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An evaluation of readiness factors for online education

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AN EVALUATION OF READINESS FACTORS FOR ONLINE EDUCATION

By

Delena Rae Lang Hukle

A Dissertation
Submitted to the Faculty of
Mississippi State University
in Partial Fulfillment of the Requirements
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AN EVALUATION OF READINESS FACTORS FOR ONLINE EDUCATION

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Online education has grown substantially over the years because of the flexibility it has given the student in acquiring an education. For many, higher education is now a reality instead of just a dream. With this educational format, traditional and non-traditional students are taking classes to obtain a degree or pursue lifelong learning. Unfortunately, some students are taking online classes without being equipped with the necessary skills required for successful completion.

The purpose of the evaluation was to investigate the readiness factors of students taking online classes. The Readiness for Education At a Distance Indicator (READI) assessment was completed by students registered for online classes at Itawamba Community College in the fall 2007 semester. A sample of 250 students was randomly selected from the population. The instrument used in the study is adapted from larger instruments and has been tested for reliability and validity. The READI assessment results included variables of individual attributes, technical competency (computer and Internet), technical knowledge, reading comprehension, typing speed and proficiency,

and learning styles – visual, social, physical, aural, verbal, solitary, and logical. Additionally, institutional educational variables included in the evaluation were ACT scores, online courses completed, total semester hours completed, and cumulative grade point average.

Descriptive statistics were given for the variables and the correlational research findings were presented in respect to the research questions. Stepwise Multiple Regression statistical analysis was conducted to determine the correlation between the measurement variables and educational variables. Individual Attributes, Reading Comprehension, and Logical Learning Style were the contributory success factors in the online classroom. The analysis revealed that Reading Comprehension correlated to the ACT score and Verbal Learning Style correlated to online course completed.

DEDICATION

I would like to dedicate this research to my parents Phillip and Donnis Lang, my grandma Minnie Rose Lang, and my husband Grant Hukle.

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Sincere appreciation is expressed to my dissertation committee: Dr. Davis, Dr. Mathews, Dr. Stonecypher, and Dr. Wiseman. Without their support and guidance, my dream of a doctoral degree would not have become a reality.

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CHAPTER I

INTRODUCTION

Education can be offered in a format other than the traditional classroom with chalkboard, chairs, and desks. Online education is facilitated via a remote computer with an internet connection. The skills needed to successfully complete an online course are different than the skills needed in the traditional classroom. With online learning being an integral part of the higher education spectrum, investigating student readiness is crucial for the continued advancement of this method of instruction. Student readiness for online learning is defined by the following three aspects: (a) students' preferences for flexible online learning as opposed to the traditional face-to-face (f2f) classroom instruction, (b) students' experiences and confidence in using electronic technologies for learning including the Internet and computer-mediated communications, and (c) students' abilities to engage in autonomous learning (Warner, Christie, & Choy, 1998).

The U.S. Department of Education (2008) has stated "our education system must reflect the skills and knowledge essential to succeed in this new era" (p. 2). With the transition from the industrial age to the information age, the locus of control has been transferred from the supplier to the individual which means education must develop personalized responses to individual needs to maximize the potential of every student (U.S. Department of Education). The Information Age has brought us to the use of the modern computer, a long way from an abacus - the mechanical computing machine

(Peterson, 2006). With the computer and the Internet, a wealth of knowledge has been brought to the students' fingertips. In comparison to the Socratic learning style, "Socrates tended to question his own and others' beliefs, evaluated others' knowledge, esteemed self-generated knowledge, began teaching by implanting doubt, and sought knowledge for which he had good reasons" (Tweed & Lehman, 2002, p. 90). In the 21st century, our search for knowledge comes primarily from machines instead of individuals.

The Southern Association of Colleges and Schools (2006) has the following definition for the purposes of accreditation review:

> Distance education is defined as a formal educational process in which the majority of the instruction (interaction between students and instructors and among students) in a course occurs when students and instructors are not in the same place. Instruction may be synchronous or asynchronous. A distance education course may employ correspondence study, or audio, video, or computer technologies. (p. 1)

In regards to this evaluation, online courses are considered distance education courses.

Online education assists in carrying out the mission of the community college because it provides "access to postsecondary educational programs and services that lead to stronger, more vital communities" (Vaughan, 2000, p. 3). The five commitments that shape the mission of the community college according to Vaughan are: open access and equity, comprehensiveness, community based, teaching and learning, and fostering lifelong learning. Whether an individual is a traditional or a non-traditional student, being able to get an education 24/7 is an ideal opportunity for lifelong learning. Martz, Venkateshwar, and Sangermano (2003) define lifelong learning as "the idea that people,

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in order to respond to the quickly changing work environment, will need to perform continuous learning throughout their work careers" (p. 145). In order to balance the responsibilities of life, some students wish "to learn outside the physical space of the classroom" (Cohen & Brawer, 2003, p. 184). Online education facilitates the processes of teaching anywhere and learning anywhere. Cohen and Brawer agree that learning is infinite and for that reason there is continual striving for innovation in education. The technologies with online learning are continually advancing and have gone beyond the boundaries of traditional education.

Computer literacy is becoming commonplace. Atkinson and Astro (2008) suggest that in order "to succeed in today's global, knowledge-based economy, people need at least basic computer and Internet skills" (p. 13). The study found that "about 75 percent of American adults reported using the Internet" (p. 12). This statistic is not surprising since "the digital information revolution is extending to virtually all aspects of our lives, all parts of society, all organizations and all nations" (p. 3). In regards to education, the Internet has reinvented the delivery of instruction from a traditional classroom setting to an online environment. Atkinson and Astro suggest that "information technology can allow the student's interests, needs, strengths, and weaknesses to drive the learning process, with the instructor facilitating rather than dictating" (p. 18). Therefore, the results of an evaluation of readiness factors will offer direction to institutions and instructors for developing online courses. Barker (2002) states "online learning involves the use of an integrated and globally accessible collection of electronic and human resources that are configured and constrained in such a way as to achieve a particular set of educational objectives" (p. 4). With a plethora of online education technologies

available, a "goal should be to find ways for technology to make teaching and learning more efficient and effective, not more complicated" (U.S. Department of Education, 2008, p. 1).

Although the online education infrastructure is available, some students are unable to take advantage of the technology because of the lack of internet access in some rural areas. The two categories commonly used for internet access technologies are: "narrow band access using dial-up modem technology and broadband access such as cable-modem, DSL, and wireless broadband access technology" (Shin, Weiss, & Tucci, 2007, p. 2). Wireless broadband providers are making strides to accommodate the rural users. Gubbins (2008) reports that "ViaSat will launch a satellite aimed at providing wholesale broadband at speeds of 2 Mb/s and 10Mb/s downstream along the West Coast and everywhere east of the Mississippi River" (p. 12). If this technology enhancement becomes a reality, this will give the opportunity for many students to take advantage of the online learning environment which in turn will increase the enrollment figures at educational institutions.

The U.S. Department of Education, National Center for Education Statistics (2008a) reported that postsecondary degree-granting institutions had enrollment of 17.5 million in fall 2005 and enrollment was projected by fall 2007 to be around 18 million - 13.5 million in public and 4.5 million in private institutions. The NCES projects enrollment to be 20.5 million by fall 2016 which is a 14% increase from the fall 2007 figures. With data from 1995 – 2005, the traditional college age population (18 – 24) increased 15%, full-time students increased 33%, part-time students increased 9%, number of males increased 18%, and number of females increased 27%. Between the

years of 1997 – 2007, the U.S. Census Bureau indicated the percentage of adults with a bachelor's degree increased from 24% to 29% (U.S. Department of Education, NCES, 2008a). To bring this in perspective with community colleges in the United States, the special analysis report from the U.S. Department of Education, National Center for Education Statistics (2008b) records 1,045 community colleges with an enrollment of 6.3 million students (35% of all postsecondary students) in 2006-2007.

Non-traditional and traditional students are taking advantage of the online learning environment. "Traditionally, distance learning initiatives have been aimed at non-traditional students and most of it offered through correspondence courses" (Paulsen & Smart, 2001, p. 340). Because of improved technology, Paulsen and Smart affirm the interest for online courses has expanded to include traditional students. The U.S. Department of Education, National Center for Education Statistics (2003) reports that 56% (2320) of degree-granting institutions in 2000 - 2001 offered online distance learning classes for all types of students, including elementary, secondary, college, adult education, continuing education, and professional development. With over 3 million enrollments in these classes, the NCES estimated 2.8 million in college-level, credit-granting courses with 82% at the undergraduate level.

Itawamba Community College is part of the Mississippi Virtual Community College (MSVCC), a consortium of the 15 Mississippi community and junior colleges that began in January 2000 with 1,382 students (MSVCC, 2008). Students can take a course from any college in Mississippi and get support from their local college. Enrollment is not limited to Mississippi students. According to the MSVCC:

The mission includes providing access to instructional offerings through

advanced technologies for those individuals who currently cannot take

advantage of the offerings of the community and junior college through

traditional means and to those individuals who are seeking alternative

educational delivery systems. (p. 1)

Itawamba Community College (ICC) is located in northeast Mississippi and

primarily services a five county district: Chickasaw, Itawamba, Lee, Monroe, and

Pontotoc (ICC, 2007). With campuses in Fulton and Tupelo, ICC offers day, night, and

online classes (See Appendix C). ICC offered their first online class, English

Composition, in the fall 1998 semester with an enrollment of 10 students. By the fall

2007 semester, ICC had 265 instructors providing 379 sections to 6,690 in-district

students (See Appendix D). Because of online classes, the scope of service has reached

beyond the designated counties to include 1,240 out-of-district students. Moller, Foshay,

and Huett (2008) deem online education as a means for maintaining growth for colleges

and universities. Additionally, Moller and colleagues suggest a "modest distance

education program (say 5% of enrollment) could mean the difference between a

budgetary surplus and a loss – especially for tuition-driven instructional programs" which

indicates "distance education has an importance much greater than the enrollment figures

may suggest" (p. 66).

Considering the growth of online classes, the issue of readiness for online

learning is becoming a directive of educational groups and accrediting institutions. The

Accrediting Commission of Career Schools and Colleges of Technology (ACCSCT)

states that "the school must establish admission requirements for distance education

programs and courses of study that assess whether students have the skills, competencies, and access to technology necessary to succeed in a distance education environment prior to their enrollment in the program or course of study" (ACCST, 2007, p. 91). In regards to an electronically offered degree and certificate program, the Southern Association for Colleges and Schools (SACS) promote the following best practices: (a) assist student in understanding independent learning expectations and challenges of learning in a technology based environment, (b) inform student of required access to technologies, (c) inform student of required technical competence, and (d) inform student of library and other learning services available to support learning and the skills required to utilize them (SACS, 2000. pp. 9-10) The North American Council for Online Learning (NACOL) has standards for quality online teaching which include a criteria that: "employs ways to assess student readiness for course content and method of delivery and employs ways for students to effectively evaluate and assess their own readiness for course content and method of delivery" (NACOL, 2006, p. 9). In addition, the National Education Association (NEA) has a Policy on Distance Education that recognizes that preparation and support are necessary for a student to be successful in an online environment (NEA, 2002). The study of Pillay, Irving, and McCrindle (2006) asserts that given the online learning framework, students are being asked to take responsibility for their own learning. However, a parallel responsibility is anticipated from institutions to enable students to be able to meet this responsibility and this is reflected by the requirements of the four institutions. Itawamba Community College has a Flexibility Strategic Initiative to "Provide Quality Distance Learning Programs" which indicates the institution has taken responsibility and is committed to online instruction (ICC, 2006, p. 2).

Statement of Problem

Some students are registering for online classes without the necessary attributes and skills to successfully complete a course. Because of the convenience and flexibility of online classes, students are being attracted to this format without considering if they are ready to learn in the online environment. Pillay et al. (2006) asserts that in an online environment, readiness relates to the individual factors that a student brings to the education environment which in turn influences success. When predicting learner success in distance education, Watkins, Leigh, and Triner (2004, p. 70) profess it is difficult to define success because it "can be viewed from multiple perspectives, each having its own definition and criteria." Searching the Internet, logging-in to class, completing assignments, posting to discussion boards, and completing assessments all indicate success in an online class. For this study, success is defined as completing a class by achieving a passing grade of A, B, C, or D which is used for calculating a cumulative grade point average (GPA).

Questions to be Answered

Question 1: Which measurement variables (individual attributes, technical competency, reading comprehension, technical knowledge) are most influential in predicting success?

Question 2: Which learning styles (visual, social, physical, aural, verbal, solitary, logical) are most influential in predicting success?

Questions 3: Are there relationships between the success predictors and educational variables?

Justification for Study

      The purpose of this study is to evaluate readiness factors of students taking online classes. It is important for institutions that are offering online courses to recognize the importance of advising students of the requirements needed for a non-traditional form of education. Gunawardena and Duphorne (2001) maintain that "paying close attention to the attitudes and skills they bring with them, and orienting them to the skills they need to function effectively in an online environment, will help ensure success in class and a more satisfying learning experience" (p. 16). The results of this study will help identify areas where institutions can provide resources, such as a readiness training program, to fill the gaps where students are not competent for online courses. In regards to course development, the results can provide a baseline for the implementation of specific technologies. Gunawardena and Duphorne suggest that "instructional designers must also pay attention to learner readiness such as pre-requisite knowledge, skills, and learner attitudes that will influence participation in virtual learning experiences" (p. 23). The evaluation will assist in fulfilling the "responsibilities of educators and trainers to ensure that learners are adequately prepared to be successful in the learning environments we create" (Watkins et al., 2004, p. 70).

Limitations

      This study is limited to students registered in online courses at Itawamba Community College during the fall 2007 semester. In regards to internal validity, subject characteristics include variance in computer technology skills and experience with the online environment.

Definition of Terms

American College Testing (ACT) – standardized collegiate examination used since 1959

for admission requirements that covers English, mathematics, science and reading with a

highest possible composite score of 36 (ACT, 2008).

Asynchronous communication – interaction between people that is separated by minutes,

hours, or even days (United States Distance Learning Association [USDLA] Glossary of

Terms, 2008).

Autonomous learning – independent learning, self-governing learning (Warner et al.,

1998).

Computer-mediated communications (CMC) – use of computer systems that incorporate

communications software such as e-mail or LISTSERVs to enhance distance learning and

computer-managed instruction applications (USDLA Glossary of Terms, 2008).

Computer self-efficacy – learner's self confidence in performing tasks and perceived

ability to apply skills related to computers (Vuorela & Nummenmaa, 2004).

Degree-granting institutions – institutions that participate in Title IV federal financial aid

programs and grant associates or higher degrees (U.S. Department of Education, NCES,

2003).

Discussion boards – asynchronous discussions, used to carry on conversations with

instructor and students at any time (Watkins, 2004).

Distance learning – acquisition of knowledge and skills through mediated information

and instruction (USDLA Dictionary, 2008).

E-learning environments – environments that provide platforms that facilitate learning through communication that does not require face-to-face contacts or physical presence in the same space or at the same moment of time (Wahlstedt, Pekkola, & Niemel, 2008).

Lifelong learning - intermittent education, undertaken in school or other setting (Cohen & Brawer, 2003).

Real-time chats - synchronous communications, allow for conversations to develop quickly between the instructor and students because of immediate replies to questions and comments (Watkins, 2004).

Synchronous communication – describes interactions where the persons communicating are doing so at the same time (USDLA Glossary of Terms, 2008)

Tertiary education - higher education (UK); post-secondary school education - generally begun after high school, usually carried out at a university or college, and usually involving study for a degree or diploma (Encarta, 2008).

Traditional student – a student aged 18 – 24 (U.S. Department of Education, NCES, 2008a).

CHAPTER II

REVIEW OF LITERATURE

The literature review includes research on distance education, distance learning, online learning, e-learning, interactive classes, internet classes, online instructional methods, online technical skills, and computer-mediated communication. Other research includes review of interpersonal skills, learning styles, learning preferences, learning strategies, success factors, student satisfaction, self-confidence, readiness factors, reading comprehension, and persistence barriers.

Introduction

Success in online learning environments (OLE's) is a combination of the interaction of human, technologic, course, pedagogic, and leadership factors (Menchaca & Bekele, 2008). The success factors as described by Menchaca and Bekele: human - refers to the student and instructor understandings, perceptions, and competencies; technologic - links to the attributes of educational technology including tools for online collaboration, interaction, and communication; course - links to the critical elements needed in instructional design i.e., course organization, relevance to student need, clear goals and expectations, flexibility, and other quality elements; pedagogic - refers to the how of learning and instruction in OLE's; and leadership - denotes the role played by administration related to technology leadership and the logistics required for the

successful implementation of online learning. According to Menchaca and Bekele, the conceptual framework includes success measures and factors in online learning environments: measures - learning outcomes, student satisfaction, higher learning, faculty satisfaction, sustainability, scalability, rate of return; human – information and communication technology (ICT) competency, motivation, aptitude, experience, learning view, knowledge view, technology view, view of technology role in learning; technology – asynchronous, synchronous, multimedia, friendly, dependable, layout, alternative tools, capacity/speed; course – structure/organization, quality content, activities/projects, relevance, clear goals, clear expectations, motivating, challenging, flexible; pedagogic – collaborative, interactive, feedback oriented, problem-based, process oriented, learner-centered, flexible/some face-to-face (f2f) meeting; and leadership – technology provision, staff/student training, staff/professional development, help desks, ICT laboratories, support teaching staff, other logistics. Menchaca and Bekele concluded that successful OLE's should integrate multiple tools for different contexts; promote a positive attitude toward technology and OLE; incorporate a social and situated learning environment; include some level of f2f interaction; involve and rely on faculty at many levels, help participants develop appropriate skills, experience, training; and provide sustained administrative support (Menchaca & Bekele).

Human Factor

Educators need understand the online learning environment and be sensitive to the diverse learning styles, needs, and expectations in order to maximize the students' learning experiences. (Mupinga, Nora, & Yaw, 2006). In regards to learning styles, the

Mupinga et al. (2006) study used the Myers-Briggs Cognitive Style Inventory personality test and did not indicate a predominant learning style within the 131 web-based students. The following preferences are the first and last letters respectively of the learning style and are considered as attitudes: extroversion (E)/introversion (I) are how we prefer to interact with the world and judging (J)/perceiving (P) are how we prefer to construct our lives (Tieger & Barron-Tieger, 1995). Sensing (S)/intuition (N) are how we take in information and thinking (T)/feeling (F) are how we make decisions, which are the middle letters of the learning style and are considered functions (Tieger & Barron-Tieger, 1995). The learning styles with the most number of students as identified in the Mupinga et al. (2006) study were: 16% - ISTJ (introvert, sensor, thinker, judger), 16% - ISFJ (introvert, sensor, feeler, judger), 14% - ISTP (introvert, sensor, thinker, perceiver), and 8.40 % - ESFJ (extrovert, sensor, feeler, judger). The introvert exists in three styles and accounts for 46% of the students. Since introverts need space and work alone, these results are in alignment with the autonomous online environment. Mupinga et al. (2006) found that the top four requests of online students were technical help, flexible and understanding instructors, advance course information, and sample assignments. Additionally, Mupinga et al. (2006) found that communication with the professor, instructor feedback, and challenging online courses were the top expectations of students.

Graff (2004) researched the effectiveness of instructional methods (literature search, online discussion, and online assessment system) in regards to cognitive learning styles and individual differences in attitudes towards computer-based learning. The learning styles were measured by the Cognitive Style Analysis (Riding, 1991) which is a two dimensional classification: wholist-intermediate-analytic (individual processes

information either as an integrated whole or in discrete parts of that whole) and verbaliser-bimodal-imager (individual processes information either in words or in images). For cognitive styles, the Graff study results indicated no significance with literature search, significant differences between bimodals and imagers with online discussion, and significant differences between wholists and intermediates with online assessments. The Computer Attitude Test (Smalley, Graff, & Saunders, 2001) was the instrument used to assess the affective, behavioral, and cognitive attitudes toward computers. The Graff study results indicated no relationship existed between attitudes and instructional methods. Given the findings, Graff suggests that students need to be educated on using instructional methods in online environments.

In Menchaca's (2006) study of identifying optimal tools and strategies in distance learning environments, data was analyzed from student surveys, faculty surveys, student interviews, and student portfolios. The results of the Menchaca study indicated that technological tools need to relate to multiple learning styles: visual learners preferred accessing curriculum in graphical formats, social learners preferred collaborating with others in a real time chat discussions, and readers/writers preferred working asynchronously and publishing to discussion boards. Menchaca found that learning in a social framework was critical in an online environment and the appropriate strategies included processing content, discussing content, problem-solving through collaboration, reflecting, and building a community of learning. Students and faculty indicated collaborating and community-building were the most significant factors contributing to success. Furthermore, Menchaca "stated that the utilization of specific tools with appropriate strategies deepened the student understanding and strengthened their ability

to solve complex problems" (p. 5). Smith (2005) supports community building by stating

the "willingness to engage collaboratively with other learners online is an important

characteristic of learners if they are to be successful within an online environment" (p. 5).

The Student Self-Evaluation Checklist (McVay, 2001) is used to assist an

individual in assessing their readiness to take an online class. The following 13 items are

rated by respondents with a response level of "rarely, sometimes, most of the time, or all

of the time" (p. 7) with the last two indicating readiness for an online environment.

1. I am able to easily access the internet as needed for my studies.

2. I am comfortable communicating electronically.

3. I am willing to actively communicate with my classmates and instructors
    electronically.

4. I am willing to dedicate 8 – 10 hours per week for my studies.

5. I feel that online learning is of at least equal quality to traditional
    classroom learning.

6. I feel that my background and experience will be beneficial to new

    learning.

7. I am comfortable with written communication.

8. When it comes to learning and studying, I am a self-directed person.

9. I believe looking back on what I have learned in a course will help me
    remember it better.

10. In my studies I am self-disciplined and find it easy to set aside reading and
    homework time.

11. I am able to manage my study time effectively and easily complete
    assignments on time.

12.   As a student, I enjoy working by myself with minimal support or

interaction.

13.   In my studies I set goals and have high degree of initiative. (p. 7)

The McVay questionnaire was tested for reliability analysis and factor analysis by

Smith, Murphy, and Mahoney (2003). The results from the Smith et al. study indicated

the questionnaire to be reliable for research and practice and indicated a two-factor

structure in the areas of comfort with e-learning and self-management of learning. The

"McVay questionnaire describes a readiness for engagement with the particular form of

resource-based learning delivery that is online" and the identification of "the need for

self-direction in learning" (Smith et al., p. 63). The original questionnaire was revised in

2003 by Lynch with some of the questions revised and the addition of the following

statement:

14.   I believe I am the only one responsible for my learning. (PSU, 2008, p. 2)

The areas investigated in this instrument can aid a student in knowing what needs to be

addressed in order to be successful in an online environment. Flexible delivery of

training in the workplace can be applied to higher education. Smith (2001) identified a

lack of readiness for online learning and the need for learners to move towards learner

preparedness by: using experiences to develop new learning; using intrinsic motivation

instead of extrinsic motivation; setting own goals; evaluating and monitoring own

learning; using a problem solving approach; and selecting own learning strategies and

learning materials.

In the research of Contreras (2004), demographic variables, personality variables,

and computer use were compared to computer self-confidence. Age, annual income,

geographic region, gender, and ethnicity were the demographic variables specified by

Contreras. The Bicognitive Orientation to Life Scale (BOLS) measured field

independence, field sensitivity, and cognitive flex in regards to personality (Ramirez,

1999). Ramirez defined field independent as individuals with discovery-oriented

learning preferences, field sensitive as individuals with interactive personalized learning

preferences, and cognitive flex as individuals adept in either personality style. The

Contreras study found the significant predictors of computer self-confidence to be

computer experience, the number of online classes taken, cognitive flex and annual

income. In regards to future investigations, Contreras suggests a focus on "the

relationship between computer self-confidence and academic performance."

In the study of Menager-Beeley (2001), the purpose was to review student

motivation and the relationship with dropout behavior. Menager-Beeley found that

"student motivation can be ascertained in the first week of class and is a strong indicator

of 'at risk' status and later dropout" (p. 2). Also, Menager-Beeley suggested:

> If the degree of motivation a student holds for the class may put them at
>
> risk for non-completion or failure, appropriate intervention strategies may
>
> be designed to assist the student in a timely way and with a greater
>
> likelihood of success. Social cognitive models of motivation propose that
>
> self-beliefs and self-regulatory processes are important in explaining how
>
> an individual accomplishes a task in a specific context. (p. 3)

Menager-Beeley concluded that students expected to persist in class have high task

choice values; however, students over 28 years of age with low task values and low

grades in English have a higher risk of dropping out of an online class.

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Technological Factor

Technical skills are required as well as communication/interaction skills according to Barker (2002). WebReady, a self-paced, open entry/open-exit online computer literacy class, is used to prepare students for internet-based classes (Sevastopoulos & Bruni, 2002). The lessons covered include: (a) using a browser to view course web pages, (b) searching the internet, (c) receiving and sending email, (d) receiving and sending attached assignments, (e) decompressing and compressing files, (f) using acrobat reader to receive course materials, and (g) using a discussion board to collaborate. Each lesson includes background reading, visual aides, resource links, study quizzes, knowledge quiz, and skill/competency checks. Additional factors for success in an online course include being realistic about current knowledge in the subject matter and scheduling time to check email every day (Dervan, 2002). In the study conducted by Aqui (2005), time management skills and accessing the course daily were of higher importance than technical skills. In addition, Aqui's findings indicated about 49% of the 51 college students enrolled in the introductory psychology course spent 6-10 hours a week on coursework which included meeting participation requirements with individual postings, small group discussion board postings, and whole class discussion board postings. With the results of the Alexander, Polyakova-Norwood, Christensen, and Loquist (2003) study, it was suggested that students should be made aware of the learning styles that are advantageous in the environment in addition to the time requirements and technical skills needed to succeed in an online class. Being self-motivated, independent, and organized with time management skills are important characteristics of an online student (Alexander et al.). Additionally, Alexander et al. found that "it is possible to hold

students accountable to a high standard of learning while giving the students the freedom to learn through non-traditional ways" (p. 54), such as searching web-based databases and using links to external resources.

Individuals and institutions are developing their own assessment tools to measure their students' readiness for online learning. Tertiary Students' Readiness for Online Learning (TSROL) survey consists of 20 items grouped into factors of technical skills, computer self-efficacy, learning preferences, and attitudes towards computers (Pillay, Irving, & Tones, 2007). The results of the assessment can identify "online students who may be at risk of non-completion" and can refer students to "online skills coaching or traditional learning environments for supplementary learning materials" (Pillay et al., p. 233). "Through positive learning experiences, students may be encouraged to take more online courses and recommend the experience to other students" (Pillay et al., p. 233). Student Online Readiness Tool (SORT) consists of six main topics: technology experience, access to tools, study habits, lifestyle, goals and purposes, and learning preferences (Board of Regents Georgia, 2003).

Course Factor

When developing online content, "recognizing the differences of learning styles enables instructors to plan course activities that enhance the students' learning experiences" (Arant, Coleman, & Daniel, 2002, p. 12). Watkins (2004) states:

While many aspects of online learning are similar to those of the traditional classroom, significant differences in the skills required by e-learners in order to be successful should not be overlooked by organizations. By

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developing new learning approaches and study skills for the online

classroom, as well as adapting some of the useful skills learned through

experiences in traditional training, we can be better prepared for success. (p.

167)

According to Watkins, online real-time chats, online discussion boards, email, and online

readings are four areas essential for success in online learning. Reading comprehension

with online readings can be improved by identifying the purpose, previewing material,

asking questions/taking notes, and taking breaks every 30 minutes according to Watkins.

According to Sims, Dobb, and Hand (2001), in an effort of "ensuring the

achievement of educational outcomes, with learners gaining significant value from their

online experiences" (p. 517) the areas of learning design, interface design and

interactivity are important. In developing courses, the learning design should be from the

perspective of the learner not the content and consideration given to prior experience and

approaches to learning when implementing different types of learning and media

resources used to enhance learning (Sims et al.). When designing the interface between

the learner and the environment, the authors indicated:

Designers must spend more effort ensuring that learners are integrated into

a narrative sequence of the learning process, rather than a familiar solution

which sees content being presented in a glamorous and dynamic format

but without necessarily achieving engagement with the content through

the interface. (p. 513)

When considering interactivity in an online environment, the study suggested:

The ability of the learner to "inhabit" the interactive world presented to

them is naturally critical to its success as a learning environment. The

way in which the motor (navigational and control interactions), cognitive

(engaging and thinking aspects of the interactions) and collaborative

(computer-mediated interactions with other course participants) elements

of an interaction coalesce with the task being undertaken will contribute to

the successful engagement of the learner with the activity. (p. 514)

Akdemir and Koszalka (2008) define instructional strategies as the activities used

to engage learners in the learning process: (a) Expository – provide learners with lecture

notes; (b) Collaborative and group work – require individuals to work together to achieve

a common goal and prompt individuals to analyze, synthesize, and evaluate their ideas

collaboratively; (c) inquisitive (discovery learning) – require individuals to formulate

investigative questions, obtain factual information, and build knowledge, which reflects

their answers to the original question. According to Akdemir and Koszalka, the use of

these three strategies in designing online courses provided about the same learning

benefits for high-field and low-field dependent students. Akdemir and Koszalka state

high-field dependent individuals have difficulty locating information and tend to accept

information without reorganizing from the way it was presented. In contrast, low-field

dependent individuals are more likely to excel at learning tasks involving identification of

important aspects of information from a poorly organized body of information and are

likely to reorganize information to fit their own perceptions.. To make instruction more

appealing and effective, it is recommended by Akdemir and Koszalka to use expository

and collaborative strategies for high-field learners and discovery strategies for low-field

learners. "Ultimately, online students may gain more learning benefits from the course in terms of their perceived learning outcome, their effort and involvement, and level of activity that they perceive in the online class" (Akdemir & Koszalka, p. 17).

Gunawardena and Duphorne (2001) emphasize, "as learner readiness increases, so does satisfaction with the learning experience" (pp. 15-16). In a study using the Distance Education Learning Environments Survey (DELES) to analyze online learning environments, Sahin (2007) found that personal relevance, instructor support, active learning and authentic learning were significant in supporting student learning. Sahin suggests these variables contribute to satisfaction and "will increase student motivation, participation, and ultimately learning" (p. 6). Consequently, "online learning environments cannot be effective and thrive without considering students' needs and preferences" (Sahin, p. 6). When learning style classifications (sensory/intuitive, visual/verbal, active/reflective, and sequential/global) were compared to demographic data (gender, age, university classification, grade point average, major by academic department, experience with using web, and taking previous web-based courses), the only significant relationship the Stokes (2003) study found was participants who preferred visual learning to verbal learning had a significantly lower mean age. Stokes suggests that "regardless of the classification scheme, more learning occurs when instructional strategies are matched with students' learning styles" (p. 5) and "likewise, when students are aware of their learning style preferences, techniques can be used to maximize learning, particularly when the instructional styles differ from preferences" (p. 6).

Considering the factors related to online readiness, some students make a choice to withdraw from a course because they not achieving success. The four potential

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barriers to persistence in distance education were defined by Garland (1993) as: (a) situational barriers – individual's general environment (social, economic, or personal) and include issues of transportation, age, time constraints, family support, or family; (b) institutional barriers – college programs, policies, and procedures and include issues with admissions, registration, class schedules, financial, and other support services; (c) dispositional barriers – personal background and includes issues of attitude, motivation, learning styles, and self confidence; (d) epistemological barriers – academic or institutional matters and include course content, prerequisite knowledge, personal interest, and expectations. In the study of student retention by Moore, Bartkovich, Fetzner, and Ison (2002), the 22 reasons for withdrawal were matched with the four barriers resulting in four factors – "Show Stoppers" (institutional), "You Gotta Have Connections" (epistemological), "It's All in the Delivery" (dispositional), and "Life Happens" (situational) (p. 19). In regards to the course factor, "lacked basic computer skills, lacked basic typing skills, too much reading and writing, felt too alone-not part of the class, the course was taking too much time, and not interested in subject matter" (p. 18) were all considered epistemological reasons (Moore et al.). "Course was too difficult, lack of motivation, got behind and it was too hard to catch up, online course was too unstructured for me, didn't like the online format, and didn't like instructor's teaching style" (p. 18) were categorized as dispositional reasons for withdrawing from a course (Moore et al.).

Pedagogic Factor

Pedagogical issues of concern with educators in distance education include "student interactions, course content design and delivery, multiple levels of communication, defining new types of assignments and performance expectations, and different assessment and evaluation techniques (to name a few)" (Moller et al., p. 67). Falvo and Pastore (2005) assert "the social construction of knowledge demands the necessity of community in online classrooms and technology-rich environments" (p. 7). Falvo and Pastore suggest "complex dynamics of a group involve interpersonal communication, conflict resolution, consensus building, and formative and summative feedback" (p. 3). The results of the Falvo and Pastore study show how "collaborative activities, and student perceptions of collaboration skills used in conjunction with the heightened awareness of learning styles work to establish a relationship-oriented, learner-centered collaborative community" (p. 6).

According to Palloff and Pratt (2001), 'the successful online student tends to enjoy learning for learning sake" (p. 109) and "demonstrates good thinking skills, an ability to work and do some amount of research independently, and an ability to work with a minimal amount of structure" (p. 109). Characteristics of a student choosing online delivery as stated by Palloff and Pratt include "voluntarily seeking further education, are motivated, have higher expectations, and are more self-disciplined" (p. 109). With independent learning, Hillstock (2005) suggests it "takes more discipline on the part of the student to be successful in a distance education course and the work load is usually heavier than in a classroom" (p. 141). Consequently, online students need to assess how they learn best which will allow them to "determine best ways to prepare for

synchronous (i.e. chat) or asynchronous (i.e. discussion board) class discussions, quizzes, and exams" (Hillstock, p. 141).   To be successful in an online course, Hillstock concludes that "students need to be self-directed learners, in that they have to take responsibility for their own actions" (p. 141).

Pillay, et al. (2006) argue that "online learning is characterized by self-regulated learning, in that students have greater control over their learning and choice over the place, time and pace at which learning occurs" (p. 96). Online students display more independent learning styles than traditional students. When considering readiness for online learning, "a high level of technical proficiency may not be sufficient for effective student learning if it is not accompanied by the desire or confidence to engage in information and communication technology in online learning contexts" (Pillay et al., p. 101). A readiness instrument can be used for identification of at risk students for an online learning environment and in turn be used to "streamline selection into courses that require students to have already attained competency to certain technical skills and to demonstrate an active and confident orientation to learning within a virtual environment" (Pillay et al., p. 101). Additionally, the instrument allows for "early identification of students who may experience difficulties in courses which incorporate online activities and resources as part of learning and assessment" (Pillay et al., p. 101).

Some research has reviewed whether a student's readiness to be a self-directed learner is a predictor of student success in an online community college curriculum. The Self-Directed Learning Readiness Scale (SDLRS), authored by Guglielmino in 1977, was the instrument Doherty (2000) used to determine if a relationship existed between self-directed learning readiness and student success, as measured by course completion, grade

point average, and student satisfaction. The results showed that an indicator of student

success in online education is how the student perceives their interactions with the

instructor (Doherty). The Pachnowski and Jurczyk (2000) study also used the SDLRS

and supplementary demographic data for the students (age range, grade point average,

hours a week spent at job, and rating on possession of attitudes/habits needed to be

successful in course) and instructors information (grade, rate students on attitudes/habits,

and rate students technical skills) to determine whether student characteristics of self-

directedness correlates with student success in Web-based courses, as defined by course

grade. The "instructors' ratings of student attitudes and habits was the best indicator, and

students' technical skills were a good indicator in a smaller sample in which students'

grades were higher" (Pachnowski & Jurczyk, p. 6).

In the study with Overbaugh and Lin (2006), "differential effects of learning

styles and learning orientations on sense of community and cognitive achievement in

Web-based and lab-based university course formats" (p. 205) were compared.

Overbaugh and Lin found that students classified as extroverts performed better in the

traditional setting and introverts performed better in the web-based setting which

correlates since the traditional course format is synchronous and web-based course

format is asynchronous. "Learning styles had no effect on Sense of Community levels"

(p. 217) which Overbaugh and Lin suggest may indicate "certain personality types don't

want (even though they might benefit) or need socialization for increased learning" (p.

217).

Observations of student activities in an online environment give insight to

developers for course design and delivery. "Click-stream data is not limited to counting

the number of clicks. Structural measures (patterns of activity) and temporal measures (when and for how long) can complement basic 'click' data to help us follow and understand the 'footprints' learners leave when working online" (del Valle & Duffy, 2004, p. 801). Some of the variables included in the del Valle and Duffy study were number of sessions used to complete course, days between logins, hours spent online, time spent on resources, messages read, and transitions between course activities. The del Valle and Duffy analysis of the data supported three groups of learners with similar approaches to online learning: (a) task oriented learners complete assignments efficiently and quickly, (b) grade oriented learners are in no hurry to complete the assignments and want to spend only a minimal amount of time with an intermediate level of commitment, and (c) goal oriented learners are highly committed to the course and self-driven in their work. "Different learners make a different use of the freedom and flexibility provided by the self-paced online environment" (del Valle & Duffy, p. 805).

Leadership Factor

Leadership is important in implementing and maintaining an online education program. The institution is required to outlay a substantial amount of capital for the infrastructure of the online delivery application and for maintaining the system. Institutions need a strategic plan for distance education and "management must provide leadership in developing this plan for the institution as a whole" (Care & Scanlan, 2001, p. 1). At the same time, leadership is conscientious of the economy and minimizing costs for the student, institution, and the environment. With the leadership from colleges and universities promoting distance education, the offerings of online classes is their

recommendation to help eliminate global warming emissions because of the decrease in transportation requirements (ACUPCC, 2008).

A definition of a distance education leader varies but includes transformational, situational and systemic leadership characteristics which are beneficial in dealing with the issues of online education (Marcus, 2004). Distance learning administrators manage the program and deal with ancillary issues. "The more difficult issues are resistance by segments of the faculty to distance education, faculty intellectual property rights, workload, training and technical support, faculty support, and job security" (Marsh, McFadden, & Price, 1999, p. 8).

CHAPTER III

METHODOLOGY

Research Design

Students registered for online classes in the fall 2007 semester at Itawamba

Community College (ICC) received an email from the Dean of Distance Learning

Instruction requesting the completion of the READI assessment. The link to the

assessment and their username/password were included in the correspondence to the

students. Completing the assessment was completely voluntary and no repercussion

occurred for non-completers. Permission was granted by the Dean of Distance Learning

Instruction at Itawamba Community College to use the READI data and institutional data

for this evaluation.

Participants

The population for this study is 1,506 students that accessed the READI

assessment between August 1, 2007 and December 31, 2007. Some attempts were

removed because of duplicate attempts or uncompleted attempts. A sample of 250

students was randomly selected from the population.

Instrumentation

READI, Readiness for Education At a Distance Indicator, from Distance Education Consulting and Development Experts (DECADE), LLC is the instrument used in this study. READI is a web-based tool which assesses a learner's likelihood for succeeding in an online learning program. The five major assessment components that READI measures are: reading speed and comprehension, technical skills and comprehension, individual attributes (academic record, help seeking, persistence, procrastination, time management, locus of control), preferred learning styles (based on the multiple intelligences model), and typing speed and accuracy. The instrument measuring the variables in each of the five major areas is adapted from a larger instrument which has been tested for reliability and validity. The reading rate and comprehension measurement was developed by LiteracyWorks.org which is a project of the National Institute for Literacy and by ReadingSoft.com. The technical competency and typing components were developed by Dr. Adkins who is one of the authors for the Alabama Course of Study in Technology. The individual attributes component is based on the dissertation research of Dr. Hartman. The preferred learning styles instrument is adapted from the larger instrument administered by memletics.com and is based on the multiple intelligence research by Dr. Gardner. The typing speed and accuracy measurement is based on the research of Teresia Ostrach which produced deciles for average typing speeds.

Procedures

The READI assessment was completed by the online student. A sequence of activities were completed by the student which were used to measure the degree to which students possess the attributes, skills, and knowledge needed for success in studying at a distance. Participants received immediate feedback in the form of a report that indicated their scores in the five READI components: reading speed and comprehension, technical competency, individual attributes, preferred learning styles and typing speed and accuracy. The personalized report includes a comparison of scores to national averages and links to additional resources on typing help, studying, computer literacy, reading, and learning styles. In addition, ICC has access, via the Internet, to a summary of the diagnostic information on each student that attempted the assessment.

Data Analysis

The dataset used for this evaluation includes the results from the READI assessments and the corresponding ICC institutional data. The READI data includes the following fields: age, gender, number of online courses taken, date/time taken, individual attributes, overall technical competency, computer competency, internet competency, technical knowledge, reading comprehension, typing words per minute (WPM), typing accuracy, learning styles – visual (spatial), social (interpersonal), physical (kinesthetic), aural (auditory-musical), verbal (linguistic), solitary (intrapersonal), logical (mathematical), and primary (dominant) learning style. Institutional data includes the variables of total semester hours completed, cumulative grade point average, number of online classes, and ACT composite score. The results and institutional data were merged

together by the Itawamba Community College Telecommunications and Information

Systems Department, the dataset for this study did not contain any identifiers to maintain

the anonymity of the participants. Descriptive statistics were reported for the

demographical, educational, and READI measurement variables. Given the descriptive

results, associational research investigated the relationships with educational variables.

CHAPTER IV

RESULTS AND DISCUSSION

Introduction

The purpose of this study was to evaluate readiness variables of students taking online classes in the fall 2007 semester at Itawamba Community College. This chapter is divided into four sections of variable analysis. The first section presents the summarization of demographical variables - gender and age. In the second section, educational variables of ACT scores, number of online courses completed, total semester hours completed, and cumulative grade point average are discussed. The third section analyzes READI measurement variables of individual attributes, technical competency (computer and Internet), technical knowledge, reading comprehension, typing speed proficiency, and learning styles. Learning style categories include visual, social, physical, aural, verbal, solitary, and logical; in addition, consideration is given to the primary learning style and secondary learning styles. Basic statistics are given for each of the areas of demographical variables, educational variables, and the READI measurement variables. The fourth section provides a discussion on the statistical analysis in regards to the three research questions. The Statistical Package for Social Sciences (SPSS) 16.0 was used for determining descriptive statistics and conducting the Multiple Regression analysis. The chapter concludes with a summary of the findings as related to the research questions.

Demographical Variables

Demographical variables of gender and age are indicated to provide an overview

of the sample of online students completing the READI assessment during the fall 2007

semester.

<u>Gender</u>

Table 4.1 shows the breakdown of the students by gender. The sample studied

was 87.2% female representing 218 students and 12.8% male representing 32 students.

Table 4.1

Gender

Gender	Students	Percentage
Female	218	87.2
Male	32	12.8
	250	100

<u>Age</u>

Table 4.2 summarizes the age of the students included in the study. There were

nine ranges for age starting at 13 and ending with 59. The 18 – 22 range had the most

students and accounted for 49.6% of the sample. The second largest group was 23 – 27

and accounted for 19.2% of the students. These two groups account for 68.8% of the

students. In terms of the total sample with age, 31.2% of the students are younger than

18 or older than 27.

Table 4.2

Age

Age Range	Students	Percentage
13 – 17	3	1.2
18 – 22	124	49.6
23 – 27	48	19.2
28 – 32	23	9.2
33 – 37	20	8.0
38 – 42	17	6.8
43 – 47	10	4.0
48 – 52	4	1.6
53 – 59	1	0.4
	250	100

Educational Variables

<u>ACT Scores</u>

Table 4.3 shows the breakdown of ACT scores for the 250 students. The range of ACT scores was 8 – 33. The mode score of the sample was 18 making up 14.4% and the score of 20 was the second common score with 10.4%. The ACT scores of 21 and 22 were the third and fourth highest ranking scores. The eight scores of 17, 18, 19, 20, 21, 22, 23 and 24 represented 72.4% of the sample. The median of the ACT scores was 20 and the mean was 19.7.

Table 4.3

ACT Scores

ACT Score	Students	Percentage
8	1	0.4
9	1	0.4
10	3	1.2
11	1	0.4
12	4	1.6
13	3	1.2
14	9	3.6
15	12	4.8
16	12	4.8
17	20	8.0
18	36	14.4
19	21	8.4
20	26	10.4
21	23	9.2
22	22	8.8
23	18	7.2
24	15	6.0
25	5	2.0
26	9	3.6
27	2	0.8
28	1	0.4
29	2	0.8
30	1	0.4
31	1	0.4
32	1	0.4
33	1	0.4
	250	100

Table 4.4 lists the number of online courses completed by the students. One hundred twenty nine students indicated completion of one course prior to the fall 2007 semester which comprised 51.6% of the sample. Seventy one students indicated completion of two courses. Sixteen students indicated completion of three courses. Twenty eight students indicated completion of four courses. Six students indicated completion of five courses. Within the total sample, most students were fairly new to the online environment since only 20% of the students had completed three, four, or five classes. The mean of the number of online courses completed was 1.84.

Table 4.4

Online Courses Completed

Courses	Students	Percentage
0	0	0
1	129	51.6
2	71	28.4
3	16	6.4
4	28	11.2
5	6	2.4
	250	100

Total Semester Hours Completed

Table 4.5 indicates the total semester hours completed before the fall 2007 semester. Three students were a first semester student and taking their first online class since they had zero semester hours completed. The largest group (22.0%) of the students

had completed 15 – 29 semester hours. The second largest range of semester hours

completed was 60 – 74. The next largest range of semester hours completed was 30 – 44.

With the last six ranges starting at 75 – 89 semester hours, 18.4% of students had

completed semester hours beyond the typical 2-yr degree requirements.

Table 4.5

Total Semester Hours Completed

Semester Hours	Students	Percentage
0	3	1.2
3 – 14	19	7.6
15 – 29	55	22.0
30 – 44	41	16.4
45 – 59	34	13.6
60 – 74	52	20.8
75 – 89	21	8.4
90 – 104	13	5.2
105 – 119	4	1.6
120 – 134	6	2.4
135 – 159	1	0.4
160	1	0.4
	250	100

Cumulative Grade Point Average (GPA)

Table 4.6 summarizes the cumulative grade point averages for the 250 students.

The majority of the students (50.8%) had a GPA of 3.00 – 3.99. Ninety four students

were rated in the second highest range for cumulative GPA range of 2.00 – 2.99. Only 12

students had a 4.00 cumulative grade point average which is considered an A. As stated

earlier, three students were enrolled in their first semester and did not yet have a

cumulative GPA.

Table 4.6

Cumulative Grade Point Average (GPA)

GPA	Students	Percentage
0	3	1.2
1.00 – 1.99	14	5.6
2.00 – 2.99	94	37.6
3.00 – 3.99	127	50.8
4.00	12	4.8
	250	100

READI Measurement Variables

Individual Attributes

Table 4.7 demonstrates the ratings for the individual attributes assessment. The

students rated 24 questions with a response of not like me at all, not much like me,

somewhat like me, or very much like me for a maximum score of 96. The assessed areas

included time management, procrastination, persistence, academic attributes, locus of

control, and willingness to ask for help. The lowest score was 54 and the highest score

was 96. The largest score (65) scored in the range of 80 – 84 which accounted for 26%

of the students. In regards to the total, 175 students scored between 75 and 89 on the

individual attributes assessment which represented 70% of the sample. The mean was

80.1 for individual attributes rating.

Table 4.7

Individual Attributes

Rating	Students	Percentage
0 – 4	0	0.0
5 – 9	0	0.0
10 – 14	0	0.0
15 – 19	0	0.0
20 – 24	0	0.0
25 – 29	0	0.0
30 – 34	0	0.0
35 – 40	0	0.0
40 – 44	0	0.0
45 – 49	0	0.0
50 – 54	1	0.4
55 – 59	0	0.0
60 – 64	6	2.4
65 – 69	19	7.6
70 – 74	26	10.4
75 – 79	59	23.6
80 – 84	65	26.0
85 – 89	51	20.4
90 – 94	21	8.4
95 – 96	2	0.8
	250	100

<u>Technical</u>

Table 4.8 indicates the ratings for the students on computer competency. The skills measured were identifying correctly formatted email addresses, following an Internet link, opening a file, identifying the appropriate application for a task, downloading/listening to an audio file, identifying files within folders, identifying an email attachment, saving a file, and printing a file. The score of 100 was the mode rating which was achieved by 188 students (75.2%). A rating of 80 was indicated by 56 students (22.4%). In comparison to the national average of 79, the mean rating of this sample was 94.4.

Table 4.8

Computer Competency

Rating	Students	Percentage
0	0	0.0
10	0	0.0
20	0	0.0
30	0	0.0
40	2	0.8
50	0	0.0
60	4	1.6
70	0	0.0
80	56	22.4
90	0	0.0
100	188	75.2
	250	100

Table 4.9 lists the ratings for students on Internet competency. Internet competency was assessed by the completion of an activity using a search engine. The score of 100 was the mode rating which was achieved by 171 students (68.4%). A rating of 80 was indicated by 63 students (25.2%). In comparison to the national average of 73, the mean rating for this sample was 92.3.

Table 4.9

Internet Competency

Rating	Students	Percentage
0	0	0.0
10	0	0.0
20	0	0.0
30	0	0.0
40	1	0.4
50	0	0.0
60	15	6.0
70	0	0.0
80	63	25.2
90	0	0.0
100	171	68.4
	250	100

Table 4.10 summarizes the overall technical competency of the students. This rating level is a combination of the areas of computer competency and internet competency. Within the total sample, students scored ratings between 50 and 100. In comparison to the national average of 76, the mean rating for this sample was 93.4.

Table 4.10

Overall Technical Competency

Rating	Students	Percentage
0	0	0.0
10	0	0.0
20	0	0.0
30	0	0.0
40	0	0.0
50	2	0.8
60	2	0.8
70	6	2.4
80	24	9.6
90	82	32.8
100	134	53.6
	250	100

Table 4.11 presents ratings of Technical Knowledge for the students. The rating is a result of questions regarding technology usage with the computer, technology usage in life, technology vocabulary, and personal computer/Internet specification. The scores ranged from 26 – 78. Sixty one students were in the range from 55 – 59 and 52 students in the range from 50 - 54. In comparison to the national average of 56, the mean rating of this sample was 53.6.

Table 4.11

Technical Knowledge

Rating	Students	Percentage
0 – 4	0	0.0
5 – 9	0	0.0
10 – 14	0	0.0
15 – 19	0	0.0
20 – 24	0	0.0
25 – 29	3	1.2
30 – 34	3	1.2
35 – 39	13	5.2
40 – 44	20	8.0
45 – 49	35	14.0
50 – 54	52	20.8
55 – 59	61	24.4
60 – 64	35	14.0
65 – 69	21	8.4
70 – 74	3	1.2
75 – 79	4	1.6
80 – 84	0	0.0
85 – 89	0	0.0
90 – 94	0	0.0
95 – 100	0	0.0
	250	100

Table 4.12 indicates the ratings for Reading Comprehension. The students read a passage and then answered questions about the passage. The score of 90 was the mode rating which was achieved by 61 students (24.4%). A rating of 80 was indicated by 60 students (24.0%). In comparison to the national average of 73, the mean rating for this sample was 73.8.

Table 4.12

Reading Comprehension

Levels	Students	Percentage
0	0	0.0
10	2	0.8
20	5	2.0
30	3	1.2
40	11	4.4
50	12	4.8
60	32	12.8
70	47	18.8
80	60	24.0
90	61	24.4
100	17	6.8
	250	100

Table 4.13 indicates the Reading Comprehension percentages using the profile categories from READI. Within the sampled students, 33 students (13.2%) were below average readers and 79 students (31.6%) were average readers for a total of 44.8%. One-hundred thirty eight students were rated as good/excellent readers which is 55.2% of the students.

Table 4.13

Reading Comprehension Profile

Levels	Profile	Students	Percentage
0		0	
10		2	
20	Below Average Reader	5	13.2
30		3	
40		11	
50		12	
60	Average Reader	32	31.6
70		47	
80	Good/Excellent Reader	60	55.2
90		61	
100		17	
		250	100

<u>Typing</u>

Table 4.14 indicates Typing Words Per Minute (WPM). Actual WPM ranged from 10 – 63. Forty nine students (19.6%) were in the range 0 – 20 and 41 students (16.4%) in the range 21 – 25. In comparison to the national average of 28.0, the mean rating of this sample was 30.4. The standard deviation for the typing WPM was 10.3.

Table 4.14

Typing Words Per Minute (WPM)

WPM	Students	Percentage
0 – 20	49	19.6
21 – 25	41	16.4
26 – 29	37	14.8
30 – 33	33	13.2
34 – 37	28	11.2
38 – 43	31	12.4
44 – 48	17	6.8
49 – 55	12	4.8
56 – 63	2	0.8
64 – 120	0	0.0
	250	100

Table 4.15 lists the students' Typing Accuracy ratings. Typing accuracy ranged from 67.4% – 100.0%. One-hundred four students had accuracy between 95% and 99%. In comparison to the national average of 94.0, the mean rating for this sample was 96.0. The standard deviation for the typing accuracy was 5.9.

Table 4.15

Typing Accuracy

Accuracy	Students	Percentage
0 – 64	0	0.0
65 – 69	2	0.8
70 – 74	4	1.6
75 – 79	1	0.4
80 – 84	6	2.4
85 – 89	12	4.8
90 – 94	26	10.4
95 – 99	104	41.6
100	95	38.0
	250	100

Learning Styles

READI used the following styles to determine learning style preferences: visual learning style, social learning style, physical learning style, aural learning style, verbal learning style, solitary learning style, and logical learning style. The student was asked 35 questions and responded in one of the following ways: the statement is very much like me, the statement is partially like me, or the statement is nothing like me. Students may have one dominant style or have a combination of styles.

49

Table 4.16 summarizes Visual Learning Style levels. The visual (spatial) learner prefers pictures, images, and spatial understanding. The top three scores in total occurrences were 12 with 17.3%, 8 with 16.8%, and 10 with 15.6%. These three scores represent 124 students (49.6%). The mode level was 12.

Table 4.16

Visual Learning Style

Levels	Students	Percentage
0	0	0
2	8	3.2
4	24	9.6
6	27	10.8
8	42	16.8
10	39	15.6
12	43	17.2
14	27	10.8
16	23	9.2
18	10	4.0
20	7	2.8
	250	100

Table 4.17 summarizes Social Learning Style levels. The social (interpersonal) learner prefers to learn in groups or with other people. The top three scores in total occurrences were 18 with 24.4%, 14 with 18.8%, and 16 with 17.6%. These three scores represent 152 students (60.8%). The mode level was 18.

Table 4.17

Social Learning Style

Levels	Students	Percentage
0	0	0.0
2	1	0.4
4	1	0.4
6	3	1.2
8	6	2.4
10	23	9.2
12	35	14.0
14	47	18.8
16	44	17.6
18	61	24.4
20	29	11.6
	250	100

Table 4.18 summarizes Physical Learning Style levels. The physical (kinesthetic) learner prefers using the body, hands, and sense of touch. The top 3 scores in total occurrences were 10 with 22.4%, 14 with 17.2%, and 8 with 11.2%. These three scores represent 127 students (50.8%). The mode level was 10.

Table 4.18

Physical Learning Style

Levels	Students	Percentage
0	0	0.0
2	1	0.4
4	4	1.6
6	14	5.6
8	28	11.2
10	56	22.4
12	50	20.0
14	43	17.2
16	26	10.4
18	21	8.4
20	7	2.8
	250	100

Table 4.19 summarizes Aural Learning Style levels. The aural (auditory-musical) learner prefers using sound and music. The top three scores in total occurrences were 16 with 20.4%, 14 with 17.6%, and 12 with 15.6%. These three scores represent 134 students (53.6%). The mode level was 16.

Table 4.19

Aural Learning Style

Levels	Students	Percentage
0	0	0.0
2	1	0.4
4	6	2.4
6	8	3.2
8	19	7.6
10	21	8.4
12	39	15.6
14	44	17.6
16	51	20.4
18	37	14.8
20	24	9.6
	250	100

Table 4.20 summarizes Verbal Learning Style levels. The verbal (linguistic) learner prefers words, both in speech and writing. The top three scores in total occurrences were 12 with 18.9%, 16 with 16.4%, and 14 with 15.6%. These three scores represent 127 students (50.9%). The mode level was 12.

Table 4.20

Verbal Learning Style

Levels	Students	Percentage
0	0	0.0
2	2	0.8
4	9	3.6
6	8	3.2
8	15	6.0
10	33	13.2
12	47	18.8
14	39	15.6
16	41	16.4
18	32	12.8
20	24	9.6
	250	100

Table 4.21 summarizes Solitary Learning Style level. The solitary (intrapersonal) learner prefers to work alone and use self-study. The top three scores in total occurrences include 12 with 20.4%, 14 with 20.0%, and 16 with 18.0%. These three scores represent 146 students (58.4%). The mode level was 12.

Table 4.21

Solitary Learning Style

Levels	Students	Percentage
0	0	0.0
2	0	0.0
4	5	2.0
6	10	4.0
8	21	8.4
10	38	15.2
12	51	20.4
14	50	20.0
16	45	18.0
18	15	6.0
20	15	6.0
	250	100

Table 4.22 summarizes Logical Learning Style level. The logical (mathematical) learner prefers using logic, reasoning and systems. The top three scores in total occurrences include 12 with 20.0%, 14 with 18.0%, and 16 with 17.6%. These three scores represent 139 students (55.6%). The mode level was 12.

Table 4.22

Logical Learning Style

Levels	Students	Percentage
0	0	0.00
2	3	1.2
4	4	1.6
6	11	4.4
8	21	8.4
10	35	14.0
12	50	20.0
14	45	18.0
16	44	17.6
18	21	8.4
20	16	6.4
	250	100

Table 4.23 summarizes the primary learning styles. The Social Learning Style was the dominant style with 51 students (20.4%). The second highest dominant style was Aural with 37 students (14.8%). The Verbal Learning Style was third highest with 25 students (10.0%). There were 3 students (1.2%) that were dominant in all 7 styles. There were 53 students (21.2%) with dominance in 2 styles.

Table 4.23

Primary Learning Style(s)

Style	Students	Percentage
Aural	37	14.8
Aural / Logical	2	0.8
Aural / Solitary	3	1.2
Aural / Verbal	5	2.0
Aural / Verbal / Logical	2	0.8
Aural / Verbal / Solitary	1	0.4
Logical	14	5.6
Physical	8	3.2
Physical / Aural	3	1.2
Physical / Aural / Verbal / Solitary / Logical	1	0.4
Physical / Logical	1	0.4
Physical / Verbal	1	0.4
Physical / Verbal / Solitary / Logical	1	0.4
Social	51	20.4
Social / Aural	9	3.6
Social / Aural / Logical	2	0.8
Social / Aural / Solitary	1	0.4
Social / Aural / Verbal	1	0.4
Social / Logical	5	2.0
Social / Physical	2	0.8
Social / Physical / Aural	3	1.2
Social / Physical / Aural / Verbal	1	0.4
Social / Physical / Solitary / Logical	1	0.4
Social / Physical / Verbal / Logical	1	0.4
Social / Solitary	4	1.6

table continues

Table 4.23 (continued)

Style	Students	Percentage
Social / Solitary / Logical	2	0.8
Social / Verbal	5	2.0
Social / Verbal / Logical	2	0.8
Solitary	18	7.2
Verbal	25	10.0
Verbal / Logical	4	1.6
Verbal / Solitary	2	0.8
Verbal / Solitary / Logical	4	1.6
Visual	9	3.6
Visual / Aural	1	0.4
Visual / Logical	1	0.4
Visual / Physical / Aural / Logical	1	0.4
Visual / Physical / Solitary	1	0.4
Visual / Social	4	1.6
Visual / Social / Aural / Verbal	1	0.4
Visual / Social / Physical	3	1.2
Visual / Social / Physical / Aural	2	0.8
Visual / Social / Physical / Aural / Verbal / Solitary / Logical	3	1.2
Visual / Social / Verbal / Logical	1	0.4
Visual / Solitary	1	0.4
	250	100

Research Question 1 Discussion

Which measurement variables (individual attributes, technical competency,

reading comprehension, technical knowledge) are most influential in predicting success?

Table 4.24 presents the descriptive statistics for the individual attributes, technical competency, reading comprehension, and technical knowledge predictor variables.

Table 4.24

Descriptive Statistics Predictor Variables

Variable	Mean	Std. Deviation
Cumulative GPA	2.96	
Individual Attributes	80.13	7.522
Overall Technical Competency	93.36	9.046
Reading Comprehension	73.80	18.421
Technical Knowledge	53.60	9.122

The SPSS output results from multiple regression analysis on the independent variables (individual attributes, technical competency, reading comprehension, and technical knowledge) and dependent variable cumulative GPA were divided into three parts: model summary, ANOVA, and coefficients. A multiple correlation, R, indicated how much information about the dependent variable was contained in the independent variables. R Square represented the degree of variance accounted for by the independent variables. F-test and Significance determined the degree of relationship between the independent and dependent variable. Tolerance and VIF measured multicollinearity among the independent variables and indicated excluded variables that made no significant contribution to the analysis (Mertler & Vannatta, 2005).

Table 4.25 summarizes the Stepwise Multiple Regression analysis for the predictor variables of Individual Attributes and Reading Comprehension. The Stepwise multiple regression removed one variable at a time to determine the impact on the remaining variables. The analysis indicated that Technical Competency and Technical Knowledge did not make meaningful contributions to the overall prediction. Individual Attributes were the strongest contributor (5.0%) to the prediction of cumulative GPA.

Table 4.25

Stepwise Multiple Regression Predictor Variables

Model Summary		
R	**R Square**	**Adj. R Square**
a. .223	.050	.046
b. .272	.074	.067
ANOVA		
Mean Square	**F**	**Significance**
a. 6.263	12.934	.000
b. 4.690	9.902	.000
Coefficients		
Beta	**Tolerance**	**VIF**
a. .223	1.000	1.000
b. .182 .162	.936	1.069

a. Individual Attributes
b. Individual Attributes, Reading Comprehension

Table 4.26 summarizes the Stepwise Multiple Regression analysis of the excluded predictor variables. The Technical Competency and Technical Knowledge variables were removed from the analysis because they did not make meaningful contributions to the overall analysis in predicting cumulative GPA.

Table 4.26

Stepwise Multiple Regression Excluded Variables

Excluded Variables			
Significance		Tolerance	VIF
a.	.258	.993	1.007
b.	.011	.936	1.069
c.	.626	.947	
a..	.440	.971	1.030
c.	.779	.869	1.151

a. Technical Competency
b. Reading Comprehension
c. Technical Knowledge

Research Question 2 Discussion

Which learning styles (visual, social, physical, aural, verbal, solitary, logical) are most influential in predicting success?

Table 4.27 lists the Descriptive Statistics of mean and standard deviation for Cumulative GPA, Visual Learning Style, Social Learning Style, Physical Learning Style, Aural Learning Style, Verbal Learning Style, Solitary Learning Style, and Logical Learning Style.

Table 4.27

Descriptive Statistics Learning Styles

Variable	Mean	Std. Deviation
Cumulative GPA	2.962	
Visual Learning Style	10.33	4.354
Social Learning Style	15.05	3.518
Physical Learning Style	12.13	3.658
Aural Learning Style	13.93	4.053
Verbal Learning Style	13.44	4.212
Solitary Learning Style	12.92	3.682
Logical Learning Style	12.95	3.940

The SPSS output results from multiple regression analysis on the independent variables (Visual, Social, Physical, Aural, Verbal, Solitary, and Logical Learning Style) and dependent variable cumulative GPA were divided into three parts: model summary, ANOVA, and coefficients. A multiple correlation, R, indicated how much information about the dependent variable was contained in the independent variables. R Square represented the degree of variance accounted for by the independent variables. F-test and Significance determined the degree of relationship between the independent variables and dependent variable. Tolerance and VIF measured multicollinearity among the independent variables and indicated excluded variables that made no significant contribution to the analysis (Mertler & Vannatta, 2005).

Table 4.28 illustrates the Stepwise Multiple Regression for the predictor variable

Logical Learning Style. The Stepwise multiple regression removed one variable at a time

to determine the impact on the remaining variables. The analysis indicated Visual

Learning Style, Social Learning Style, Physical Learning Style, Aural Learning Style,

Verbal Learning Style, and Solitary Learning Style did not make meaningful

contributions to the overall prediction. Logical Learning Style was the strongest

contributor (2.7%) to the prediction of cumulative GPA.

Table 4.28

Stepwise Multiple Regression Learning Styles Predictor Variables

Model Summary		
R	**R Square**	**Adj. R Square**
.165	.027	.023
ANOVA		
Mean Square	**F**	**Significance**
3.430	6.919	.009
Coefficients		
Beta	**Tolerance**	**VIF**
.165	1.000	1.000

Table 4.29 illustrates the Stepwise Multiple Regression learning styles excluded

variables. Visual Learning Style, Social Learning Style, Physical Learning Style, Aural

Learning Style, Verbal Learning Style, and Solitary Learning Style were removed from

the analysis because they provided no significant contributions.

Table 4.29

Stepwise Multiple Regression Learning Styles Excluded Variables

Excluded Variables		
Significance	**Tolerance**	**VIF**
a. .106	.859	1.164
b. .556	.884	1.131
c. .721	.939	1.065
d. .316	.950	1.053
e. .525	.702	1.425
f. .554	.873	1.146

a. Visual Learning Style
b. Social Learning Style
c. Physical Learning Style
d. Aural Learning Style
e. Verbal Learning Style
f. Solitary Learning Style

Research Question 3 Discussion

Are there relationships between the success predictors and educational variables?

Table 4.30 summarizes the Stepwise Multiple Regression analysis for the

predictor variables of individual attributes, technical competency, reading

comprehension, technical knowledge, learning styles (Visual, Social, Physical, Aural,

Verbal, Solitary, Logical) and the educational, dependent variable ACT score. The

Stepwise multiple regression removed one variable at a time to determine the impact on

the remaining variables. The analysis indicated that Technical Knowledge, Visual

Learning Style, Social Learning Style, Physical Learning Style, Verbal Learning Style,

Solitary Learning Style, and Logical Learning Style did not make meaningful

contributions to the overall prediction. Reading Comprehension, Technical Competency,

and Aural Learning Style were contributors to the analysis. Reading Comprehension was

the strongest contributor (11.3%) to the prediction of ACT score.

Table 4.30

Stepwise Multiple Regression Predictor Variables ACT Score

Model Summary		
R	**R Square**	**Adj. R Square**
a. .336	.113	.109
b. .403	.163	.156
c. .425	.181	.171
ANOVA		
Mean Square	**F**	**Significance**
a. 450.456	31.457	.000
b. 325.601	24.003	.000
c. 241.275	18.107	.000
Coefficients		
Beta	**Tolerance**	**VIF**
a. .336	1.000	1.000
b. .298	.973	1.028
.227	.973	1.028
c. .277	.950	1.052
.222	.972	1.029
.137	.973	1.028

a. Reading Comprehension
b. Reading Comprehension, Technical Competency
c. Reading Comprehension, Technical Competency, Aural Learning Style

Table 4.31 summarizes the Stepwise Multiple Regression analysis of the excluded

predictor variables for ACT scores. The excluded variables of Individual Attributes,

Technical Competency, Technical Knowledge, and Visual, Social, Physical, Aural,

Verbal, Solitary, and Logical Learning Style were removed from the analysis.

Table 4.31

Stepwise Multiple Regression Excluded Predictor ACT Score

Excluded Variables		
Significance	**Tolerance**	**VIF**
a. .879	.936	1.069
b. .000	.973	1.028
c. .181	.892	1.122
d. .134	1.000	1.000
e. .261	.987	1.013
f. .934	1.000	1.000
g. .016	.974	1.027
h. .379	.971	1.030
i. .853	.972	1.028
j. .018	.926	1.080
a. .747	.934	1.071
c. .274	.887	1.128
d. .209	.994	1.006
e. .205	.986	1.014
f. .869	.996	1.004
g. .020	.973	1.028
h. .519	.967	1.035
i. .640	.967	1.034
j. .057	.908	1.101
a. .846	.931	1.074
c. .305	.886	1.129
d. .415	.954	1.048
e. .563	.890	1.123
f. .622	.920	1.087
h. .869	.924	1.083
i. .864	.951	1.051
j. .131	.877	1.141

a.   Individual Attributes   f.   Physical Learning Style
b.   Technical Competency   g.   Aural Learning Style
c.   Technical Knowledge   h.   Verbal Learning Style
d.   Visual Learning Style   i.   Solitary Learning Style
e.   Social Learning Style   j.   Logical Learning Style

Table 4.32 summarizes the Stepwise Multiple Regression analysis for the

predictor variables of individual attributes, technical competency, reading

comprehension, technical knowledge, learning styles (Visual, Social, Physical, Aural,

Verbal, Solitary, and Logical) and the educational, dependent variable of online courses

completed. Verbal, Social, and Aural Learning Style were contributors to the analysis.

The Verbal Learning Style was the strongest contributor (5.2%) to the prediction of

online courses completed.

Table 4.32

Stepwise Multiple Regression Predictor Variables Online Courses Completed

Model Summary		
R	**R Square**	**Adj. R Square**
a. .228	.052	.048
b. .289	.084	.076
c. .316	.100	.089
ANOVA		
Mean Square	**F**	**Significance**
a. 15.796	13.549	.000
b. 12.762	11.282	.000
c. 10.150	9.097	.000
Coefficients		
Beta	**Tolerance**	**VIF**
a. .228	1.000	1.000
b. .318	.797	1.255
-.200	.797	1.255
c. .333	.788	1.269
-.163	.747	1.339
-.135	.886	1.129

a. Verbal Learning Style
b. Verbal Learning Style, Social Learning Style
c. Verbal Learning Style, Social Learning Style, Aural Learning Style

Table 4.33 summarizes the Stepwise Multiple Regression analysis of the excluded predictor variables for online completed courses. The variables of Verbal Learning Style, Social Learning Style and Aural Learning Style were the three contributory variables.

Table 4.33

Stepwise Multiple Regression Excluded Predictor Online Courses Completed

Excluded Variables		
Significance	**Tolerance**	**VIF**
a. .228	.808	1.238
b. .686	.991	1.009
c. .762	.899	1.113
d. .587	.971	1.030
e. .148	.937	1.068
f. .004	.797	1.255
g. .140	.919	1.088
h. .006	.945	1.058
i. .889	.733	1.365
j. .055	.702	1.425
a. .196	.807	1.238
b. .559	.988	1.012
c. .762	.899	1.113
d. .666	.969	1.032
e. .210	.931	1.074
g. .575	.819	1.220
h. .037	.886	1.129
i. .842	.732	1.365
j. .112	.690	1.448
a. .310	.791	1.264
b. .643	.984	1.016
c. .782	.898	1.113
d. .853	.955	1.047
e. .327	.913	1.095
g. .798	.801	1.248
i. .908	.731	1.368
j. .157	.685	1.460

a. Individual Attributes   f. Social Learning Style
b. Technical Competency   g. Physical Learning Style
c. Technical Knowledge   h. Aural Learning Style
d. Reading Comprehension   i. Solitary Learning Style
e. Visual Learning Style   j. Logical Learning Style

Findings Summary

The findings of the three research questions are summarized as follows:

Question 1: Which measurement variables (individual attributes, technical competency, reading comprehension, technical knowledge) are most influential in predicting success?

1. Descriptive statistics were calculated for the variables including mean and standard deviation.

2. Multiple Regression analysis was performed with the independent variables of individual attributes, technical competency, reading comprehension, and technical knowledge and the dependent variable GPA.

3. Stepwise Multiple Regression indicated that individual attributes and reading comprehension contributed most to the overall analysis.

Question 2: Which learning styles (visual, social, physical, aural, verbal, solitary, logical) are most influential in predicting success?

1. Descriptive statistics were calculated for the variables including mean and standard deviation.

2. Multiple Regression analysis was performed with the independent variables of visual, social, physical, aural, verbal, solitary, and logical learning styles and the dependent variable GPA.

3. Stepwise Multiple Regression indicated that the Logical Learning Style contributed most to the overall analysis.

Question 3: Are there relationships between the success predictors and educational variables?

1.   Multiple Regression analysis was performed with the independent variables of individual attributes, technical competency, reading comprehension, technical knowledge, Visual Learning Style, Social Learning Style, Physical Learning Style, Aural Learning Style, Verbal Learning Style, Solitary Learning Style, and Logical Learning Style and the dependent variable ACT score.

2.   Stepwise Multiple Regression indicated that Reading Comprehension, Technical Competency, and Aural Learning Style have a predictive relationship with ACT scores.

3.   Multiple Regression analysis was performed with the independent variables of individual attributes, technical competency, reading comprehension, technical knowledge, visual learning style, social learning style, physical learning style, aural learning style, verbal learning style, solitary learning style, and logical learning style and the dependent variable online courses completed.

4.   Stepwise Multiple Regression indicated that Verbal Learning Style, Social Learning Style, Aural Learning Style have a predictive relationship with online courses completed.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

Online education has grown substantially over the years because of the flexibility it has given the student in acquiring an education. For many, higher education is now a reality instead of just a dream. With this educational format, traditional and non-traditional students are taking classes to obtain a degree or pursue lifelong learning. Unfortunately, some students are taking online classes without being equipped with the necessary skills required for successful completion. Educational groups and accrediting institutions are providing leadership with respect to student readiness by dictating directives, best practices, standards, and policies to address the issue with online learning. Educational institutions not only have a responsibility to provide educational opportunities but to assist their students in meeting their educational goals.

The literature review is structured around five factors that contribute to online instruction. According to Menchaca and Bekele (2008), the factors of human, technological, course, pedagogic, and leadership have a role in the success of online learning environments. The human factor addresses the importance of knowing the learning style preferences of the students. The technological factor includes the areas of technical competency, technical knowledge, typing speed, and typing accuracy. The course factor represents the instructional design of a course as a result of the individual

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attributes and skills of the student. The pedagogic factor deals with the various types of learning and communication techniques with the self-directed learner. The leadership factor is considered of highest importance because without support from administration the online environment would not be possible.

Chapter three outlines the methodology used in this study to evaluate readiness factors for online education. The Readiness for Education At a Distance Indicator (READI) assessment was completed by students registered for online classes at Itawamba Community College in the fall 2007 semester. The READI assessment analyzed the areas of individual attributes, technical competency, reading comprehension, learning styles, and typing speed and accuracy (DECADE, 2006). The instrument is adapted from larger instruments and has been tested for reliability and validity. The diagnostic results of the assessments were the foundational data used in this study.

Descriptive statistics were given for the variables and the correlational research findings were presented in respect to the research questions. Stepwise Multiple Regression statistical analysis in the fourth chapter was used to determine the correlation between the measurement variables and educational variables. Given the results, instructors and course developers can design course content to meet the preferences of the students. In addition, institutions can provide support and skills training to assist the student in being successful in the online environment.

Conclusions

The following conclusions are made from this study:

1. The demographical variables included in the study were gender and age. The gender breakdown of the students was 87.2% female and 12.8% male. The student between the ages of 18 and 27 represents 68.8% of the 250 sample. With such a high percentage of females and a traditional and slightly older student, this statistic may be explained by the student taking advantage of having to balance family, work, and school.

2. The study included the educational variables: ACT scores, online courses completed, total semester hours completed, and cumulative grade point average (GPA). Given the ACT scores 17 – 24, they accounted for 181 students. Since the highest possible score is 36 on the ACT, 72.4% scored around the middle of the range indicating an average student. Eighty percent of the students completed one or two online classes before the current semester which indicates students had some experience with online education. Given the total semester hours completed, the largest group was the range 15 – 29 semester hours. A cumulative grade point average (GPA) of 3.00 – 4.00 accounted for 55.6% of the students which indicates above average and excellent academic achievement.

3. READI Measurement Variables included individual attributes, technical, reading, typing, and learning styles. The results provide benchmarks for future analysis. Benchmark levels are representative of the scores by the majority of the students or the mean - Individual Attributes 80 – 84 (out of

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100), Computer Competency 100 (out of 100), Internet Competency 100 (out of 100), Overall Computer Competency 100 (out of 100), Technical Knowledge 55 -59 (out of 100), Reading Comprehension 90 (out of 100), Typing WPM 30 (mean), and Typing Accuracy 95 – 99 (out of 100). The benchmark levels (out of 20) for the learning styles include: Visual Learning Style 12, Social Learning Style 18, Physical Learning Style 10, Aural Learning Style 16, Verbal Learning Style 12, Solitary Learning Style 12, and Logical Learning Style 12. In regards to the Primary Learning styles, the most dominant are Social Learning Style, Aural Learning Style, and Verbal Learning Style.

4. Individual Attributes and Reading Comprehension are significant readiness factors for online courses. Skills and the lack of skills in time management, procrastination, persistence, academic attributes, locus of control, and willingness to help are influential in performing class activities. With online classes, a significant amount of time is required for reading course materials and completing content assessments which confirms the need for reading comprehension. Even though the other two READI Measurement Variables of Technical Competency and Technical Knowledge did not statistically show significance, they are obviously vital in the online classroom.

5. Of the seven learning styles, the Logical Learning Style is the contributory style for success in an online class. Given the online environment is very

structured and requires a systematic approach to obtain education, it is not surprising the Logical Learning Style is influential in predicting success.

6. An analysis of READI Measurement Variables and Learning Styles indicates Reading Comprehension correlates to the ACT score and Verbal Learning Style correlates to online course completed. Since the ACT exam covers the subjects of English, mathematics, science and reading, the reading score could be used as a placement requirement since a significant amount of time reading is required in an online class. Communication in an online environment is primarily in the format of written words by email or other communication tool which are techniques preferred by the verbal learner.

7. The Typing WPM and Typing Accuracy results of this study indicate a mean of 30.4 for WPM and a mean of 96.0 for Accuracy. Both of these are above the national averages of 28.0 and 94.0 respectively. Students scoring below the national average should strive to improve their typing proficiency to see an improvement in their ability to participate in online courses.

Recommendations

The following recommendations are made as a result of the study:

1. Expand the READI repository by making the completion of the assessment a requirement. In order to maintain the continuity of the data, the assessment should be submitted within the first two weeks of the class.

2.	Design and implement course content to meet the learning preferences of students. By knowing the dominant learning styles of online students, institutions and instructors can design and implement course content based on the learning style techniques. Since Social Learning Style is the primary style of the students in this study, course content needs to include activities designed to create a sense of community with the students and instructor. The use of technologies such as discussion boards (asynchronous communication) and real-time chat (synchronous communication), as well as group projects, would meet the style preference. With the second primary learning style being Aural, the use of multimedia including sound and music would accommodate the students that have the auditory learning style.

3.	Implement threshold values in READI for the categories of Overall Technical Competency, Technical Knowledge, Individual Attributes, and Reading Competency to target deficiencies. Each category has a value for Failed, Questionable, and Passed (Adkins, 2008). For Overall Technical Competency, the values are below 80, 80 – 90, and 90+. For Technical Knowledge, the values are below 50, 50 – 75, and 75+. For Individual Attributes, the values are below 70, 70 – 85, and 85+. For Reading Competency, the values are below 65, 65 – 85, and 85+. Threshold values can assist in advising students for online education.

4.	Analyze the data and provide assistance to students in their areas where they are deficient. Develop a readiness training program that includes

structured activities for improving reading speed & comprehension and

technical competency & knowledge. Additionally, provide opportunities

for students to improve their typing proficiency.

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APPENDIX A

INSTITUTIONAL REVIEW BOARD (IRB) APPROVAL LETTER

Mississippi State
UNIVERSITY

October 27, 2008

Delena Hukle
270 Pearce Drive
Mantachie, MS 38855

RE: IRB Study #08-257: An Evaluation of Readiness Factors for Online Education

Dear Ms. Hukle:

The above referenced project was reviewed and approved via administrative review on 10/24/2008 in accordance with 45 CFR 46.101(b)(4). Continuing review is not necessary for this project. However, any modification to the project must be reviewed and approved by the IRB prior to implementation. Any failure to adhere to the approved protocol could result in suspension or termination of your project. The IRB reserves the right, at anytime during the project period, to observe you and the additional researchers on this project.

Please note that the MSU IRB is in the process of seeking accreditation for our human subjects protection program. As a result of these efforts, you will likely notice many changes in the IRB's policies and procedures in the coming months. These changes will be posted online at http://www.orc.msstate.edu/human/aahrpp.php.

Please refer to your IRB number (#08-257) when contacting our office regarding this application.

Thank you for your cooperation and good luck to you in conducting this research project. If you have questions or concerns, please contact me at cwilliams@research.msstate.edu or call 662-325-5220.

Sincerely,

Christine Williams
IRB Compliance Administrator

cc: Ed Davis (Advisor)

APPENDIX B

PERMISSION LETTER

Itawamba
Community
College

June 12, 2008

To whom it may concern:

As Dean of Distance Learning Instruction at Itawamba Community College} this letter is documentation of granting permission to Delena Hukle} a Community College Leadership doctoral student, to use the READI data and institutional data for her dissertation.

Sincerely,

Ellene McCrimon

Dr. Ellene McCrimon
Dean of Distance Learning Instruction
Itawamba Community College
2176 S. Eason Boulevard
Tupelo} MS 38804

2176 South Eason Boulevard • Tupelo, Mississippi 38804 • 662.620.5000

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APPENDIX C

ITAWAMBA COMMUNITY COLLEGE FACT SHEET

Fact Sheet
And
Campus Map

EMPHASIS
Freshman and sophomore level university transfer, early career, adult education, continuing education and workforce development..

ENROLMENT
Fulton Day 2349, Tupelo Day 825, Fulton/Tupelo Night 2482, Total Enrollment 5656. Faculty: Student Ratio is 1:18. Typical class size is 20 to 45 students.

SETTING
ICC, founded in 1948, serves progressive Northeast Mississippi with campuses in Fulton, located on the recreationally-oriented Tenn-Tom Waterway and Tupelo, located in the All-American city offering shopping, dining, recreation and entertainment..

ACCREDITATION
Accredited by the Commission on Colleges of the Southern Association of Colleges and Schools (1866 Southern Lane, Decatur, Georgia 30033-4097; Telephone number 404.679.4501) to award the Associate Degree.

STUDENT DEMOGRAPHICS

Sex		Race			
Female	60%	White	72%	Asian American	1%
Male	40%	Black	24%	Hispanic	1%
		American Indian	1%	Other	1%

COST
The cost of attending ICC is only about one-third the cost of a university. ICC's current cost per semester:

Tuition	$600
Room	$400-$450
Meals	$570
Books/Supplies (Estimated)	$300-$400

FINANCIAL AID AND SCHOLARSHIPS
More than 75 percent of ICC's students receive some type of grant, loan, work-study or scholarship. An attractive scholarship program is offered to students whose past performance demonstrates excellence and participation.

HOUSING
ICC operates five modern residence halls. Rooms with individual baths, carpeting, security and individually controlled heat/air accommodate approximately 850 students.

ADVISEMENT, COUNSELING, CAREER PLANNING
In addition to personal/social counseling, each student has an advisor for course planning and scheduling. A modern Career Planning Center assists students with the crucial decision of finding the "right" major.

INTERCOLLEGIATE ATHLETICS
ICC has a strong tradition of competitive athletics. Many students have signed with major universities. Some have played professional sports. Students may participate in men's/women's basketball, men's/women's tennis, football, softball, baseball, soccer and

SOCIAL
A collegiate environment offers numerous opportunities for involvement in clubs and organizations. There are also intramural sports, fine arts activities, band, chorus, theatre, publications, Indian Delegation, Fashion Tribe and cheerleading. Students enjoy participating in activities which build friendships, personal development and provide enjoyment..

WEBSITE
Visit ICC's website at www.iccms.edu

UNIVERSITY TRANSFER

Accounting	Physics
Agriculture	Political Science
Art	Pre-Architecture
Biology	Pre-Dentistry
Business Administration	Pre-Engineering
Business Education	Pre-Law
Chemistry	Pre-Medicine
Computer Engineering	Pre-Nursing
Computer Information Systems	Pre-Occupational Therapy
Computer Science	Pre-Optometry
Court Reporting	Pre-Pharmacy
Criminal Justice	Pre-Physical Therapy
Elementary Education	Pre-Veterinary
English	Psychology
Family and Consumer Science	Psychology - Educational and Clinical
Foreign Languages	Public Administration
Geology	Radio And Television Broadcasting
Graphic Communication	Science
Health Information Management	Secondary Education
History	Social Science
Journalism	Social Studies
Liberal Arts or Arts and Sciences	Social Work
Library Science	Sociology
Mathematics	Special Education
Medical Technology/Clinical Laboratory	Speech Education
Music	Speech Pathology
Paralegal	Sports Medicine
Physical Education	

EARLY CAREER

Tupelo Campus Early Career Programs

Automotive Technology/	Health Information Technology
Computer Programming Technology/	Heating and Air Conditioning Technology/
Computer Network Support Technology	Local Area Networking Technology
Computer Servicing Technology	Microcomputer Technology
Diesel Equipment Technology/	Office Systems Technology/
Drafting and Design Technology/	Surgical Technology/
Electrical Technology/	Tool and Die Making Technology/
Electronic Commerce Technology	Ultrasound Technology
Electronics Technology	

Vocational Certificate Programs

Collision Repair Technology	Practical Nursing
Commercial Truck Driving	Welding and Cutting
Electrical Construction Technology	

Fulton Campus Early Career Programs

Agribusiness Technology	Interpreter Training Technology
Business and Marketing Technology	Nursing - Associate Degree
Child Development Technology	Physical Therapist Assistant Technology
Emergency Medical Technician Paramedic	Radiologic Technology
Forestry Technology	Respiratory Therapy Technology/

*Optional 1-year Certificate also offered in these programs

CAMPUS TOURS
Visitors are always welcome! ICC is open 8 a.m.-4 p.m. weekdays. If convenient, visits are preferred on Fridays at 9,10,11 a.m. or 1 p.m. To request a tour, catalog, application or additional information, contact:.

Student Affairs	Student Affairs
ICC	ICC
602 W. Hill Street	2176 South Eason Blvd.
Fulton, MS 38843	Tupelo, MS 38804
662.862.8280	662.620.5000

Itawamba Community College is an equal opportunity institution.

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APPENDIX D

MSVCC FALL SEMESTER 2007 ENROLLMENT DATA

College	# of Sections Provided	# of Courses Provided	#of sections Hosted	# of Participating Instructors	Non-Duplicated Head Count	Average # of Classes Taken by Each Student	# of Class Entries (Enrollment)	Total # of Seats Provided	# of Seats Hosted From Other Colleges	# of Seats Provided to In-District Students	# of Seats Provided to Out-of-District Students	# of Course No Shows
CCC	33	29	71	22	519	2.52	1309	943	392	917	25	1
COLIN	55	44	214	39	788	2.33	1835	1370	643	1192	163	5
ECCC	51	43	94	29	456	2.21	1008	1039	236	772	245	123
EMCC	163	90	112	91	1452	2.41	3504	3607	518	2986	571	343
HINDS	218	125	27	102	1913	2.24	4290	4766	146	4144	512	234
HOLMES	36	36	311	24	1035	2.34	2418	952	1574	844	106	0
ICC	379	96	97	265	2891	2.38	6884	8415	194	6690	1240	468
JONES	45	31	46	24	948	1.72	1629	1499	202	1427	70	287
MCC	82	69	32	46	723	1.89	1367	1514	62	1305	207	152
MDCC	58	56	89	37	657	2.47	1624	1875	174	1450	337	149
MGCCC	183	99	28	109	2261	1.78	4033	4327	117	3916	387	250
NECC	37	25	132	27	614	1.91	1175	760	450	725	34	47
NWCC	173	87	36	64	1421	1.96	2786	3013	99	2687	307	24
PRCC	71	53	35	44	635	2.05	1303	1413	177	1126	271	142
SMCC	46	34	268	20	439	2.04	894	566	442	452	108	22
TOTALS	1630		1592	943	16752	2.15	36059	36059	5426	30633	4583	2247

Mississippi Virtual Community College
Fall Semester 2007 Enrollment Data

MSVCC Totals

Number of Courses = 279
Number of Sections = 1,630
Number of Instructors = 943
Total Enrollment (class entries) = 36,059 (After removing 2,247 no shows = 33,812 enrollments)
Non-Duplicated Head Count = 16,752
Average Number of Classes Taken by Each Student = 2.15