and F.

#### Summary

This quantitative study was used to explore a relationship between students' participation rate in course components compared to their preferred learning style. Chapter three provided a background on the population and sample, instruments used, data collection procedures, and data analysis measurements.



## CHAPTER 4. ANALYSIS OF THE DATA

Secondary teachers need guidance and mentoring in designing, developing, and implementing successful quality online courses. This research utilized these resources to create a blended approach for a secondary Career and Technical Education Family and Consumer Sciences Exploring Childhood course that met the needs of a wide range of student characteristics. The research study compared the students' learning styles to the participation rate within the course components; group projects, individual assignments, discussions, and assessments. The study attempted to determine if there was a relationship between multiple intelligence characteristics and participation rate within the course components. The study exhibited a pedagogical background for teaching blended learning to meet the needs, interest, and abilities of the various learning styles. The main focus of the study was to determine whether students' learning styles have an effect on their participation rate of coursework in a blended class with a constructivist approach to learning.

The research will further not only various studies and literature on the use of a constructivist approach to teaching a blended Family and Consumer Sciences course but also the various components of distance education. The main focus of the study was to determine the participation rate of the learning styles within group projects, individual assignments, discussions, and assessment components of a secondary blended course. The study will also contribute leadership and innovation to the Family and Consumer Sciences profession. The results showed no relation between certain course components and learning styles. Distance education courses that utilized a variety of instruction would be more beneficial to all learners.

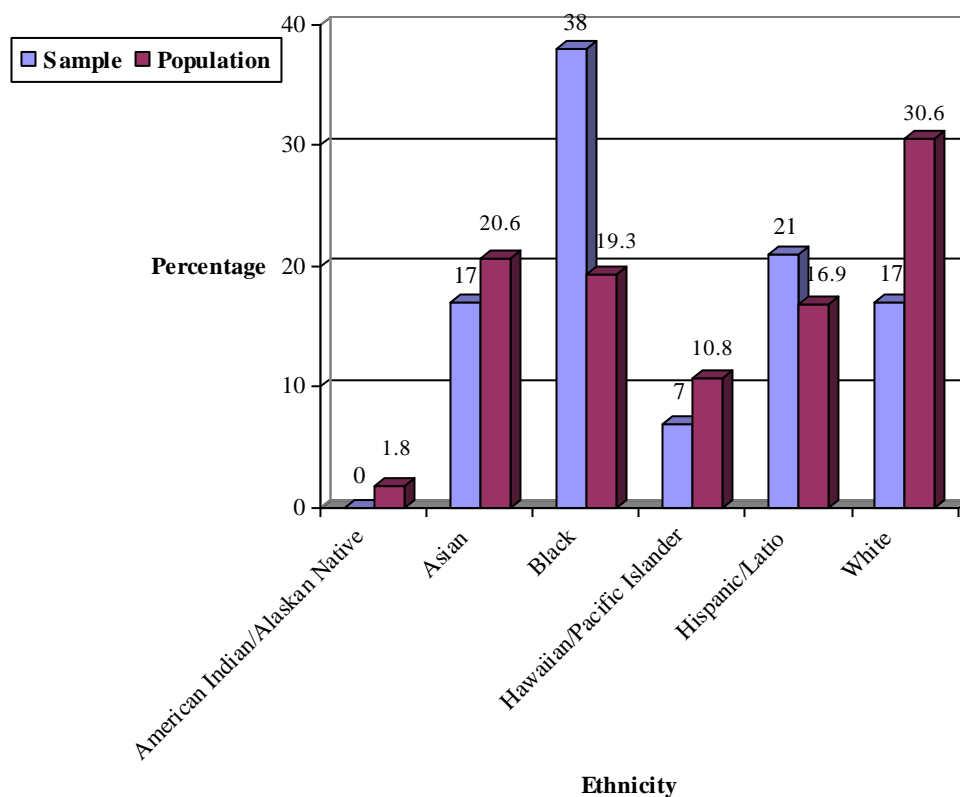
This chapter describes the sample and analysis of data related to each research question.

### Description of Sample

The sample for this study was convenient. The participants were high school students already enrolled in a Family and Consumer Sciences Exploring Childhood class taught by the researcher. There were a total of 32 students enrolled in the course. Of the students enrolled 29 returned IRB consent forms giving permission to participate in the study. The participants were freshmen to seniors with an age range from 14 to 17 years old with the majority being freshmen. Due to the nature of the course, there were only three male and 26 female participants. Of the participants 14 percent received support through special programs such as Special Education, 504 or English Language Learner services. The breakdown of the participants' ethnicity was comparable to the diversity shown within the school population itself.

Figure 4.1  
Participants' Ethnicity

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Due to the small sample size  $n = 29$ , there were limited types of analyses to perform. Consequently, the tests have low statistical power; therefore they are not able to detect differences and associations that may be significant with a larger sample size. Results must be viewed with interpretation considering the small sample size.

### Research Question 1

What is the rate of secondary family and consumer sciences student's participation within the different components (discussions, assessments, group projects, and individual assignments) of a blended course?

Table 4.1 summarizes the descriptive statistics for the percentages earned by students for each of the following course components: discussions, assessment, group projects, and individual assignments. These four components were measured in percentage points. The first column (N) indicates the number of student responses for each component. Note that in the data set there are two students marked as not applicable for the discussions and group projects components. The students were not enrolled in the course during the time the discussion and group projects were implemented. This is the explanation for having 29 student responses for the assessment and individual assignment components but only 27 for the discussions and group project components. The second column lists the mean of each component and the third column lists the standard deviation of each component.

Table 4.1  
Descriptive Statistics: Students per Component

Variables	N	Mean	SD
Discussions	27	66.63	37.820
Assessment	29	63.17	32.203
Group Projects	27	79.04	25.240
Individual Assignments	29	73.86	28.147

Notice that the mean percentage earned by students for the discussion component was 66.63%. Similarly, the mean percentage earned by students for the assessment, group projects, and individual assignments components were 63.17%, 79.04%, and 73.86%, respectively. This indicated that students' rates were the highest in the group projects component. This may be due to the fact that students feel a sense of accountability to their teammates as well as to themselves. Interpretation of the mean was an average of the students' participation rates in percentage form. The mean could be misleading because it factored in high and low figures. Means may be lower than expected due to students who did not participate at all or higher because students participated each and every time.

The minimum (0%) and maximum (100%) values are the range of the values that are present in the data set. Table 4.2 provided for further explanation of the analysis.

Table 4.2  
Frequency Distribution: Students per Component

Percentage Range	Discussions	Assessment	Group Project	Individual Assignments
0-9	4	2	1	1
10-19	1	2	0	1
20-29	0	0	0	0
30-39	4	3	0	1
40-49	0	0	0	3
50-59	0	7	5	2
60-69	0	2	2	4
70-79	0	0	6	3
80-89	8	5	0	3
90-99	2	0	0	0
100	8	8	13	11
NA	2	0	2	0
n=	29	29	29	29

Just fewer than half the students participated at a 100 percent rate for the group project component. This signifies 13 students attempted all course work for group projects that were assigned. The remainder of the students' participation rate was mostly above 50 percent detailing a higher mean for group projects. Four students did not participate at all in the discussion component impacting the discussion mean. Attendance and maturity level could be factors impacting the percentage rate reiterating the need for meaningful and engaging learning environments that revolves around the learner. The majority of the participants in the study were freshmen still developing social interaction skills.

The median for discussions (83), assessment (50), group projects (75), and individual assignments (77) and the mode for discussions (100), assessment (100), group projects (100), and individual assignments (100) were respectively. The median was not affected by excessive high and low figures. The median and mean of both group projects and individual assignments more closely resemble each other providing for more accurate interpretation. It was interpreted that when students are assigned group projects and individual assignments they would participate about 75 percent of the time those course components were assigned. The mode was the highest frequency of the figures. Based on the mode, on all four components more students participated 100 percent of the assigned times. This is interpreted as majority of the students would participate in every component they were assigned in each component. Is the focus of educating the youth of America on majority or all students? Understanding participation rates of students would leave no child left behind and excellence for every student every day. Overall, student participation has room for improvement. Student motivation remains a major factor in an effective learning environment.

### Research Question 2

Is there a relationship between students' learning style and the participation rate within the different components of a blended course? ie: what is the relationship (or is there one) between the percentage rates and a student's learning style?

Howard Gardner's Multiple Intelligence inventory was used to determine the learning style because it is embedded in the state curriculum used for teaching the Kent School District Family and Consumer Sciences course. Table 4.3 summarizes the descriptive for each learning component accounting for the different student learning styles. The six different learning styles being considered are bodily-kinesthetic, interpersonal, musical, logical/mathematical, spatial/visual, and intrapersonal. Note that not all of Howard Gardner's multiple intelligences were represented in this study.

The most apparent result seen in the table was that students with a logical/mathematical learning style have the highest percentage rate for all components. On the other hand, students with a bodily-kinesthetic learning style had the lowest percentage rate for all components except discussions, for which they have the second lowest. Finally, students with an interpersonal or intrapersonal learning style tend to have moderate percentage rate for all components.

Now consider each component separately. For discussions and assessment, logical/mathematical learners participated the highest whereas bodily-kinesthetic and spatial/visual learners participated the least. Students with the three other learning styles had moderate participation. For group projects and individual assignments, logical/mathematical learners once again participated the best whereas bodily-kinesthetic learners participated the least. Students with the four other learning styles had moderate participation.

Table 4.3  
Descriptive Statistics: Learning Styles per Component

Components	Learning Styles	N	Mean	SD
Discussions	Bodily Kinesthetic	4	50.00	48.915
	Interpersonal	8	79.38	32.867
	Musical	5	63.20	44.740
	Logical/Mathematical	2	100.00	.000
	Spatial/Visual	5	46.40	36.025
	Intrapersonal	3	72.00	34.828
Assessment	Bodily Kinesthetic	4	41.50	34.588
	Interpersonal	9	72.11	27.715
	Musical	6	58.33	43.038
	Logical/Mathematical	2	100.00	.000
	Spatial/Visual	5	43.40	14.758
	Intrapersonal	3	83.33	16.503
Group Projects	Bodily Kinesthetic	4	56.25	42.696
	Interpersonal	8	83.38	19.376
	Musical	5	90.00	22.361
	Logical/Mathematical	2	100.00	.000
	Spatial/Visual	5	73.40	18.036
	Intrapersonal	3	75.00	25.000
Individual Assignments	Bodily Kinesthetic	4	54.75	31.742
	Interpersonal	9	83.78	18.680
	Musical	6	64.17	38.866
	Logical/Mathematical	2	100.00	.000
	Spatial/Visual	5	67.60	30.113
	Intrapersonal	3	82.00	16.093

The learning styles were represented by bodily-kinesthetic (4), interpersonal (9), intrapersonal (3) logical/mathematical (2), musical (6), and spatial/visual (5).

Logical/mathematical learning style participated with the highest rate amongst all four components, however there were only 2 students representing that learning style. Table 4.4 focused on the two learning styles with the most student representation, interpersonal and musical.

Table 4.4  
Frequency Distribution: Learning Styles per Component

Learning Style	Percentage Range	Discussions	Assessment	Group Project	Individual Assignments
Interpersonal	0-9	1	0	0	0
	10-19	0	0	0	0
	20-29	0	0	0	0
	30-39	0	2	0	0
	40-49	0	0	0	1
	50-59	0	1	1	0
	60-69	0	1	1	1
	70-79	0	0	2	2
	80-89	3	2	0	1
	90-99	2	0	0	0
	100	2	3	4	4
	NA	1	0	1	0
Musical	0-9	1	1	0	1
	10-19	0	1	0	0
	20-29	0	0	0	0
	30-39	1	0	0	0
	40-49	0	0	0	1
	50-59	0	1	1	1
	60-69	0	0	0	0
	70-79	0	0	0	0
	80-89	1	1	0	1
	90-99	0	0	0	0
	100	2	2	4	2
	NA	1	0	1	0

Overall, students with interpersonal and musical learning styles participated moderately higher than other learning styles. Students with interpersonal learning styles interacted with others effectively. This ability was detailed in an 83 mean, 100 median, and a mode of 100 for group projects requiring students to work with peers. Musical learning styles may have had a moderate participation rate because they were motivated by music. Students were able to listen to music while working online.



While the general trends were noted above for the participation rate of different course components across the six learning styles, a separate one-way analysis of variance (ANOVA) was performed on the data for each component to statistically test for differences. Table 4.5 displays the results. Notice that the significance value for each F test was significantly greater than 0.05. This means there is not sufficient evidence to suggest that student learning styles are associated with the achievement level within different course components. In other words, the means of the percentages earned by students in discussions, assessment, group projects, or individual assignments were not statistically different across different learning styles. Note that the extremely small sample size caused several assumptions for ANOVA to be suspected. Due to this, the ANOVA results may not be reliable. To improve reliability, a larger sample would need to be collected.

Table 4.5  
ANOVA: Students and Learning Styles per Components

Variables		SS	df	MS	F	Sig
Discussions	Between Groups	6824.421	5	1364.884	.944	.473
	Within Groups	30363.875	21	1445.899		
	Total	37188.296	26			
Assessment	Between Groups	8625.049	5	1725.010	1.944	.126
	Within Groups	20411.089	23	887.439		
	Total	29036.138	28			
Group Projects	Between Groups	3915.138	5	783.028	1.300	.302
	Within Groups	12647.825	21	602.277		
	Total	16562.963	26			
Individual Assignments	Between Groups	4671.109	5	934.222	1.227	.328
	Within Groups	17512.339	23	761.406		
	Total	22183.448	28			

In an attempt to overcome the distributional assumptions not being met, a separate Kruskal-Wallis one-way ANOVA was performed on the data for each component. This was a nonparametric alternative to one-way ANOVA. Table 4.6 displays the results. Notice that the

results are similar and have the same implications as those in the previous table. This table once again indicates that student learning style is not related to percentages earned by students in discussions, assessment, group projects, or individual assignments.

Table 4.6  
Kruskal-Wallis: Student Learning Styles per Component

Null Hypothesis	Sig.	Decision
Distribution of Discussions is the same across Categories of Multiple Intelligence.	.278	Retain the null hypothesis
Distribution of Assessment is the same across Categories of Multiple Intelligence.	.117	Retain the null hypothesis
Distribution of Group Projects is the same across Categories of Multiple Intelligence.	.351	Retain the null hypothesis
Distribution of Individual Assignments is the same across Categories of Multiple Intelligence.	.329	Retain the null hypothesis

The Kruskal-Wallis test was only proven if all k distributions were equal. In other words, all the significance levels must be below the set alpha level of .05. If this was the case, the Null hypothesis would be accepted. If there was an “odd man out” or at least one value lower than the significance level the null hypothesis would be rejected. The study results exhibited the null hypothesis was retained for all the significance levels were higher than the alpha. Since the null hypothesis was retained, the test concluded there was evidence that something is going to occur. The results indicated learning styles could and could not predict with confidence or evidence that it was associated with students’ participation rate within the four course components. There needs to be further studies or larger sample size to determine the results.

### Research Question 3

Do different learning styles influence student perceptions of course activities that provide opportunities for them to utilize prior knowledge to gain new concepts?

Due to the small sample size, the survey results were limited. One possible analysis was to use Fisher's Exact Test to analyze contingency tables and determine if there was any association between student responses to each question and student learning style. The benefit of using this test was that it is an exact test, which does not have any sample size requirements for it to be valid. However, even with exact tests, a reduced statistical power could result due to small sample size and it could be difficult to show significant results. Table 4.7 summarizes the results of Fisher's Exact Test for each question. Note that the questions have been re-coded to Q1 through Q25. The full questions can be found in Appendix D. The only question that had potential of being statistically significant association with student learning style is Q6: "I think critically about my own ideas". All questions had p-values greater than 0.05 which indicated no evidence of an association between any of the questions and student learning style. It was possible that almost no questions produced significant associations with student learning style because of an extremely small number of students in the data set. With such a small sample size, even significant associations may not be detected. Further studies warrant the claim to determine an association.

Table 4.7  
Fisher's Exact Test: Survey Questions Results

Question	P-Value	Question	P-Value
1	0.973	14	0.688
2	0.504	15	0.230
3	0.971	16	0.409
4	0.381	17	0.514
5	0.334	18	0.544
6	0.091	19	0.869
7	0.773	20	0.902
8	0.523	21	0.650
9	0.720	22	0.509
10	0.282	23	0.917
11	0.401	24	0.557
12	0.706	25	0.636
13	0.636		

The contingency table for Q6 versus student learning style is on the next page (Table 4.8). The rows represent the six different student learning styles and the columns represent the categories of the Likert scale responses to Q6. Note that there is no column for response category 1 because no students in the data set responded with a 1 for this question. There was potential of evidence to support students thinking critically about their own ideas, question 6. The students were reflecting on prior experiences for ideas.

The majority of learning styles perceived that they thought critically about their own ideas sometimes (3) and often (4). However, a higher number of students with interpersonal learning styles perceived they almost always (5) thought critically about their own ideas. Interpersonal learning styles also demonstrated a higher participation rate (mean 83, median 100, and Mode 100) within group projects. The higher participation in a component requiring collaboration would impact students' perception of thinking critically about their own ideas. A

person with the skills to effectively work with others would reflect on their thoughts and ideas while considering peer input. An interpersonal learning style normally assesses and discusses decisions with others.

Table 4.8  
Survey Question Six

Multiple Intelligence	2	3	4	5	Total
Bodily-Kinesthetic	0	3	1	0	4
Interpersonal	1	2	2	4	9
Musical	0	1	5	0	6
Logical/Mathematical	0	1	1	0	2
Spatial/Visual	0	4	1	0	5
Intrapersonal	0	0	2	1	3
Total	1	11	12	5	29
Fisher's exact = 0.091					

### Summary

Overall, the results determined that students participated more when given group projects, possibly due to accountability factors. Students with a logical/mathematical learning style participated more in all four components. There was no statistical evidence that learning styles could predict a student's participation rate in the various components of discussions, assessments, individual assignments and group projects nor determined students' perceptions of course activities to build new concepts based on prior knowledge.

## CHAPTER 5. DISCUSSION

The purpose of this chapter is to discuss the meaning of the findings. It will address practical implications, limitations, and recommendations for future research.

### Overview of the Study

The three themes within the study identified in the literature review in chapter two were constructivism theory, distance education/blended learning, and learning styles. The study explored an interrelationship between students' identified learning style and participation in four course components taught with constructivism pedagogy.

The research questions that directed this study were:

1. What is the rate of secondary family and consumer sciences student's participation within the different components (discussions, assessments, group projects, and individual assignments) of a blended course?
2. Is there a relationship between students' learning style and the participation rate within the different components of a blended course?
3. Do different learning styles influence student perceptions of course activities that provide opportunities for them to utilize prior knowledge to gain new concepts?

Data for the research questions were summarized using descriptive statistics, ANOVA, and Fisher's Exact Test.

### Discussion of Findings

#### *Question1. Overall Rate of Participation*

Question one focused in general how students participated in the different course components. The results found that students participated more in the group project component of the course than discussions, assessment and individual assignments. Possible explanations for

a higher participation rate with group projects could be the feelings of obligation, higher motivation, and collaborative thinking. Students felt obligated to participate in group projects because other students were depending on them thus increasing their own responsibility. Group members would put pressure on other students to complete the work rather than a teacher trying to motivate students. There were more individuals to share ideas and concepts.

### *Question 2. Rate of Participation per Learning Style*

Question two classified the participation rate for the components by Howard Gardner's Multiple Intelligences. The results found that students with the logical/mathematical learning style had the highest participation rate compared to other learning styles. The results held no statistical significance. A person's learning style would not determine they would have a high or low participation rate for the course components. Blended learning education has potential to promote participation within an effective learning environment no matter the learning style.

As noted in the literature review, students whose strong learning style was bodily kinesthetic learned best by processing knowledge through bodily sensations, creative dramatics, and dance. Students with this learning style were good at physical activities and hands on projects. Those with interpersonal learning styles learned best by sharing, comparing, relating, cooperating, interviewing, and teaching. Students with an interpersonal learning style understand people, lead others, had superior organization skills, effective communication skills, the ability to manipulate and mediate conflicts. Those with the musical learning style learned best through rhythm, melody, patterned sounds, songs, and functioned better with background music. Students with this learning style are good at picking up sounds, remembering melodies, noticing pitches/rhythms, and keeping time. People who learn best by working with numbers and abstract patterns, classifying, and categorizing were deemed to have a logical/mathematical

learning style. They were good at math, science, reasoning, logic, and problem solving. A student with spatial/visual learning style learned through working with images, spatial organization, use of imagination, and drawings. Their strength was in visual arts, imagining things, sensing changes, mazes and puzzles, and reading maps or charts. Those with intrapersonal learning styles worked alone, worked intuitively, prefer individual projects, learned through self paced instruction, and preferred to have their own space. They were good at self understanding, focusing inward on feelings and dreams, pursuing goals, following intuition, and being unique (Washington State Teachers Recruiting Future Teacher Task Force, 2002). The results determined the style students' process information would not determine achievement levels. The teacher focused on the learner as individuals and provided a variety of educational opportunities.

### *Question 3. Perceptions of Constructivism Theory per Learning Style*

Question three focused on the students' perception of the use of a constructivism theory approach to the course. The results found that students think about their own ideas. This finding related to the students higher participation rate within group projects. Group projects required the students to think critically about the ideas and concepts shared. The student would reflect on their prior knowledge and experiences while in discussion with group members.

### **Practical Implications**

It is common knowledge that people learn and process information in different ways. With a class full of individuals, it would be essential to differentiate learning and instruction. The study explored the interrelationship between learning styles and participation rates for assessments, individual assignments, group projects, and discussion. There was no relationship



found. A person's learning style would not determine whether they would participate in any of the different course components thus reinforcing the need to provide students with a variety of learning opportunities and instruction that would motivate all students to learn.

### Limitations of the Study

Some limitations that made an impact on the study were the sample size and data coding. A small sample size was used creating a challenge with data analysis. A small sample size hindered statistical significance and what type of testing could be utilized. Another factor relating to the small sample size was the number of learning style categories. Howard Gardner's Multiple Intelligences inventory was used generating eight categories. With the small sample size divided amongst the eight categories, not all learning styles were represented with a significant figure. The researcher implemented this inventory because it was part of the state curriculum. Other post secondary level studies on distance learning have used Kolb's Learning Style Inventory that categorizes into four different types of learners.

The data coding focused on quantity of participation not on the quality of work. A student who may have failed a component was coded the same as a student who excelled at the same requirement. The study observed only attempts as the participation rate not skills or comprehension. The study did not focus on whether or not the student was able to process the information taught.

### Recommendations for Future Research

This exploratory quantitative study was designed to examine a dilemma before it even exists. As technology becomes more popular in the secondary schools, there was an increase in the need to research online education at that level. There was an overabundance of studies focusing on adult or college level education. Research was needed for endorsing change in the

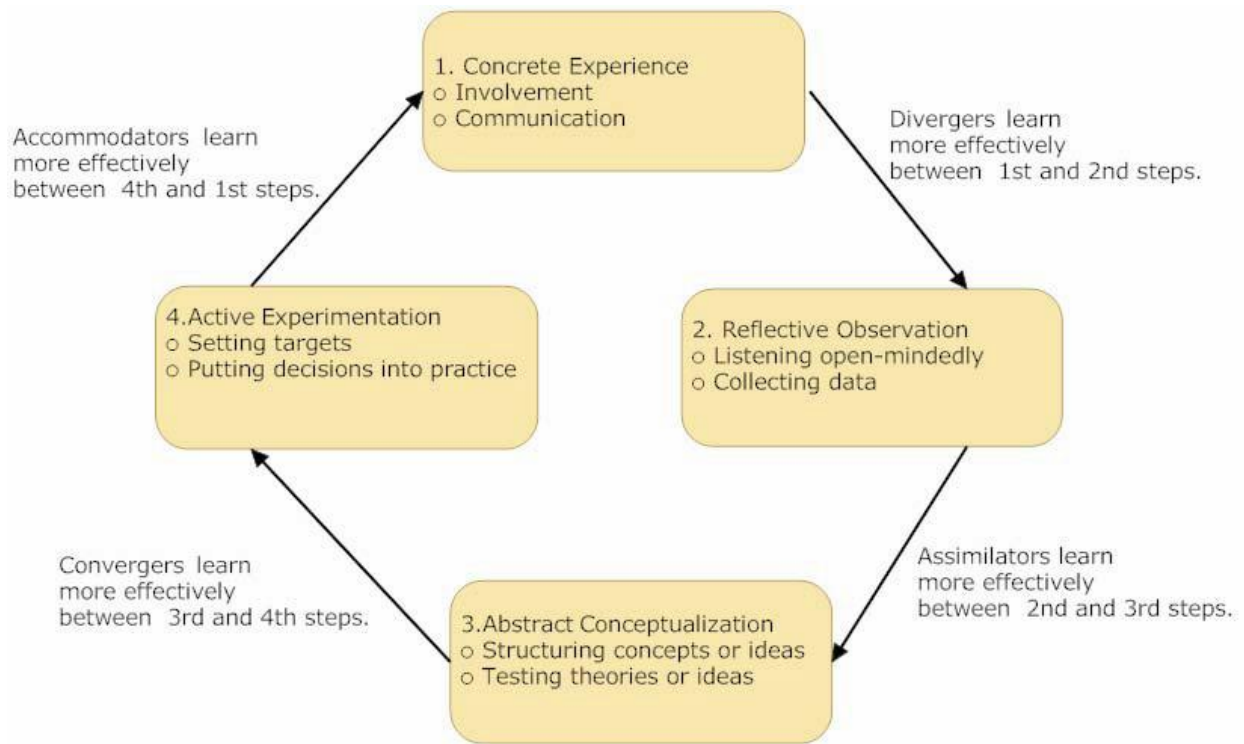
secondary education system. When a small sample size is used for a study, the Kolb's Learning Style Inventory is better suited. The Kolb's inventory sorted students into four learning style categories that pertain more closely to online education.

Kolb's Learning Style Inventory was first established in 1976 but later revised in 1985 (Yilmaz-Soylu & Akkoyunlu, 2009). Responses to the inventory questions were organized into two bipolar concepts. These concepts were Concrete Experience (CE) vs Reflective Observation (RO) and Abstract Conceptualization (AC) vs Active Experimentation (AE). Response scores were summed providing a total for CE, AC, RO, and AE. The organization CE minus RO and perception AC minus CE were calculated to determine an individual's learning style (Yilmaz-Soylu & Akkoyunlu, 2009). The interaction categorized to Accommodator, Diverger, Assimilator, and Converger. Learning styles could change over time (see figure 5.1) (Yilmaz-Soylu & Akkoyunlu, 2009).

Accommodators are activist. They learn best when fully engaged. Accommodator learners do well with case studies and simulations because of an intuitive problem solving ability. Convergers identify with practical applications. These learners prefer technical tasks over social issues. They learn best through field work. Assimilators work well with ideas and are concise and logical preferring lecture and essay formats of education. Divergers are reflective learners. These learners enjoy observations and making sense of experiences. They are imaginative and hold other's thoughts and feelings in high regard (Lowy & Hood, 2004). The Kolb's Learning Inventory was a more concise match to the various course components in this study. Assumptions could be made that an assimilator learner may do well or participate more with individual assignment and divergers would excel in discussions compared to those with a converger learning style.

Figure 5.1.  
Learning Styles in Kolb's Learning Cycle

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Much research used learning styles as a variable affecting the final outcome (final score or grade) or perceptions/attitudes of a course. There was limited research in using learning styles as a focus on participation rates for online course components and at the secondary education level. Research should also focus on the quality of participation. This would better show that different learning styles have unique ways of processing information which in turn affects participation. Further studies should break down the components of courses to determine why or why not those learning styles have a positive or negative effect. Research should also include techniques for motivating the unmotivated students.

### Conclusion

This study brought insight that any learning style could have a high participation rate in the assessment, individual assignments, discussions, and group project components of a blended Family and Consumer Sciences secondary school Exploring Childhood course. It was determined that all students would participate more within group projects. The study determined that the focus of online blended course components should remain on students as individuals not as different particular learning styles.

# APPENDIX A. RUBRIC FOR EVALUATING ONLINE COURSES

Kent School District  
Instructional Services

## Rubric for evaluating online courses

**Vendor:** \_\_\_\_\_ **Evaluator:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Course Title:** \_\_\_\_\_ **Course Number:** \_\_\_\_\_

**Possible Equivalent KSD Course Title:** \_\_\_\_\_

Part I: Required Elements		Yes
Courses are accredited by a nationally- or state-recognized academic accrediting agency		<input type="checkbox"/>
Aligns with the course goals and outcomes and vision of the Kent School District		<input type="checkbox"/>
Aligns with <a href="#">GLEs</a> , National Standards, IB/ <a href="#">AP</a> requirements		<input type="checkbox"/>
Vetting process shows positive results		<input type="checkbox"/>

### Curriculum as a stand alone

Part II: Curriculum				
Course Design Principles	1	2	3	4
Comments:	<input type="checkbox"/> <b>Course design is not standards based</b> <ul style="list-style-type: none"><li>• Focal points of learning are not clear</li></ul>	<input type="checkbox"/> <b>Course design is topical but based upon standards</b> <ul style="list-style-type: none"><li>• Courses address important skills</li><li>• Courses are structured around important topics</li><li>• Courses include little higher level thinking</li></ul>	<input type="checkbox"/> <b>Course is designed around some curriculum development best-practices</b> <ul style="list-style-type: none"><li>• Based upon some elements of constructivism</li><li>• Communication and conversation are key elements in activities</li><li>• Teaches skills and concepts students will need in their future</li></ul>	<input type="checkbox"/> <b>Course is designed using curriculum development best-practices and innovations</b> <ul style="list-style-type: none"><li>• Based upon a constructivist learning model</li><li>• Clearly demonstrates a structure that is based upon Understanding by Design principles</li><li>• Determines/assesses students' prior knowledge for the purpose of differentiation</li><li>• Substantive conversation is a key element in learning</li></ul>

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			<ul style="list-style-type: none"> <li>• Courses have some open-ended questions and high-level thinking elements</li> <li>• Courses are structured around big ideas and essential learning outcomes</li> <li>• Courses have collaborative elements</li> </ul>	<ul style="list-style-type: none"> <li>• Course is designed around the development of deep knowledge</li> <li>• Course is designed to prepare students for their future</li> <li>• Authentic application is prevalent throughout</li> <li>• Courses are collaborative</li> </ul>	
Comments	<input type="checkbox"/> <b>No accessibility features or opportunity to customize for special needs</b>	<input type="checkbox"/> <b>Teachers can add elements to improve accessibility</b> <ul style="list-style-type: none"> <li>• Teachers can add intervention material</li> <li>• Provisions are made for students with special needs</li> </ul>	<input type="checkbox"/> <b>Includes accessibility features and allows user to add elements</b> <ul style="list-style-type: none"> <li>• Supports some ELL</li> <li>• Teachers can add intervention material</li> <li>• Provisions are made for students with special needs</li> </ul>	<input type="checkbox"/> <b>Includes a wide range of accessibility features</b> <ul style="list-style-type: none"> <li>• Supports ELL and various reading levels</li> <li>• Teacher and student sites have intervention plans for student failure</li> <li>• Provisions are made for students with special needs</li> </ul>	
<b>Assessment</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	
Comments	<input type="checkbox"/> <b>Assessment limited to short answer, multiple-choice and true-false.</b>	<input type="checkbox"/> <b>Assessment is entirely formal and exam based.</b> <ul style="list-style-type: none"> <li>• Focuses on recall of material</li> <li>• Assessments are varied but do not demand critical thinking</li> </ul>	<input type="checkbox"/> <b>Assessment is primarily formal and matches outcomes.</b> <ul style="list-style-type: none"> <li>• It includes at least one performance or project assessment.</li> <li>• Self-assessment throughout</li> <li>• Measures match outcomes</li> <li>• Measures process and content knowledge</li> </ul>	<input type="checkbox"/> <b>Includes a variety of informal and formal assessments.</b> <ul style="list-style-type: none"> <li>• Self-assessment throughout</li> <li>• Measures reflect learning</li> <li>• Measures match outcomes</li> <li>• Measures process and content knowledge</li> <li>• Assessment system compels student to do reading</li> <li>• Students cannot skip sections without penalty</li> </ul>	
Comments	<input type="checkbox"/> <b>Scope, sequence, and rigor of courses are not appropriate</b> <ul style="list-style-type: none"> <li>• Will not prepare student for KSD end-of-course assessments</li> </ul>	<input type="checkbox"/> <b>Scope and sequence of courses are appropriate but courses lack rigor</b> <ul style="list-style-type: none"> <li>• Course syllabi align with KSD face to face courses</li> <li>• Assessments and learning activities do not require critical thinking</li> </ul>	<input type="checkbox"/> <b>The scope, sequence, and rigor of courses align with KSD curriculum standards</b> <ul style="list-style-type: none"> <li>• Courses will prepare students to pass end-of-course assessments</li> </ul>	<input type="checkbox"/> <b>Scope, sequence, and rigor of courses match KSD curriculum standards and promote new learning</b> <ul style="list-style-type: none"> <li>• Courses will prepare students for success on the KSD end-of-course assessments</li> <li>• Content and activities extend beyond the grade level and end-of-course expectations</li> <li>• Content, activities, and assessments demand critical and creative thought</li> <li>• Content prepares students for further study of subject</li> </ul>	

Comments	<input type="checkbox"/> Tasks are at knowledge and understanding level and may be repetitive, unrelated, or inauthentic which may be related to the discipline.	<input type="checkbox"/> Tasks ask students to retrieve or reproduce isolated fragments of knowledge or to repeatedly apply previously learned procedures related to the discipline. <ul style="list-style-type: none"> <li>• Repetition of prior learning</li> </ul>	<input type="checkbox"/> Tasks ask students to organize, synthesize, interpret, explain, or evaluate information in addressing a concept, problem or issue considered central to the discipline. <ul style="list-style-type: none"> <li>• Requires interpretation of nuances of a topic</li> </ul>	<input type="checkbox"/> Tasks ask students to organize, synthesize, interpret, explain, or evaluate complex information in addressing a concept, problem or issue considered central to the discipline. <ul style="list-style-type: none"> <li>• Requires interpretation of nuances of a topic</li> </ul>
Comments	<input type="checkbox"/> Tasks require mere repetition of information presented	<input type="checkbox"/> Tasks ask students to focus on one solution, strategy, or perspective as they address a concept, problem, or issue.	<input type="checkbox"/> Tasks ask students to consider alternative solutions, strategies, perspectives, or points of view as they address a concept, problem, or issue.	<input type="checkbox"/> Tasks ask students to generate alternative solutions, strategies, perspectives, or points of view as they address a concept, problem, or issue. <ul style="list-style-type: none"> <li>• Prompts through explicit presentation of the alternatives or an activity that cannot be successfully completed without examination of alternatives implicit in the work.</li> <li>• May include listing or prioritizing alternatives</li> </ul>
<b>Instructional Strategies</b> Comments:	<input type="checkbox"/> No feedback is offered and no connections are made to student and the world	<input type="checkbox"/> There are a small number of feedback opportunities. <ul style="list-style-type: none"> <li>• Some of the materials are relevant but most do not connect to world</li> <li>• Students receive some feedback throughout the course</li> </ul>	<input type="checkbox"/> There are a few feedback opportunities and self-assessments. <ul style="list-style-type: none"> <li>• Some assignments connect to careers and future.</li> <li>• Interaction between teacher and student is built into a portion of the course.</li> </ul>	<input type="checkbox"/> Feedback and interaction are important elements of the course. Topics are presented as connected to the world. <ul style="list-style-type: none"> <li>• Multiple self-assessment and feedback opportunities</li> <li>• Relevant and meaningful materials and discussion topics</li> <li>• Interaction between teacher and student and student-to-student guaranteed</li> </ul>
<b>Instructional Strategies</b> Comments:	<input type="checkbox"/> Material is essentially text with follow up questions. <ul style="list-style-type: none"> <li>• No essential questions (or guiding principles) are apparent</li> </ul>	<input type="checkbox"/> Knowledge is presented in text, video and online demonstration format. <ul style="list-style-type: none"> <li>• Essential questions are limited</li> </ul>	<input type="checkbox"/> Curriculum has elements of inquiry and scaffolding. More than one type of activity is offered. <ul style="list-style-type: none"> <li>• Uses some essential questions</li> <li>• Scaffolding exists</li> <li>• Two or three different types of activities are incorporated</li> </ul>	<input type="checkbox"/> Curriculum drives higher level thinking. Experiences are designed to both support and challenge. Material is created for different learning styles. <ul style="list-style-type: none"> <li>• Effective use of Essential Questions</li> <li>• Provides scaffolding to help students process and learn</li> <li>• Provides tutorials</li> <li>• Provides a variety of learning experiences</li> </ul>

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	<ul style="list-style-type: none"><li>Questions are primarily multiple choice and True/False</li></ul>	<ul style="list-style-type: none"><li>Little scaffolding occurs</li><li>Activities are limited to reading, video, and some online</li><li>Very few open-ended questions are presented</li></ul>	<ul style="list-style-type: none"><li>Teaches problem solving and critical thinking</li><li>Allows for student creativity</li><li>Includes open-ended tasks</li><li>Includes push-away tasks (might want to use offline task?)</li><li>Uses visuals and simulations throughout</li><li>Based on Constructivist methodology</li></ul>	
Interactivity Comments:	<input type="checkbox"/> Few interactive elements and participation is not required.	<input type="checkbox"/> Simulations and videos are used sparingly and there are no offline activities. <ul style="list-style-type: none"><li>Discussion is limited</li><li>Only a small amount of participation is required</li></ul>	<input type="checkbox"/> Provides interactive elements throughout courses <ul style="list-style-type: none"><li>Online and offline activities are available to the student</li><li>Simulations and online manipulatives are widely used</li><li>Variety of threaded discussion</li><li>Participation is required</li><li>Synchronous and asynchronous capabilities</li></ul>	
Resources	1	2	3	4
Level of Engagement Comments:	<input type="checkbox"/> Courses lack interesting elements.	<input type="checkbox"/> The courses can be supplemented to be interesting and engaging. <ul style="list-style-type: none"><li>Some reading is engaging and age appropriate</li></ul>	<input type="checkbox"/> The courses have interesting and engaging elements. <ul style="list-style-type: none"><li>Most reading is engaging and age appropriate</li><li>Requires student interaction with class peers</li><li>Some opportunity to collaborate</li><li>Material is somewhat interesting but humor is hokey, not age appropriate</li></ul>	<input type="checkbox"/> Overall the courses are interesting and engaging. <ul style="list-style-type: none"><li>Reading is engaging and age appropriate</li><li>Requires student interaction with class peers and/or worldwide</li><li>Course is designed to take advantage of the unique applications for online delivery</li><li>Opportunities to collaborate</li><li>Students produce meaningful products</li><li>Uses authentic resources</li><li>Frequently updates links</li><li>Material is age appropriate</li><li>Establishes real-world connections</li></ul>



Part III: Site Design and Management Tools and Learning Tools				
Student Site	1	2	3	4
<b>Student Site Design</b> Comments:	<input type="checkbox"/> This site is difficult to use. <ul style="list-style-type: none"> <li>Broken links</li> <li>Navigation difficult</li> <li>Distracting content</li> <li>Changes without notice</li> </ul>	<input type="checkbox"/> Site is functional but has some problems. <ul style="list-style-type: none"> <li>Somewhat unclear navigation but usable</li> <li>Changes are rare but not communicated well</li> <li>Requires multiple clicks</li> </ul>	<input type="checkbox"/> Site is functional and easy to understand. <ul style="list-style-type: none"> <li>No broken links</li> <li>Somewhat consistent look and navigation</li> <li>Navigation is linear but does not lead the student to close program or become lost</li> <li>Changes are communicated clearly</li> </ul>	<input type="checkbox"/> Site looks good, works well, is intuitive to use, has clean navigation, and is up to date. <ul style="list-style-type: none"> <li>No broken links</li> <li>Uncluttered, simple and attractive</li> <li>Clear and consistent navigation with multiple ways to get back and forth</li> <li>Loads in reasonable time</li> <li>Most students can navigate with no training</li> <li>Future changes are communicated clearly and in a timely manner</li> <li>Uses visual clues to emphasize information and organize ideas</li> <li>Screen displays text with no scrolling</li> </ul>
<b>2. Ease of Use for Student</b> Comments:	<input type="checkbox"/> Course material and tools will be difficult to use for many students. <ul style="list-style-type: none"> <li>Reading level is inappropriate</li> <li>Communication tools are cumbersome</li> <li>Submitting documents is difficult</li> <li>Students must request grade information</li> <li>Syllabi are difficult to access</li> <li>Organization of materials is awkward</li> <li>Course timelines and requirements are difficult to interpret</li> </ul>	<input type="checkbox"/> Most students will be able to use tools and access material with ample assistance. <ul style="list-style-type: none"> <li>Course expectations are difficult to locate</li> <li>Reading level is close to grade level but inconsistent</li> <li>Student tools exist but take several clicks to access</li> <li>Documents can be submitted and distributed but do not allow for teacher comments on document</li> <li>Tech requirements are vague</li> <li>Course timelines and requirements are posted but difficult to interpret</li> </ul>	<input type="checkbox"/> A majority of students will be able to use tools and access material with some assistance. <ul style="list-style-type: none"> <li>Organization of learning materials needs is difficult to understand</li> <li>Communication tools include email and a secure discussion board</li> <li>Documents can be submitted, returned with comments</li> <li>Students and parents have access to secure grade info but have to take action to retrieve this info</li> <li>Students are offered training in the use of site and tools</li> <li>Learning goals are clearly defined for student</li> <li>Syllabi are available for review but written in "teacher language"</li> </ul>	<input type="checkbox"/> Students with varying abilities will be able to use tools and access material with little assistance. <ul style="list-style-type: none"> <li>Course expectations, requirements, and timelines are clear</li> <li>Student tools are clearly described and easy to access</li> <li>Reading level is at level or slightly below</li> <li>Visual and audio clues accompany reading</li> <li>Technical requirements and minimum competencies for student access are clearly posted</li> <li>Syllabi are available for review and are written as to be understood by parents and students</li> <li>Communication tools include intra email, secure discussion board and electronic blackboard tools which are secure and easy to use</li> <li>Documents can be easily submitted, returned with comments, shared, etc.</li> <li>Student and parent have access to secure grade and achievement info and this data is "pushed" to the student portal</li> <li>Includes a server-based workspace</li> <li>Includes tutorials and documentation</li> </ul>

<b>Student Academic Support</b> Comments:	<input type="checkbox"/> No content area or academic support	<input type="checkbox"/> Content and academic support is offered via email but is very limited in hours.	<input type="checkbox"/> Content and academic support is available from teachers via email and phone. <ul style="list-style-type: none"> <li>Students have access to a glossary and other reference materials</li> <li>Strategies for success in an online class are listed</li> </ul>	<input type="checkbox"/> Content and academic support is available from content area teachers on a regular basis via email, chat, and phone. <ul style="list-style-type: none"> <li>Students have access to a glossary and other reference materials that can be customized by users</li> <li>Strategies for success in an online class are listed</li> </ul>
<b>Student Technical Support</b> Comments:	<input type="checkbox"/> No technical support	<input type="checkbox"/> Technical support is offered via email but is very limited in hours.	<input type="checkbox"/> Technical support is available from teachers via email and phone on a regular basis	<input type="checkbox"/> Technical support is available 24/7
<b>Teacher Support</b> Comments:	<input type="checkbox"/> No support or training	<input type="checkbox"/> Does not offer staff development but has documentation and support materials	<input type="checkbox"/> Offers some staff development and some support materials.	<input type="checkbox"/> Offers a wide range of staff development, teacher support materials, and online supports.
<b>Content options</b> Comments:	<input type="checkbox"/> Cannot customize or add content	<input type="checkbox"/> Additional content can be added but there are no customization features	<input type="checkbox"/> Content can be added and edited on a limited basis	<input type="checkbox"/> Allows a high level of customization and content management
<b>Quality Control</b> Comments:	<input type="checkbox"/> No quality control measures are in place.	<input type="checkbox"/> Quality control is limited. <ul style="list-style-type: none"> <li>Courses may not be completely field tested</li> <li>Some updates are made</li> </ul>	<input type="checkbox"/> Quality control is adequate. <ul style="list-style-type: none"> <li>Courses are field tested</li> <li>Vendor updates every few years</li> <li>Courses are only reviewed as necessary</li> </ul>	<input type="checkbox"/> Quality control is extensive. <ul style="list-style-type: none"> <li>Courses have been previously field-tested and revised if necessary</li> <li>Vendor improves and updates materials as needed</li> <li>Quality control procedures are in place for both student participation/behavior and course delivery/quality</li> <li>Instructor quality is monitored</li> </ul>
<b>Course options</b> Comments:	<input type="checkbox"/> Few options	<input type="checkbox"/> Offers choices but is missing some of the key courses we are seeking	<input type="checkbox"/> Offers a large choice of core content courses with some customization choices	<input type="checkbox"/> Offers a wide range of courses not typically available <ul style="list-style-type: none"> <li>Both AP/IB and intervention courses</li> <li>Curriculum is available in modules</li> <li>Offers all core content courses as well as electives</li> </ul>

Management Tools	1	2	3	4
<b>Student Information System</b> Comments:	<input type="checkbox"/> <b>Management system lacks important elements.</b> <ul style="list-style-type: none"> <li>• Not user-friendly</li> <li>• Not customizable</li> <li>• No verification of participation is required</li> </ul>	<input type="checkbox"/> <b>Provides a management system that will need to be supplemented for adequate monitoring.</b> <ul style="list-style-type: none"> <li>• Cumbersome but adequate</li> <li>• Schools can customize parts of grade book</li> <li>• Verification of student participation is dependent upon teacher</li> </ul>	<input type="checkbox"/> <b>Provides an adequate management system that takes a minimal amount of additional work for instructors.</b> <ul style="list-style-type: none"> <li>• Easy to use with some orientation</li> <li>• Individual teachers can customize parts of grade book</li> <li>• Student participation data can be monitored</li> <li>• Some reports are available</li> </ul>	<input type="checkbox"/> <b>Provides a rich and customizable management system that does not add significantly to the workload of the instructor.</b> <ul style="list-style-type: none"> <li>• Easy to use</li> <li>• Customizable</li> <li>• Assessment and grading are integrated (rarely have to enter same data more than once)</li> <li>• Verification of student participation and identification are in place</li> <li>• A wide range of reports are available and easy to access</li> <li>• Student guardian can access student information</li> <li>• Easily imports and exports student data</li> </ul>
<b>Assessment Tools</b> Comments:	<input type="checkbox"/> <b>Assessment tools are not useful.</b> <ul style="list-style-type: none"> <li>• Assessments cannot be differentiated for classes or students</li> <li>• Assessments are limited and not customizable</li> </ul>	<input type="checkbox"/> <b>Assessment tools are available but limited.</b> <ul style="list-style-type: none"> <li>• Assessments cannot be differentiated for individual students</li> <li>• Assessments cannot be changed but there is choice of assessments</li> <li>• Limited assessment and question types</li> <li>• Reports are available but limited</li> </ul>	<input type="checkbox"/> <b>Assessment tools are somewhat easy to use and offer a range of measures.</b> <ul style="list-style-type: none"> <li>• Electronically graded assignments are entered into grade book with a few extra steps</li> <li>• Assessments cannot be differentiated for student but students can be assigned different assessments</li> <li>• Assessments can be somewhat customized</li> <li>• A number of reports are available</li> <li>• Process for retaking a test is available</li> </ul>	<input type="checkbox"/> <b>Assessment tools are easy to use, flexible, offer a range of measures, and can be differentiated.</b> <ul style="list-style-type: none"> <li>• Many assessments can be graded electronically and offer immediate feedback</li> <li>• Electronically graded assignments are entered into grade book directly with no extra steps</li> <li>• Can be differentiated for students</li> <li>• Can be significantly customized</li> <li>• Assessments can be locked per individual students</li> <li>• Tracks number of attempts, time, hints requested, etc.</li> <li>• Assessments include essay and performance tasks</li> <li>• Teachers have a menu of formative and summative assessment options</li> <li>• District can add their own assessments (like EOC)</li> <li>• A number of reports are available with the option of customizing</li> <li>• Students can receive feedback from returned assessments</li> <li>• Process for retaking a test is controlled by teacher</li> </ul>

<b>User Management Control</b> Comments:	<input type="checkbox"/> Little user control for teacher	<input type="checkbox"/> Teacher tools are present but limited. <ul style="list-style-type: none"> <li>Control of communication is difficult but possible</li> </ul>	<input type="checkbox"/> Teacher tools give teacher some control over work flow. <ul style="list-style-type: none"> <li>Teacher can monitor most discussions</li> <li>Teacher can change some of the course material</li> <li>Some content can be differentiated</li> </ul>	<input type="checkbox"/> Teacher tools give teacher control over communication and work flow. <ul style="list-style-type: none"> <li>Teachers can easily post messages, etc.</li> <li>Teacher controls and monitors discussion and communication flow</li> <li>Teachers can change assignments, unit order, add material easily</li> <li>Teacher can manage groups and users</li> <li>Content can be differentiated for students</li> </ul>
<b>Monitoring</b> Comments:	<input type="checkbox"/> No discussion of monitoring appropriate use or checking validity	<input type="checkbox"/> No vendor monitoring, but teachers are instructed in monitoring strategies	<input type="checkbox"/> Partial monitoring of appropriate use <ul style="list-style-type: none"> <li>Teachers have training in monitoring student discussions, content, and appropriate use</li> <li>Students agree to appropriate use rules</li> </ul>	<input type="checkbox"/> Continuous monitoring and immediate reporting to KSD of appropriate technology use <ul style="list-style-type: none"> <li>Automated content controls are in place</li> <li>Integrates methods for checking validity and authenticating identity</li> <li>Students are aware of appropriate use and agree to policy</li> </ul>

### Recommendation

This course is equivalent to KSD Course Number

Course Name

Comments:

This course is not equivalent to an existing KSD Course.

Comments:

3/24/2008

## APPENDIX B. WSTRFT HOWARD GARDNER'S MULTIPLE INTELLIGENCE

## Multiple Intelligence Inventory

### Student Handout

Name: \_\_\_\_\_

Rank each statement with **1** for lowest to **5** for highest based, on how true it is for you. Then total each category.

### VERBAL/LINGUISTIC

I like to convince others and play with words. \_\_\_\_\_

I like to play Scrabble and other word games. \_\_\_\_\_

I like to tell jokes and tell stories. \_\_\_\_\_

I like poetry, puns, and rhymes. \_\_\_\_\_

I like to write and it comes easy to me. \_\_\_\_\_

I have a good memory when I hear things. \_\_\_\_\_

**TOTAL** \_\_\_\_\_



### LOGICAL/MATHEMATICAL

I enjoy thinking things out and asking BIG questions. \_\_\_\_\_

I like to play strategy games like chess, Risk, Stratego, etc. \_\_\_\_\_

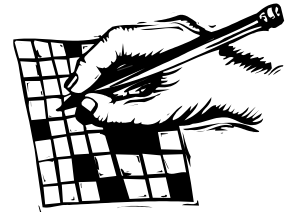
I can calculate math problems in my mind. \_\_\_\_\_

I can use the computer and learned how by myself. \_\_\_\_\_

I like to do puzzles and look for patterns. \_\_\_\_\_

I like things to be in order. \_\_\_\_\_

**TOTAL** \_\_\_\_\_



### SPATIAL/VISUAL

I enjoy creating products using design and layouts. \_\_\_\_\_

I can picture things in my mind without having to write it down. \_\_\_\_\_

I can recreate different viewing angles of an object. \_\_\_\_\_

I can use a map, and I like to use graphs. \_\_\_\_\_

I like art and things that are balanced in art. \_\_\_\_\_

I think back in my memory through pictures. \_\_\_\_\_

**TOTAL** \_\_\_\_\_



## MUSICAL

I use music to relax or to help me to think. \_\_\_\_\_  
 I can compose tunes and/or silly songs. \_\_\_\_\_  
 I can gather meaning and importance from music. \_\_\_\_\_  
 Composing music comes naturally to me. \_\_\_\_\_  
 I can "hear" melodies in my mind and I move to music. \_\_\_\_\_  
 I NEED music on all the time. \_\_\_\_\_



**TOTAL** \_\_\_\_\_

## BODILY/KINESTHETIC

I enjoy activities like dancing, swimming, biking, skating, etc. \_\_\_\_\_  
 I use small objects as part of a hobby and like to take things apart. \_\_\_\_\_  
 I want to mimic others and imitate them very well. \_\_\_\_\_  
 I can use my body and face skillfully for drama. \_\_\_\_\_  
 I am accurate in my timing while involved in a sport. \_\_\_\_\_  
 I need to change positions a lot when sitting. \_\_\_\_\_



**TOTAL** \_\_\_\_\_

## INTRAPERSONAL

I can detect and express feelings in myself. \_\_\_\_\_  
 I enjoy performing tasks and other activities by myself. \_\_\_\_\_  
 I laugh at my own mistakes. \_\_\_\_\_  
 I prefer to work by myself. \_\_\_\_\_  
 I sometimes do things differently than everyone else. \_\_\_\_\_  
 I care deeply about my own self. \_\_\_\_\_



**TOTAL** \_\_\_\_\_

## INTERPERSONAL

- I sometimes touch others when I talk to them. \_\_\_\_\_
- I usually can tell about others without them telling me things. \_\_\_\_\_
- I can correctly judge a social situation and make adjustments. \_\_\_\_\_
- I have many friends and am a leader. \_\_\_\_\_
- I enjoy performing tasks with others and like team sports. \_\_\_\_\_
- I care deeply about others. \_\_\_\_\_



**TOTAL** \_\_\_\_\_

## NATURALIST

- I am aware of and concerned about the environmental impact of products. \_\_\_\_\_
- I am interested in natural events such as weather patterns and the Greenhouse Effect. \_\_\_\_\_
- I support efforts to protect endangered species and wilderness areas. \_\_\_\_\_
- I have an ability to identify plants and animals. \_\_\_\_\_
- I enjoy being outdoors. \_\_\_\_\_
- I support businesses and organizations that are proactive in efforts to protect our environment (Hard Rock Café's "Save the Planet Program," Body Works, Ben and Jerry's Ice Cream, "The Grateful Dead"). \_\_\_\_\_



**TOTAL** \_\_\_\_\_

## APPENDIX C. HOWARD GARDNER'S MULTIPLE INTELLIGENCE FROM BUSINESSBALLS.COM

### Multiple Intelligences Test - based on Howard Gardner's MI Model

more info at  
[businessballs.com](http://businessballs.com)

Score the statements: 1 = Mostly Disagree, 2 = Slightly Disagree, 3 = Slightly Agree, 4 = Mostly Agree

Adults over 16 complete all questions. Young people between 8-16 answer red questions only.

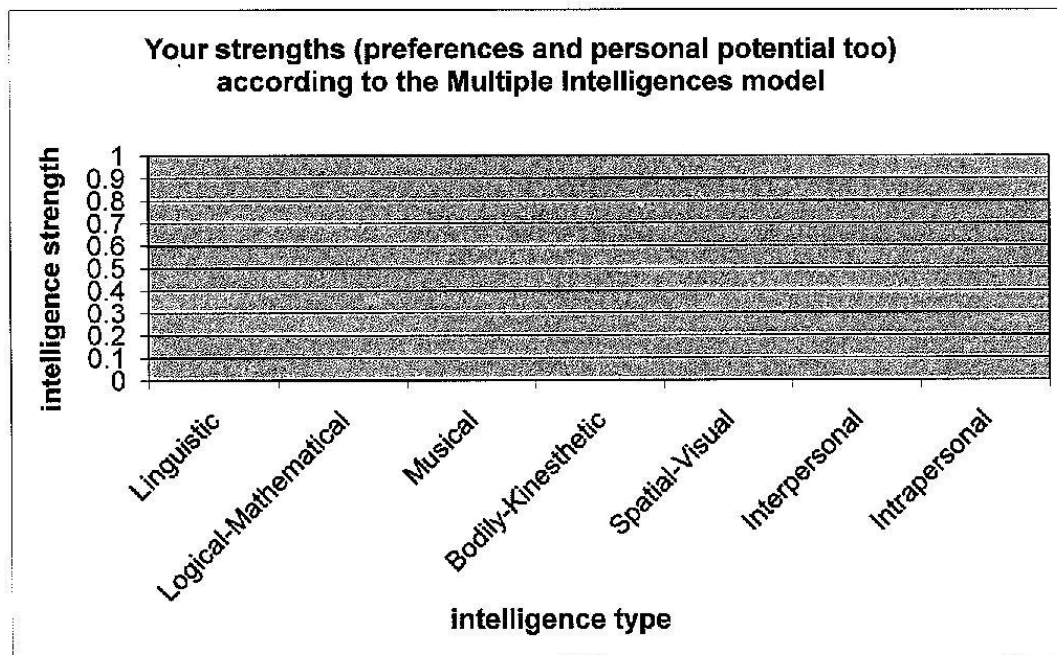
Statement	Score
I like to learn more about myself	
I can play a musical instrument	
I find it easiest to solve problems when I am doing something physical	
I often have a song or piece of music in my head	
I find budgeting and managing my money easy	
I find it easy to make up stories	
I have always been very co-ordinated	
When talking to someone, I tend to listen to the words they use not just what they mean	
I enjoy cross words, word searches or other word puzzles	
I don't like ambiguity, I like things to be clear	
I enjoy logic puzzles such as 'sudoku'	
I like to meditate	
Music is very important to me	
I am a convincing liar	
I play a sport or dance	
I am very interested in psychometrics (personality testing) and IQ tests	
People behaving irrationally annoy me	
I find that the music that appeals to me is often based on how I feel emotionally	
I am a very social person and like being with other people	
I like to be systematic and thorough	
I find graphs and charts easy to understand	
I can throw things well - darts, skimming pebbles, frisbees, etc	
I find it easy to remember quotes or phrases	
I can always recognise places that I have been before, even when I was very young	
I enjoy a wide variety of musical styles	
When I am concentrating I tend to doodle	
I could manipulate people if I choose to	
I can predict my feelings and behaviours in certain situations fairly accurately	
I find mental arithmetic easy	
I can identify most sounds without seeing what causes them	
At school one of my favourite subjects is / was English	
I like to think through a problem carefully, considering all the consequences	
I enjoy debates and discussions	
I love adrenaline sports and scary rides	
I enjoy individual sports best	
I care about how those around me feel	
My house is full of pictures and photographs	
I enjoy and am good at making things - I'm good with my hands	
I like having music on in the background	
I find it easy to remember telephone numbers	
I set myself goals and plans for the future	
I am a very tactile person	
I can tell easily whether someone likes me or dislikes me	
I can easily imagine how an object would look from another perspective	
I never use instructions for flat-pack furniture	
I find it easy to talk to new people	
To learn something new, I need to just get on and try it	
I often see clear images when I close my eyes	
I don't use my fingers when I count	
I often talk to myself - out loud or in my head	
At school I loved / love music lessons	
When I am abroad, I find it easy to pick up the basics of another language	
I find ball games easy and enjoyable	
My favourite subject at school is / was maths	



I always know how I am feeling	
I am realistic about my strengths and weaknesses	
I keep a diary	
I am very aware of other people's body language	
My favourite subject at school was / is art	
I find pleasure in reading	
I can read a map easily	
It upsets me to see someone cry and not be able to help	
I am good at solving disputes between others	
I have always dreamed of being a musician or singer	
I prefer team sports	
Singing makes me feel happy	
I never get lost when I am on my own in a new place	
If I am learning how to do something, I like to see drawings and diagrams of how it works	
I am happy spending time alone	
My friends always come to me for emotional support and advice	

**Your strengths in each of the multiple intelligences are automatically calculated below, and also shown in graph form. The descriptions of the multiple intelligences are shown on the next worksheet within this file - click the intelligences descriptions tab below.**

Intelligence type	your totals
Linguistic	0
Logical-Mathematical	0
Musical	0
Bodily-Kinesthetic	0
Spatial-Visual	0
Interpersonal	0
Intrapersonal	0



**Gardner's Multiple Intelligences - descriptions, preferences, personal potential, related tasks and tests**

Intelligence type	Intelligence description	typical roles, preferences, potential	related tasks, activities or tests	preferred learning style
<b>1. Linguistic</b>	<b>words and language</b> , written and spoken; retention, interpretation and explanation of ideas and information via language, understands relationship between communication and meaning	writers, lawyers, journalists, speakers, trainers, copy-writers, English teachers, poets, editors, linguists, translators, PR consultants, media consultants, TV and radio presenters, voice-over artists	write a set of instructions; speak on a subject; edit a written piece or work; write a speech; commentate on an event; apply positive or negative 'spin' to a story	words and language
<b>2. Logical - mathematical</b>	<b>logical thinking</b> , detecting patterns, scientific reasoning and deduction; analyse problems, perform mathematical calculations, understands relationship between cause and effect towards a tangible outcome or result	scientists, engineers, computer experts, accountants, statisticians, researchers, analysts, traders, bankers, bookmakers, insurance brokers, negotiators, deal-makers, trouble-shooters, directors	perform a mental arithmetic calculation; create a process to measure something difficult; analyse how a machine works; create a process; devise a strategy to achieve an aim; assess the value of a business or a proposition	numbers and logic
<b>3. Musical</b>	<b>musical ability</b> , awareness, appreciation and use of sound; recognition of tonal and rhythmic patterns, understands relationship between sound and feeling	musicians, singers, composers, DJs, music producers, piano tuners, acoustic engineers, entertainers, party-planners, environment and noise advisors, voice coaches	perform a musical piece; sing a song; review a musical work; coach someone to play a musical instrument; specify mood music for telephone systems and receptions	music, sounds, rhythm
<b>4. Bodily - Kinesthetic</b>	<b>body movement control</b> , manual dexterity, physical agility and balance; eye and body coordination	dancers, demonstrators, actors, athletes, divers, sports-people, soldiers, fire-fighters, PTIs, performance artists; ergonomists, osteopaths, fishermen, drivers, crafts-people; gardeners, chefs, acupuncturists, healers, adventurers	juggle; demonstrate a sports technique; flip a beer-mat; create a mime to explain something; toss a pancake; fly a kite; coach workplace posture, assess work-station ergonomics	physical experience and movement, touch and feel
<b>5. Spatial - Visual</b>	<b>visual and spatial perception</b> ; interpretation and creation of visual images; pictorial imagination and expression; understands relationship between images and meanings, and	artists, designers, cartoonists, story-boarders, architects, photographers, sculptors, town-planners, visionaries, inventors, engineers, cosmetics and beauty consultants	design a costume; interpret a painting; create a room layout; create a corporate logo; design a building; pack a suitcase or the boot of a car	pictures, shapes, images, 3D space
<b>6. Interpersonal</b>	<b>perception of other people's feelings</b> ; ability to relate to others; interpretation of behaviour and communications; understands the relationships between people and their situations, including other people	therapists, HR professionals, mediators, leaders, counsellors, politicians, educators, sales-people, clergy, psychologists, teachers, doctors, healers, organisers, carers, advertising professionals, coaches and mentors; (there is clear association between this type of intelligence and what is now termed 'Emotional Intelligence' or EQ)	interpret moods from facial expressions; demonstrate feelings through body language; affect the feelings of others in a planned way; coach or counsel another person	human contact, communications, cooperation, teamwork
<b>7. Intrapersonal</b>	<b>self-awareness</b> , personal cognisance, personal objectivity, the capability to understand oneself, one's relationship to others and the world, and one's own need for, and reaction to change	arguably anyone who is self-aware and involved in the process of changing personal thoughts, beliefs and behaviour in relation to their situation, other people, their purpose and aims - in this respect there is a similarity to Maslow's Self-Actualisation level, and again there is clear association between this type of intelligence and what is now termed 'Emotional Intelligence' or EQ	consider and decide one's own aims and personal changes required to achieve them (not necessarily reveal this to others); consider one's own 'Johari Window', and decide options for development; consider and decide one's own position in relation to the Emotional Intelligence model	self-reflection, self-discovery


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businessballs.com


## APPENDIX D. COLLES SURVEY

KM-124-01-S1: Exploring Childhood

Page 1 of 2



**Kent School District**  
KENT • CHARTERS • MERIDIAN



**Kent-Meridian High School**

[Jump to...](#)

KSD Moodle ► KM-124-01-S1 ► Surveys ► Exploring Childhood

[Update this Survey](#)  
 View 0 survey responses

**Directions:**  
Please complete the following survey based on your experience and participation within your Exploring Childhood class at Kent-Meridian High School. This survey will be used for Mrs. Devlin's dissertation work.

Each one of the 24 statements below asks about your experience in this unit.

There are no 'right' or 'wrong' answers; we are interested only in your opinion. Please be assured that your responses will be treated with a high degree of confidentiality, and will not affect your assessment.

Professional practice for high school students means skills and knowledge you will use in other classes, home life, and work. Thanks for your support and input.

Thank you very much for your assistance.  
Mrs. Bree Devlin  
Family and Consumer Sciences Educator  
Iowa State University, Graduate Student

**Relevance**

Responses	Almost Never	Seldom	Sometimes	Often	Almost Always
In this online unit...					
1 my learning focuses on issues that interest me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
2 what I learn is important for my professional practice.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
3 I learn how to improve my professional practice.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
4 what I learn connects well with my professional practice.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

**Reflective Thinking**

Responses	Almost Never	Seldom	Sometimes	Often	Almost Always
In this online unit...					
5 I think critically about how I learn.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
6 I think critically about my own ideas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
7 I think critically about other students' ideas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
8 I think critically about ideas in the readings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

**Interactivity**

Responses	Almost Never	Seldom	Sometimes	Often	Almost Always
In this online unit...					
9 I explain my ideas to other students.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
10 I ask other students to explain their ideas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
11 other students ask me to explain my ideas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
12 other students respond to my ideas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

**Tutor Support**

Responses	Almost Never	Seldom	Sometimes	Often	Almost Always
In this online unit...					
13 the tutor stimulates my thinking.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
14 the tutor encourages me to participate.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
15 the tutor models good discourse.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
16 the tutor models critical self-reflection.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

**Peer Support**

Responses	Almost Never	Seldom	Sometimes	Often	Almost Always
In this online unit...					

## KM-124-01-S1: Exploring Childhood

Page 2 of 2

- |  |                       |                       |                       |                       |                       |                                  |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------------------------------|
| 17 other students encourage my participation.          | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| 18 other students praise my contribution.              | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| 19 other students value my contribution.               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| 20 other students empathise with my struggle to learn. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |

## Interpretation

- | Responses   | Almost Never          | Seldom                | Sometimes             | Often                 | Almost Always                    |
|---|-----------------------|-----------------------|-----------------------|-----------------------|----------------------------------|
| In this online unit...                            |                       |                       |                       |                       |                                  |
| 21 I make good sense of other students' messages. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| 22 other students make good sense of my messages. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| 23 I make good sense of the tutor's messages.     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| 24 the tutor makes good sense of my messages.     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| 25 How long did this survey take you to complete? | Choose...             |                       |                       |                       |                                  |
| 26 Do you have any other comments?                | <input type="text"/>  |                       |                       |                       |                                  |

[Click here to check and continue](#)

ThamGurus

You are logged in as Breanne Devlin (Logout)

KM-124-01-S1 |

## APPENDIX E. HUMAN SUBJECT APPROVAL

**IOWA STATE UNIVERSITY**  
OF SCIENCE AND TECHNOLOGY

Institutional Review Board  
Office for Responsible Research  
Vice President for Research  
1138 Pearson Hall  
Ames, Iowa 50011-2207  
515 294-4566  
FAX 515 294-4267

**Date:** 3/30/2010

**To:** Breanne Devlin  
11207 SE 181st St  
Renton, WA 98058

**CC:** Dr. Robert Bosselman  
31 MacKay  
Dr. Ann Thompson  
N108 Lagomarcino

**From:** Office for Responsible Research

**Title:** A Guide to Developing, Designing, and Implementing a Hybrid Secondary Family and Consumer Sciences Course with a Study of the Students' Multiple Intelligences Compared to their Completion of Various Online Course Components

**IRB Num:** 10-016

**Submission Type:** New **Exemption Date:** 3/25/2010

The project referenced above has undergone review by the Institutional Review Board (IRB) and has been declared exempt from the requirements of the human subject protections regulations as described in 45 CFR 46.101(b). The IRB determination of exemption means that:

- You do not need to submit an application for annual continuing review.
- You must carry out the research as proposed in the IRB application, including obtaining and documenting informed consent if you have stated in your application that you will do so or if required by the IRB.
- Any modification of this research should be submitted to the IRB on a Continuing Review and/or Modification form, prior to making any changes, to determine if the project still meets the federal criteria for exemption. If it is determined that exemption is no longer warranted, then an IRB proposal will need to be submitted and approved before proceeding with data collection.

Please be sure to use only the approved study materials in your research, including the recruitment materials and informed consent documents that have the IRB approval stamp.

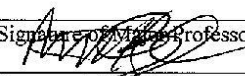
Please note that you must submit all research involving human participants for review by the IRB. Only the IRB may make the determination of exemption, even if you conduct a study in the future that is exactly like this study.

<b>For IRB Use Only</b>	Review Date: <u>March 25, 2010</u>	IRB ID: <u>10-016</u>
	Approval Date: <u>March 25, 2010</u>	Length of Approval: <u>12 months</u>
	Approval Expiration Date: <u>n/a</u>	FULL Committee Review: <u>no</u>
	EXEMPT per 45 CFR 46.101(b): <u>1</u> Date: <u>3/25/10</u>	Minimal Risk: <u>yes</u>
	EXPEDITED per 45 CFR 46.110(b)	More than Minimal Risks: <u>no</u>
	Category <u>Letter</u>	Project Closed Date: <u>                    </u>

**INSTITUTIONAL REVIEW BOARD (IRB)**  
**Application for Approval of Research Involving Humans** JAN 20 2010

**SECTION I: GENERAL INFORMATION**

Principal Investigator (PI): Breaune Devlin		Phone: 425-226-5312	Fax: <u>                    </u>
Degrees: Doctorate of Philosophy	Correspondence Address: 11207 SE 181 <sup>st</sup> Street Renton WA 98058		
Department: AESHM	Email Address: devlinbm@hotmail.com		
Center/Institute:	College: ISU		
PI Level: <input type="checkbox"/> Faculty <input type="checkbox"/> Staff <input type="checkbox"/> Postdoctoral <input checked="" type="checkbox"/> Graduate Student <input type="checkbox"/> Undergraduate Student			
Alternate Contact Person: NA		Email Address: <u>                    </u>	
Correspondence Address:		Phone: <u>                    </u>	
Title of Project: A Guide to Developing, Designing, and Implementing a Hybrid Secondary Family and Consumer Sciences Course with a Study of the Students' Multiple Intelligences Compared to their Completion of Various Online Course Components			
Project Period (Include Start and End Date): [1/6/10] to [05/05/10]			

<b>FOR STUDENT PROJECTS</b>	
Name of Major Professor/Supervising Faculty: Dr. Bob Bosselman & Dr. Ann Thompson	Signature of Major Professor/Supervising Faculty: 
Phone: 515-294-7474 & 515-294-5287	Campus Address: 31 MacKay Ames, IA 50011-1121 N108 Lagomarcino Hall Ames, IA 50011
Department: AESHM & CI (CTLT)	Email Address: drbob@iastate.edu & eat@iastate.edu
Type of Project: (check all that apply)	
<input type="checkbox"/> Research <input type="checkbox"/> Thesis <input checked="" type="checkbox"/> Dissertation <input type="checkbox"/> Class project <input type="checkbox"/> Independent Study (490, 590, Honors project) <input type="checkbox"/> Other. Please specify: <u>                    </u>	

**KEY PERSONNEL**

List all members and relevant experience of the project personnel. This information is intended to inform the committee of the training and background related to the specific procedures that each person will perform on the project.

NAME & DEGREE(S)	SPECIFIC DUTIES ON PROJECT	TRAINING & EXPERIENCE RELATED TO PROCEDURES PERFORMED, DATE OF TRAINING
✓ Bree Devlin	Principal investigator, researcher, analysis	IRB Training August 2007 8/23/07
✓ Bob Bosselman	Research support	IRB Training November 2007 11/1/07
✓ Ann Thompson	Research support	IRB Training September 2002 9/5/02
✓ Kevin Saunders	Data Analysis support	IRB Training October 2000 10/9/00

To list additional personnel please attach separate sheet.

**FUNDING INFORMATION**

<input type="checkbox"/>	Internally funded, please provide account number:
<input type="checkbox"/>	Externally funded, please provide funding source and account number:
<input type="checkbox"/>	Funding is pending, please provide OSPA Record ID on GoldSheet: Title on GoldSheet if different from above:
<input type="checkbox"/>	Other: (e.g., funding will be applied for later)
<input checked="" type="checkbox"/>	Student Project—no funding or funding provided by student Bree Devlin & Family

**SCIENTIFIC REVIEW**

Although the assurance committees are not intended to conduct peer review of research proposals, the federal regulations include language such as “consistent with sound research design,” “rationale for involving animals or humans” and “scientifically valuable research,” which requires that the committees consider in their review the general scientific relevance of a research study. Proposals that do not meet these basic tests are not justifiable and cannot be approved. If an assurance review committee(s) has concerns about the scientific merit of a project and the project was not competitively funded by peer review or was funded by corporate sponsors, the project may be referred to a scientific review committee. The scientific review committee will be an ad hoc and will consist of your ISU peers and outside experts as needed. If this situation arises, the PI will be contacted and given the option of agreeing that a consultant may be contacted or withdrawing the proposal from consideration.

☐ Yes ☒ No Has or will this project receive peer review?

If the answer is “yes,” please indicate who did or will conduct the review:

If a review was conducted, please indicate the outcome of the review:

**COLLECTION OR RECEIPT OF SAMPLES**

Will you be: (Please check all that apply.)

X Yes ☐ No Receiving samples from outside of ISU? See examples below.  
X Yes ☐ No Sending samples outside of ISU? See examples below.

Examples include: genetically modified organisms, body fluids, tissue samples, blood samples, pathogens.

If you will be receiving samples from or sending samples outside of ISU, please identify the name of the outside organization(s) and the identity of the samples you will be sending or receiving outside of ISU. If the outside organizations have not been identified, please check no for both questions above.

Kent Meridian High School, Kent School District Family and Consumer Sciences Exploring Childhood Class
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Please note that some samples may require a USDA Animal Plant Health Inspection Service (APHIS) permit, a USPHS Centers for Disease Control and Prevention (CDC) Import Permit for Etiologic Agents, a Registration for Select Agents, High Consequence Livestock Pathogens and Toxins or Listed Plant Pathogens, or a Material Transfer Agreement (MTA) [EH&S Website](#)

**ASSURANCE**

- I certify that the information provided in this application is complete and accurate and consistent with any proposal(s) submitted to external funding agencies.
- I agree to provide proper surveillance of this project to ensure that the rights and welfare of the human subject or welfare of animal subjects are protected. I will report any problems to the appropriate assurance review committee(s).
- I agree that I will not begin this project until receipt of official approval from all appropriate committee(s).
- I agree that modifications to the originally approved project will not take place without prior review and approval by the appropriate committee(s), and that all activities will be performed in accordance with all applicable federal, state, local and Iowa State University policies.

**CONFLICT OF INTEREST**

A conflict of interest can be defined as a set of conditions in which an investigator's or key personnel's judgment regarding a project (including human or animal subject welfare, integrity of the research) may be influenced by a secondary interest (e.g., the proposed project and/or a relationship with the sponsor). ISU's Conflict of Interest Policy requires that investigators and key personnel disclose any significant financial interests or relationships that may present an actual or potential conflict of interest. By signing this form below, you are certifying that all members of the research team, including yourself, have read and understand ISU's Conflict of Interest policy as addressed by the ISU Faculty Handbook (<http://www.provost.iastate.edu/faculty>) and have made all required disclosures.

- ☐ Yes ☒ No Do you or any member of your research team have an actual or potential conflict of interest?  
☐ Yes ☐ No If yes, have the appropriate disclosure form(s) been completed?

**SIGNATURES**

Breanne M. Deak 1-12-10  
 Signature of Principal Investigator Date

[Signature] 4/15/10  
 Signature of Department Chair Date

The Major Professor/Supervising Faculty member must sign the cover page in the section entitled "For Student Projects".

**PLEASE NOTE: Any changes to an approved protocol must be submitted to the appropriate committee(s) before the changes may be implemented.**

**Please proceed to SECTION II.**



## SECTION II: IRB SECTION - STUDY SPECIFIC INFORMATION

Please complete all of the following questions.

### STUDY OBJECTIVES

Briefly explain in language understandable to a layperson the specific aim(s) of the study.

The aim of the study is to provide instructors/teachers with a pedagogical guide to the basic design, development, and implementation of a distance learning course with a study to examine the students' participation in the online components and explore if multiple intelligences have a relationship to their participation. The study will review the following questions...

1. What is the rate of secondary family and consumer sciences student's achievement within the different components (discussions, assessments, group projects, and individual assignments) of a blended course?
2. Is there a relationship between students' learning style and the achievement level within the different components of a blended course?
3. What are the perceptions of the various learning styles on the course activities to provide opportunities for students to utilize prior knowledge to gain new concepts?

### BENEFITS TO SOCIETY AND PARTICIPANTS

Explain in language understandable to a layperson how the information gained in this study will advance knowledge, and/or serve the good of society. Please also describe the direct benefits to research participants; if there are no direct benefits to participants, indicate that. **Note:** monetary compensation cannot be considered a benefit to participants.

The purpose of this research is due to distance learning and/or hybrid courses becoming a new trend in secondary education and the Family and Consumer Sciences profession. This phenomenon requires further research for student and instructor success. Secondary school programs are adopting the distance/hybrid learning concept. The project will include a pedagogical approach to the design, development, and implementation techniques from literature. The study will review the students' participation rate within the discussion, assessment, group project, and individual assignment online components. The study will examine if there is a relationship between multiple intelligence characteristics and participation in the course components. The results will present findings for the main characteristics of each learning style portrayed through the completion rate of the different course components. The study will exhibit a pedagogical background for teaching blended learning to meet the needs, interests, and abilities of the various learning styles. There will be no direct benefit to the research participants.

### PART A: PROJECT INVOLVEMENT

- 1) ☐ Yes ☒ No Is this project part of a Training, Center, Program Project Grant?  
Director Name: \_\_\_\_\_ Overall IRB ID: \_\_\_\_\_
- 2) ☐ Yes ☒ No Is the purpose of this project to develop survey instruments?
- 3) ☐ Yes ☒ No Does this project involve an investigational new drug (IND)? Number: \_\_\_\_\_
- 4) ☐ Yes ☒ No Does this project involve an investigational device exemption (IDE)? Number: \_\_\_\_\_
- 5) ☐ Yes ☒ No Does this project involve existing data or records?
- 6) ☐ Yes ☒ No Does this project involve secondary analysis?
- 7) ☐ Yes ☒ No Does this project involve pathology or diagnostic specimens?
- 8) ☐ Yes ☒ No Does this project require approval from another institution? Please attach letters of approval.
- 9) ☐ Yes ☒ No Does this project involve DEXA/CT scans or X-rays?

**PART B: MEDICAL HEALTH INFORMATION OR RECORDS**

- 10) ☐ Yes ☒ No Does your project require the use of a health care provider's records concerning past, present, or future physical, dental, or mental health information about a subject? The Health Insurance Portability and Accountability Act established the conditions under which protected health information may be used or disclosed for research purposes. If your project will involve the use of any past or present clinical information about someone, or if you will add clinical information to someone's treatment record (electronic or paper) during the study, you must complete and submit the Application for Use of Protected Health Information.

**PART C: ANTICIPATED ENROLLMENT**

<b>Estimated number of participants to be enrolled in the study</b> Total: <u>32</u> Males: Females:	
Check if any enrolled participants are:	Check below if this project involves either:
X Minors (Under 18)	<input type="checkbox"/> Adults, non-students
Age Range of Minors: 14 to 18	<input type="checkbox"/> Minor ISU students
<input type="checkbox"/> Pregnant Women/Fetuses	<input type="checkbox"/> ISU students 18 and older
<input type="checkbox"/> Cognitively Impaired	<input type="checkbox"/> Other (explain)
<input type="checkbox"/> Prisoners	
<b>List estimated percent of the anticipated enrollment that will be minorities if known:</b> Unknown at this time	
American Indian:	Alaskan Native:
Asian or Pacific Islander:	Black or African American:
Latino or Hispanic:	

**PART D: PARTICIPANT SELECTION**

Please use additional space as necessary to adequately answer each question.

11. Explain the procedures and rationale for selecting participants, including the inclusion and exclusion criteria (e.g., where will names come from, what persons will be included or excluded and why, etc.).

Participants are volunteers who are enrolled in the Kent Meridian High School, Family and Consumer Sciences sixth period Exploring Childhood class with Mrs. Bree Devlin as an instructor. Only participants with a returned parent/guardian consent form will be considered the sample. The Exploring Childhood class was chosen for the purpose of implementing and introducing online education to the students and district.

12. Describe the procedures for contacting participants (e.g., letter, email, flyer, advertisements, phone call, etc.). Attach copies of any letters, scripts, flyers, or advertisements that will be used. Recruitment materials should include a statement of the voluntary and confidential nature of the research.

Contact with the participants will be daily face to face interaction. Participants will be required to return a parent/guardian consent form. The only recruitment material will be the consent form/letter.

**PART E: RESEARCH PLAN**

Include sufficient detail for IRB review of this project independent of the grant, protocol, or other documents.

13. The information needed here is similar to that in the "methods" or "procedures" sections of a research proposal—it should describe the flow of events that will occur during your interactions with subjects. Please describe in detail your plans for collecting data from participants, including all procedures, tasks, or interventions participants will be asked to complete during the research (e.g., random assignment, any conditions or treatment groups into which participants will be divided, mail survey or interview procedures, sensors to be worn, amount of blood drawn, etc.). This information is intended to inform the committee of the procedures used in the study and their potential risk. Please do not respond with "see attached" or "not applicable."

per 3/25/10 email (cc) Age, gender, grade, ethnicity, special services (EN, special ed.)

Consent forms will be sent home for parent/guardian approval of the minor students to participate in the study. Once participants have been established, the demographics of the sample will be taken from the education management system "Skyward". This information is provided from the Kent School District enrollment packet. This information will be used to describe the study population only. The information will not be used in statistical analysis. Data collected for the study will come from two sources. The sources are the students' course work and a survey. The course work will be a tally whether they completed or not completed the various components. The survey will be delivered hard copy in class and available through the online education management system, Moodle, that will be

*Both sources are from normally - assigned coursework - the survey includes learning style assessment and a*  
 used for the online component of the course. Data will be collected from the second quarter grading period of the Kent School District, approximately November 3, 2009 to January 26, 2010. The data will be collected from the pre-existing Skyward grade book. The data will be coded and analyzed using SPSS statistical analysis.

14. For studies involving pathology/diagnostic specimens, indicate whether specimens will be collected prospectively and/or already exist "on the shelf" at the time of submission of this review form. If prospective, describe specimen procurement procedures; indicate whether any additional medical information about the subject is being gathered, and whether specimens are linked at any time by code number to the participant's identity. If this question is not applicable, please type N/A in the response cell.

N/A

15. For studies involving deception or where information is intentionally withheld from participants, such as the full purpose of the study, please explain how persons will be deceived or what information will be withheld. Additionally, a waiver of the applicable elements of consent will be needed. Please complete the "Waiver of Elements of Consent" form (available at the IRB website). If this question is not applicable, please type N/A in the response cell.

N/A

#### PART F: CONSENT PROCESS

A copy of any translated informed consent documents and an English version should be submitted with the application. Provide the name of the individual who translated the consent documents, their qualifications for translating documents, and in particular informed consent documents, below.

If the consent process does not include documented consent, a waiver of documentation of consent must be requested. If any information about the study is intentionally withheld or misleading (i.e., deception is used), a waiver of the elements of consent must be requested. Forms for requesting waivers are available at the IRB website.

16. Describe the consent process for adult participants (those who are age 18 and older).

Participants who are 18 years of age or older may sign the same consent form sent to the minor students.

17. If your study involves minor children, please explain how parental consent will be obtained prior to enrollment of the minor(s).

A consent form will be sent home and returned signed by a parent/guardian of the students prior to collecting any information. *Students will explain the information in the form if their parents do not read or understand English. see 3/25/10 email*

18. Please explain how assent will be obtained from minors (younger than 18 years of age), prior to their enrollment. Also, please explain if the assent process will be documented (e.g., a simplified version of the consent form, combined with the parental informed consent document). According to the federal regulations assent "...means a child's affirmative agreement to participate in research. Mere failure to object should not, absent affirmative agreement, be construed as assent."

The minor will also be required to sign the parent/guardian consent form. ~~An assent form will be given to the minors to sign as well.~~

#### PART G: DATA ANALYSIS

19. Describe how the data will be analyzed (e.g. statistical methodology, statistical evaluation, statistical measures used to evaluate results).

Quantitative: Descriptive Statistics, Cross Tabulation, Regression, General Linear Models

**PART H: RISKS**

The concept of risk goes beyond physical risk and includes risks to participants' dignity and self-respect as well as psychological, emotional, legal, social or financial risk.

20. ☐ Yes ☒ No Is the **probability** of the harm or discomfort anticipated in the proposed research greater than that encountered ordinarily in daily life or during the performance of routine physical or psychological examinations or tests?
21. ☐ Yes ☒ No Is the **magnitude** of the harm or discomfort greater than that encountered ordinarily in daily life, or during the performance of routine physical or psychological examinations or tests?
22. Describe any risks or discomforts to the participants and how they will be minimized and precautions taken. Do **not** respond with N/A. If you believe that there will not be risk or discomfort to participants, you must explain why.

There will be no risk or discomfort to the participants because they will be completing the same work required for a secondary class whether enrolled in a study or not. They will not be required to complete anything different than what is required by the state curriculum.

23. If this study involves vulnerable populations, including minors, pregnant women, prisoners, the cognitively impaired, or those educationally or economically disadvantaged, what additional protections will be provided to minimize risks?

There will be no risk or to the participants because they will be completing the same work required for a secondary class whether enrolled in a study or not. They will not be required to complete anything different than what is required by the state curriculum. Any participants with an educational need will be taught following the mandated IEP or 504 plans.

**PART I: COMPENSATION**

24. ☐ Yes ☒ No Will participants receive compensation for their participation? If yes, please explain.

Do not make the payment an inducement, only a compensation for expenses and inconvenience. If a person is to receive money or another token of appreciation for their participation, explain when it will be given and any conditions of full or partial payment. (E.g., volunteers will receive \$5.00 for each of the five visits in the study or a total of \$25.00 if he/she completes the study. If a participant withdraws from participation, they will receive \$5.00 for each of the visits completed.) It is considered undue influence to make completion of the study the basis for compensation.

**PART J: CONFIDENTIALITY**

25. Describe below the methods that will be used to ensure the confidentiality of data obtained. (For example, who has access to the data, where the data will be stored, security measures for web-based surveys and computer storage, how long data or specimens will be retained, anticipated date that identifiers will be removed from completed survey instruments and/or audio or visual tapes will be erased, etc.)

Only the researcher/instructor has access to the participants' names and data. The survey is only available to the students enrolled in the Exploring Childhood class. The completed surveys are only available to the instructor either hand delivered in class or submitted online. Online submission of the survey requires an access code to sign

into the Moodle platform. The data will be stored on the researcher/instructors personal laptop computer requiring a password to sign on. All data will be erased from the computer after the ~~August 2010~~ graduation. Study is complete.

or in a locked cabinet in the PI's classroom.

per consent form (K)

per 3/24/10 email (K)

**PART K: REGISTRY PROJECTS**

26. To be considered a registry: (1) the individuals must have a common condition or demonstrate common responses to questions; (2) the individuals in the registry might be contacted in the future; and (3) the names/data of the individuals in the registry might be used by investigators other than the one maintaining the registry.

☐ Yes ☒ No Does this project establish a registry?

If "yes," please provide the registry name below.

**Checklist for Attachments**

Listed below are the types of documents that should be submitted for IRB review. Please check and attach the documents that are applicable for your study:

- X A copy of the informed consent document OR ☐ Letter of introduction containing the elements of consent  
 X A copy of the assent form if minors will be enrolled  
 X Letter of approval from cooperating organizations or institutions allowing you to conduct research at their facility  
 X Data-gathering instruments (including surveys)  
 NA Recruitment fliers, phone scripts, or any other documents or materials participants will see or hear

The original signed copy of the application form and one set of accompanying materials should be submitted for review. **Federal regulations require that one copy of the grant application or proposal be submitted for comparison with the application for approval.**

**FOR IRB USE ONLY:**

Action by the Institutional Review Board (IRB):

- ☐ Project approved. Date: \_\_\_\_\_  
☒ Project is exempt. Date: 3/28/10  
☐ Project not approved. Date: \_\_\_\_\_  
☐ IRB approval is not required. Date: \_\_\_\_\_  
☐ Project is not research according to the federal definition.  
☐ Project does not include human subjects as defined by the federal regulations.

Kenya A. Agnieszka  
 IRB Approval Signature

March 25, 2010  
 Date

**SECTION III: ENVIRONMENTAL HEALTH AND SAFETY INFORMATION**

☐ Yes ☒ No Does this project involve human cell or tissue cultures (primary OR immortalized), or human blood components, body fluids or tissues?

**PART A: HUMAN CELL LINES**

☐ Yes ☒ No Does this project involve human cell or tissue cultures (primary OR immortalized cell lines/strains) that have been documented to be free of bloodborne pathogens? If the answer is "yes," please answer question 1 below and attach copies of the documentation.

1) Please list the specific cell lines/strains to be used, their source and description of use.

CELL LINE	SOURCE	DESCRIPTION OF USE

Add New Row

2) Please refer to the ISU "Bloodborne Pathogens Manual," which contains the requirements of the OSHA Bloodborne Pathogens Standard. Please list the specific precautions to be followed for this project below (e.g., retractable needles used for blood draws):

N/A

Anyone working with human cell lines/strains that have not been documented to be free of bloodborne pathogens is required to have Bloodborne Pathogen Training annually. Current Bloodborne Pathogen Training dates must be listed in Section I for all Key Personnel. Please contact Environmental Health and Safety (294-5359) if you need to sign up for training and/or to get a copy of the Bloodborne Pathogens Manual (<http://www.ehs.iastate.edu/cms/default.asp?action=article&ID=214>)

**PART B: HUMAN BLOOD COMPONENTS, BODY FLUIDS OR TISSUES**

☐ Yes ☒ No Does this project involve human blood components, body fluids or tissues? If "yes," please answer all of the questions in the "Human Blood Components, Body Fluids or Tissues" section.

1) Please list the specific human substances used, their source, amount and description of use.

SUBSTANCE	SOURCE	AMOUNT	DESCRIPTION OF USE
<i>E.g., Blood</i>	<i>Normal healthy volunteers</i>	<i>2 ml</i>	<i>Approximate quantity, assays to be done.</i>

Add New Row

2) Please refer to the ISU "Bloodborne Pathogens Manual," which contains the requirements of the OSHA Bloodborne Pathogens Standard. Specific sections to be followed for this project are:

Office for Responsible Research/IRB 05/05/09





September 3, 2009

I approve of Breanne M Devlin performing research in Kent-Meridian High School for her doctoral dissertation at Iowa State University entitled "Developing, Designing, and Implementing a Hybrid Secondary Family and Consumer Sciences Course with a Study of the Students' Multiple Intelligences Compared to their Completion of Various Online Course Components". We understand that Mrs. Devlin will be using her students within her Exploring Childhood class as part of her research.

Permission granted September 3, 2009

Respectfully,

A handwritten signature in black ink, appearing to read "Wade Barringer", written over a horizontal line.

Dr. Wade Barringer  
Principal  
Kent-Meridian High School  
253-373-7403

**Kent-Meridian  
High School**  
10020 SE 256th Street  
Kent, Washington  
98030-6400  
Ph: 253-373-7405  
Fax: 253-373-7411

## APPENDIX F. CONSENT DOCUMENT

ISU IRB # 1	10-016
EXEMPT DATE:	26 March 2010

### **CONSENT FORM FOR:** *A Guide to Developing, Designing, and Implementing a Hybrid Secondary Family and Consumer Sciences Course with a Study of the Students' Multiple Intelligences Compared to their Completion of Various Online Course Components*

This form describes a research project. It has information to help you decide whether or not you wish to participate. Research studies include only people who choose to take part—your participation is completely voluntary. Please discuss any questions you have about the study or about this form with the project staff before deciding to participate.

**For Parents:** You are being asked to provide consent for your child to take part in the study described below. Please read the information below with your child. If both you and your child agree to take part, please print and sign your names in the spaces provided.

#### **Who is conducting this study?**

This study is being conducted by Mrs. Bree Devlin, graduate student with Iowa State University and a Kent Meridian High School Family and Consumer Sciences Educator.

#### **Why am I invited to participate in this study?**

You are being asked to take part in this study because you are enrolled in Mrs. Devlin's sixth period Exploring Childhood Class at Kent Meridian High School.

#### **What is the purpose of this study?**

The purpose of this study is to assist Mrs. Devlin in completion of her doctorate of philosophy degree through Iowa State University. The study is for her dissertation work. The research study will compare the students' learning style with the participation within online components in the class; projects, assignments, discussions, and assessments. The main focus of the study is to see whether students learning styles have an effect on how they complete coursework in an online setting.

#### **What will I be asked to do?**

If you agree to participate, you will be asked to complete the same requirements for the Exploring Childhood class. There is no additional work or cost required to participate in the study. I will be tallying the number of times the course-work, projects, assessments, and discussions were completed. Scores will not be a factor in the study, only whether the item was completed or not. As part of the course curriculum, the students will complete multiple intelligence surveys to understand learning styles. Those results will be part of the data. Also as part of the class the students will be completing a survey to help improve the learning environment and teaching practices, those results will be used both for Mrs. Devlin to improve her professional teaching career and within the research. Demographic information such as gender, age, grade level, ethnicity, and special programs will be gathered from the Skyward systems school records. Data will be collected from the second semester grading period of the 2009 to 2010 academic year for the Kent School District.

#### **What are the possible risks and benefits of my participation?**

Risks – The possible risks related to your participation in this research are none.

**Benefits** – You may not receive any direct benefit from taking part in this study. We hope that this research will benefit society by examining if there is a relationship between multiple intelligence characteristics and participation in the course components. The results of the study will present further techniques or guides to differentiating learning to meet the needs of students based on multiple intelligences. The research will also assist with the stringent graduation requirements for most high school students. It will help open pathways for students to take alternative routes to occupational education.

**How will the information I provide be used?**

The information you provide will be used for the following purposes: writing of Mrs. Devlin's dissertation for a doctorate of philosophy degree.

**What measures will be taken to ensure the confidentiality of the data or to protect my privacy?**

Records identifying participants will be kept confidential to the extent allowed by applicable laws and regulations. Records will not be made publicly available. However, federal government regulatory agencies, auditing departments of Iowa State University, and the ISU Institutional Review Board (a committee that reviews and approves research studies with human subjects) may inspect and/or copy your records for quality assurance and analysis. These records may contain private information.

To ensure confidentiality to the extent allowed by law, the following measures will be taken: Students will be assigned a unique code and letter that will be used on forms instead of their name. If the results are published, your identity will remain confidential. All material and information will be stored in a locked cabinet in the classroom and by a password protected computer systems. The data will be destroyed after the study is complete.

**Will I incur any costs from participating or will I be compensated?**

You will not have any costs from participating in this study. You will not be compensated for participating in this study.

**What are my rights as a human research participant?**

Participating in this study is completely voluntary. You may choose not to take part in the study or to stop participating at any time, for any reason, without penalty or negative consequences. Your choice of whether or not to take part will not have any effect on your grade in the class.

**Whom can I call if I have questions or problems?**

You are encouraged to ask questions at any time during this study.

- For further information about the study contact Mrs. Bree Devlin 253-373-4114 direct line to classroom, 253-486-8581 personal cell phone or best by email at [bree.devlin@kent.k12.wa.us](mailto:bree.devlin@kent.k12.wa.us) or [devlinbm@hotmail.com](mailto:devlinbm@hotmail.com) or the supervising faculty Dr. Bob Bosselman, Iowa State University, 515-294-7474 or [drbob@iastate.edu](mailto:drbob@iastate.edu)
- If you have any questions about the rights of research subjects or research-related injury, please contact the IRB Administrator, (515) 294-4566, [IRB@iastate.edu](mailto:IRB@iastate.edu), or Director,

ISU IRB #1	10-018
EXEMPT DATE:	25 March 2010

(515) 294-3115, Office for Responsible Research, 1138 Pearson Hall, Iowa State University, Ames, Iowa 50011.

**Consent and Authorization Provisions**

Your signature indicates that you voluntarily agree to participate in this study, that the study has been explained to you, that you have been given the time to read the document and that your questions have been satisfactorily answered. You will receive a copy of the written informed consent prior to your participation in the study.

Participant's Name (printed) \_\_\_\_\_

\_\_\_\_\_  
(Participant's Signature)

\_\_\_\_\_  
(Date)

\_\_\_\_\_  
(Signature of Parent/Guardian or  
Legally Authorized Representative)

\_\_\_\_\_  
(Date)

## REFERENCES

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