1-11-2011

Cyber High School Students' Transition to a Traditional University

Dorothy M. Gracey
Indiana University of Pennsylvania

CYBER HIGH SCHOOL STUDENTS' TRANSITION TO A TRADITIONAL UNIVERSITY

A Dissertation

Submitted to the School of Graduate Studies and Research

in Partial Fulfillment of the

Requirements for the Degree

Doctor of Education

Dorothy M. Gracey

Indiana University of Pennsylvania

December 2010

Indiana University of Pennsylvania
The School of Graduate Studies and Research
Department of Professional Studies in Education

We hereby approve the dissertation of

Dorothy Myslinski Gracey

Candidate for the degree of Doctor of Education

_____ _____
Dr. Frank Corbett, Jr., Chairperson
Professor of Professional Studies in Education

_____ _____
Dr. DeAnna Laverick
Assistant Professor of Professional Studies in Education

_____ _____
Dr. Kelly Heider
Associate Professor of Library Science

_____ _____
Dr. David Loomis
Assistant Professor of Journalism

ACCEPTED

_____ _____
Dr. Timothy P. Mack, Dean
The School of Graduate Studies and Research

Title: Cyber High School Students' Transition to a Traditional University

Author: Dorothy M. Gracey

Dissertation Chair: Dr. Frank. Corbett, Jr.

Dissertation Committee Members: Dr. DeAnna Laverick
Dr. Kelly Heider
Dr. David Loomis

This mixed-method study identifies cyber high school graduates' perceptions of the effect of a cyber high school education on successful transition to a traditional university. The study examined students' perceptions of the advantages and disadvantages their cyber education experience contributed to their academic and social transition to college. In addition, the level of involvement of cyber high school graduates in university-based social activities was compared to the similar involvement of their university peers.

The study was conducted at four universities in the Pennsylvania State System of Higher Education. The analyses of quantitative data from a survey of 32 cyber high school graduates' academic self-efficacy showed that cyber high school graduates believed they had the academic abilities to succeed in college. Responses from participants for select questions from the 2008 National Survey of Student Engagement were compared to responses by a representative sample of the general student population at study sites to the same questions. Results indicated that involvement of cyber high school graduates in university-based social activities was not significantly different than the involvement of their university peers.

Qualitative analysis was applied to data from focus group interviews involving 14 cyber high school graduates. Findings revealed that unique features of cyber education, particularly related to pace and learner independence, had an effect on cyber high school graduates' early college experiences. Negative academic transition experiences resulted from adjustments to a

loss of control over the flexibility and pace of their learning. Negative social transition experiences resulted from the increased daily interactions with peers that cyber graduates did not have during their cyber high school experiences. However, students reported more positive than negative effects. The majority of students believed their cyber education adequately prepared them for transition to college. Participants perceived they gained academic skills in cyber high school which enabled successful transition. They also believed themselves to be socially well-adjusted.

ACKNOWLEDGEMENTS

As I write this acknowledgment, I am still not sure it should be done. I will never be able to mention all of the people who were critical in this process. I know where it started, and where it ended, but the path along the way is not so clear. Conversations, ideas, consolation, encouragement, and help have been given to me by so many family members, friends, and colleagues during this journey. How is it possible to say which was more important than another? At each moment, the support I received was exactly what I needed to take just one more step. So, I offer a humble appreciation to the following people, knowing full well that there are so many more whose names I do not write:

To Dr. Frank Corbett – I cannot thank you enough for your help. You kept me 'on the train', especially when I wanted to disembark many times along the way. Your encouragement and guidance made me strive toward excellence. I will never forget the experience.

To Drs. Kelly Heider, DeAnna Laverick, and David Loomis – your assistance was incredible. You always made me take the blinders off to see issues from many vantage points, and to do quality work. Thank you for being such wonderful mentors throughout the process. I am privileged to now be your colleague.

To Dawn – so many years ago, you urged me onto this path; because of your support, I kept my 'eye on the prize' and finally made it to the first reward. I will never forget your help and friendship.

To Lucinda – thank you for the many, many nights the warmth of your words and of *Prelude to Promotion* kept me motivated. I promise to pay it forward.

To Renee – your help was so appreciated when I needed it most. Thanks for the many quick reviews, listening ear, and sense of humor that kept me going.

To JoAnn and Gary – if all your friends were to jump off a bridge, you wouldn't follow them; you'd be at the bottom, waiting with a net. Thanks for being there, always.

To Pat and Kim – you made this possible – from the idea to the last review. Thank you!

Finally, to my husband and sons, how lucky I am to have three unique and wonderful men in my life. Brian – words cannot express the gratitude I feel for the support and love you have shown over the course of this journey. It has been as hard on you in many ways. Thank you for never giving up, for always being there to read, re-read, offer suggestions, and to hold me - and us - together.

Kyle and Alex – this, like everything since each of you were born, has ultimately been for you. You are my inspiration and my motivation. I can only hope to be the same for you. Wherever your journeys take you, remember that the best rewards are found in what is learned about yourself and others along the way.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

INTRODUCTION

The time of transition from high school to college can be filled with stress. During this period, students are consumed with apprehension over how well they will perform. Can I handle the workload? Will I get along with my professors? Will my peers accept me? Leaving the safety of family and familiarity of peers and high school is scary. For cyber schooled students whose primary contact with teachers and classmates has occurred from the security of their living room, heading to college may be even more disconcerting. Cyber high school graduates may experience unique issues as they move from a classroom of one to a community of many (Maeroff, 2003).

Problem of the Study

The problem of this study is to identify cyber high school graduates' perceptions of the effect of a cyber school education on transitioning successfully to a traditional university. The study seeks to address the existing lack of research regarding student transitions from K-12 cyber education to college. The study will examine students' perceptions of the advantages and disadvantages that their cyber education experience contributed to their academic performance and social engagement at the university. In addition, this study will determine the level of involvement of cyber high school graduates in university social activities compared to their non-cyber educated university peers.

Background of the Study

A diverse population of students is arriving on the campuses of traditional universities (Smith & Zhang, 2009). Incoming freshmen represent a wide range of ethnicities, socioeconomic statuses, ages, and academic abilities, and, due to technological advances and

changing state and national policies, a growing number of students are entering college from non-traditional educational formats. Among them are students who have graduated from cyber high schools where education is delivered entirely online. According to S. Patrick, President and Chief Executive of the International Association for K-12 Online Learning, there were more than 100,000 full-time cyber school students in the United States by the spring of 2009 (Scolforo, 2009). In 2000, only two cyber schools existed in Pennsylvania. In the 2008-09 school year, over 22,000 students attended the state's 11 independent, full-time cyber schools (Pennsylvania Department of Education, 2009a). The largest cyber school in the state, Pennsylvania Cyber Charter School, graduated 1,032 students in June, 2010 (P. Jacoby, personal communication, August 20, 2010).

There was unsurprising resistance to this new format of education for K-12 students in the early 1990s (McLester, 2002). In the 1980s and 1990s, the majority of courses and programs delivered via computer was geared to the adult learner, as many assumed that the self-regulation needed for solitary learning was beyond the maturity of children and adolescents (Maeroff, 2003). Red flags were raised by those concerned over potential lack of course quality taught by K-12 educators unfamiliar with this new medium, and fear spread that staying at home to attend cyber school disrupted opportunities for students to gain critical socialization skills through close interaction with their peers (McLester, 2002). Despite those concerns, in the late 1990s the movement of education online in the United States did infiltrate elementary and secondary levels, and a period of exponential acceptance and development has followed (Rice, 2006).

Because cyber education is delivered in a format unlike face-to-face education, cyber schools meet the needs of students with different learning preferences (Watson & Gemin, 2008). Learning pace can be customized to each student's needs, creating a viable option for both gifted

and learning disabled students. Anonymity provided in the virtual classroom gives voice to shy students who were previously inconspicuous in school. Cyber education levels the playing field for students with low self-image by preventing visual cues from prejudicing peers and instructors (Hassel & Terrell, 2004).

One conclusion in particular has emerged from the ongoing research of cyber education. Learning online is different than learning in a traditional classroom. In describing the pedagogical dimension of distance education, Peters (2003) declared that "distance education has become a unique form of teaching and learning that differs in decisive structural elements from face-to-face educations and requires different approaches" (p. 61).

Based on the increase in the number of cyber schools (Cavanaugh, Barbour, & Clark, 2009), well-designed cyber education appears to work on the elementary and secondary level, especially for students needing individualized instruction. Some students, such as those who are accelerated, are slower learners, are hospital bound, or who travel extensively during the school year, experience a closer match in cyber school between their needs and the curricula available in a traditional school. However, caution should be used when comparing cyber to traditional education. While frustrated parents and students unhappy with some aspect of traditional classes may think online education is an answer to problems encountered in traditional school, Maeroff (2003) warns that "courses over the Internet may not suit all students...[but] such courses have already shown they can and do serve the needs of some students under certain circumstances" (p. 283).

Evaluation of education offered at a distance raises questions of the advantages and disadvantages of online courses; the quality and design of courses measured by interaction occurring within the setting; the changes that teachers and learners encounter, particularly in

their interaction with each other; and, most importantly, the quality of learning that occurs. A 2009 meta-analysis of evidence-based practices in online learning prepared for the U. S. Department of Education reported "a surprising lack of studies comparing the learning effectiveness of online and face-to-face instruction for K-12 students" (U. S. Department of Education, Office of Planning, Evaluation, and Policy Development, 2009, p. xii). The review of literature for the meta-analysis included reports published between 1996 and 2008. For that period, no studies were found contrasting full-time K-12 cyber education to education delivered in a traditional K-12 school; but studies of K-12 online classes have shown promising results.

By most indications revealed in research data, experience in cyber education can produce a laundry list of desirable traits. Researchers have found increased learner autonomy and independence, augmented analytical and communication skills, well-developed study skills, and high levels of motivation, self-efficacy, and self-regulated learning (Frid, 2001; Kramarski & Mizrachi, 2006; Roblyer & Marshall, 2003).

Beyond academic concerns are worries over the social education students receive in cyber school. Imparting social skills and cultural mores has long been considered a key role of education, making students ready to participate in society and to accept its norms. Traditional classroom interaction with teachers, peers, and school staff develops students culturally and socially. The question that arises is whether cyber education is able to provide the same social development as that afforded by traditional education. Unease over the absence of visual cues and spontaneous interaction in the cyber classroom is felt by cyber school administrators. To resolve socialization concerns, most cyber organizations encourage, and sometimes require, students' participation in virtual and physical outings beyond the academic classroom (Watson & Gemin, 2008). Coordinated field trips and social gatherings are designed to emulate the

interaction that traditional school students experience. Such efforts are applauded but may be unnecessary.

Social scientists and educational researchers propose that the current generation of late adolescents, including cyber and non-cyber students, are accustomed to interacting in a virtual world. Proponents of cyber schools and researchers interested in the millennial generation of students born after 1980 contend that these interactions match and exceed the socialization afforded by traditional school attendance. Taylor (2006) argues that "many of their interpersonal relationships exist primarily online, and the lines between the online and the live (what we might consider the virtual and the real) are blurred or nonexistent" (p. 49). Oblinger (2008) supports the assertion that much of today's students' socialization occurs online. In *Growing up with Google,* she reports that over 800,000 students polled across the nation asserted that over 30% of their friends are people they have never met in person. Therefore, it may be that technologically savvy teens have similar socialization skills regardless of where they attend high school.

Like their traditional school counterparts, many students graduating from cyber schools are moving on to higher education. And, like traditional high school graduates, cyber high school graduates attend a wide variety of postsecondary institutions, from community colleges to elite Ivy League universities and selective military academies (Pennsylvania Cyber Charter School, 2009). As cyber high school graduates join the ranks of other first-year students at traditional universities, they fall under the watchful eye of academic departments concerned with the retention and success of their student bodies.

Substantial research is available regarding the high-school-to-college transition (Bergerson, 2007; Dyson & Renk, 2006; Zychowski, 2007). Universities are particularly interested in the transition process and what they can do to enhance student adjustment. As new

minority groups of students have moved onto campus, studies related to their specific transition issues have emerged. In the light of changing school systems and current education reforms (Chaker, 2009), organizations like the Social Science Research Council (2007) have urged increasing investigation of the impact of these changes on students and their transition to college. As stated in the U.S. Department of Education, Office of Planning, Evaluation, and Policy Development report (2009), there has been little research conducted on the practices and results of K-12 cyber education. This includes a lack of research on the transition of cyber high school graduates to traditional colleges.

Preparation for college resulting from online education may be different than preparation garnered from a traditional school. Students develop unique behaviors to succeed in online learning, especially in the exclusive online setting of cyber school (Maeroff, 2003). Whether those behaviors inhibit or contribute to cyber high school graduates' academic and social success at a traditional university is important to understand as the numbers of cyber high school graduates increase. Higher education faculty's and staff's understanding of these students' perceptions of the transition process should aid in the recruitment and retention of cyber high school graduates.

Any attempt to understand the transition needs of students should look to research for insight. Two recurring themes in transition research are self-efficacy beliefs and involvement. Self-efficacy beliefs are an individual's judgment of his or her ability to reach desired goals (Bandura, 1977) and involvement is "the amount of physical and psychological energy that the student devotes to the academic experience" (Astin, 1999, p. 518). Bandura argues that a person's beliefs about a situation are often more influential than actual circumstances. He "hypothesized that expectations of personal efficacy determine whether coping behavior will be

initiated, how much effort will be expended, and how long it will be sustained in the face of obstacles and aversive experiences" (Bandura, 1977, Abstract). Chemers, Hu, and Garcia (2001) assert that "self-efficacy has predictive power above and beyond more objective measures such as past performance" (p. 61). Therefore, perceptions of students regarding their preparation and ability to succeed in college are relevant to understanding student transition experiences. While past performance may not be predictive of college success, current performance in the form of academic and social involvement is.

Colleges have long acknowledged the value of a well-rounded student who is both academically and socially engaged. Many schools across the United States monitor their students' involvement through annual assessment via the National Survey of Student Engagement (NSSE) (n.d.). Results of NSSE feed a national database documenting student attitudes and activities in college. Participating universities use the data to understand further their own students and to self-evaluate relative to results from other universities. Data gathered in this study via survey and follow-up focus group interviews will incorporate answers provided by study subjects to several of the engagement questions from NSSE 2008.

Answers to the research questions of this study may indicate that cyber high school graduates believe cyber education has enabled their development of skills facilitating a successful transition to college, such as self-regulation, study habits, time-management, and strong written communication. Conversely, results may indicate that students who attended cyber high schools believe their cyber school experience did not provide them with foundational academic or social proficiencies, such as the ability to navigate interpersonal interaction, needed to enhance transition. The perceived advantages and/or disadvantages contributed by attending a cyber high school will be explored.

Research Questions

The purpose of this study is to provide insight into the transition of cyber high school graduates to traditional universities. The following inquiries will guide the investigation:

1. What difficulties do cyber high school graduates perceive inhibited their success at a traditional university?
2. What advantages do cyber high school graduates perceive contributed to their success at a traditional university?
3. How do cyber high school graduates perceive their high school education affects their academic performance at a traditional university?
4. How involved in university-based social activities are cyber high school graduates compared to their university peers?

Definition of Terms

Cyber schools: For the purpose of this study, cyber schools will refer to full-time online education programs for K-12 students. These are also called virtual schools, cyber charters, electronic schools, and e-schools. Education is typically, but not always, delivered to the student's home.

Distance education: A broad term that encompasses forms of electronically-mediated teaching and learning where instructors and students learn at different times and/or places through video, radio, web, and combination formats. Distance education can refer to supplemental or exclusive online content.

Limitations of the Study

This study is concerned with the transition of cyber high school graduates to a traditional university. There are at least three limitations inherent in the study design.

1. Many cyber students participate in dual-enrollment courses (taking some campus-based college classes) during their cyber high school years. Therefore, such students may have already experienced academic and social changes that influenced their transition to attending college full time.

2. All subjects in the sample of this study successfully completed cyber high school and were admitted to traditional universities. The population did not include students who were unable to gain admission into a traditional university. This fact may limit findings of perceptions that cyber school provided students with inadequate preparation for successful academic and social transition to a traditional university.

3. Due to time and logistical constraints of the researcher being able to conduct follow-up focus group questions at the study sites, the study was limited to cyber students attending four Pennsylvania State System of Higher Education (PASSHE) schools. The sites selected were the PASSHE schools with the largest population in the four geographic (north, south, east, and west) quadrants (Pennsylvania State System of Higher Education, n. d.). Currently, the numbers of cyber high school graduates attending the study schools are small and thus findings regarding these students may not be generalizable to the cyber high school graduate population as a whole. However, since students and their transition issues are complex (Bean, 1990), the data gathered should add to the bodies of research in both K-12 cyber education and college transition.

Summary

According to Kelly, Kendrick, Newgent, & Lucas (2007) "…both academic and non-academic influences are related to college retention and performance" (p. 1031). It is intended that the findings of this study will inform the K-12 cyber school and traditional post-secondary

educational communities about how cyber high school graduates perceive their academic and social preparation for transition to a traditional university. "Online learning is growing so rapidly that the possibility that half of all high school courses will be online in little more than a decade is plausible" (Watson, Gemin, & Ryan, 2008, p. 47). Researchers repeatedly state that online learners and those who learn in traditional settings "differ in the biographical and academic characteristics" (Chen, Gonyea, & Kuh, 2008, p. 2), and do not have the same academic and social engagement experiences (Murphy & Manzanares, 2008). Whether differences are noteworthy enough to warrant altered approaches by cyber schools to ensure the success of college-bound students is important to explore.

Chapter I provided an overview of the problem of the study. Chapter II will present a summary of literature related to K-12 cyber education, transition experiences of young adults heading to college, and perceptions of academic and social ability. Chapter II will also include discussion of theories which offer a framework valuable to understanding the transition of cyber high school graduates to traditional universities.

CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction

"Online learning through virtual [cyber] schools is one of the most important advancements in attempting to rethink the effectiveness of education in the United States" (North American Council for Online Learning & Partnership for 21st Century Skills, 2006, p. 1). Yet, according to a 2009 report prepared for the U.S. Department of Education, surprisingly little research-based documentation of the effectiveness of K-12 cyber schools is available (U.S. Department of Education, Office of Planning, Evaluation, and Policy Development, 2009).

K-12 cyber schools have experienced sustained growth since their inception, and many graduates of cyber schools continue their education at traditional universities (Cavanaugh, Barbour, & Clark, 2009). It is vital to understand cyber school students' academic and social experiences to ensure cyber students' post-secondary academic and social success. Therefore, a need exists for research on the transition from a cyber high school education to a traditional university setting. The following is a review of the literature pertaining to cyber high schools and the students who attend them. It includes an explanation of the difficulties caused by overlapping terminology found in this field of study, an overview of the development of cyber high schools in the United States, and presents findings of research comparing cyber education to traditional classroom education, as well as findings regarding academic achievement and socialization in the cyber setting (Cavanaugh, Barbour, & Clark, 2009; Roblyer, 2006). Literature regarding socialization and home schooled students is also included due to the similarity of setting (primarily being educated at home) and the peer exposure (removal from weekday interaction) of cyber schooled and home schooled students.

Each year, more research is conducted about full-time, as well as supplemental, online programs. *Keeping Pace with K-12 Online Learning,* published yearly since 2004, is a review of state-level policy and practice for both types of programs. As stated in the 2008 report, "the total number of full-time students is growing along with the continued increase in the number of new full-time programs" (Watson et al., 2008, p. 20). However, research of full-time cyber programs is still minimal. In a review of cyber school literature, Cavanaugh, Barbour, and Clark (2009) found that much of the published work is based on personal experiences, and a sizable portion of the research is found in unpublished masters' theses and doctoral dissertations. This study continues the "foundational descriptive work that often precedes experimentation in any scientific field" (p. 2).

Cyber Schools

Characteristics

Confusion over the terminology in the field of online education abounds. Therefore, it is critical to highlight that "distance education, distance learning, e-learning, Web-based instruction, virtual schools, and online learning are all terms used interchangeably to describe this broad, somewhat confusing and constantly changing field of nontraditional instruction" (Rice, 2006, p. 426). The same terminology, with different meanings, has been used to discuss adult, K-12, full-time (exclusively online), supplemental (part-time online), and blended (online and face-to-face) delivery of online education. Researchers recognize the misunderstandings caused by use of loose definitions in this field, but to date, no generally-accepted cyber terminology exists. Oblinger (2004) cautioned that "distance learning, distributed learning, and e-learning are often used interchangeably to describe the delivery of post-secondary education degrees, programs, and courses independent of fixed time and place...discussing e-learning will

be impossible if there is no common definition" (pp. 14, 15). Every effort has been made in this paper to clarify the type of e-learning discussed in each section.

A large portion of online education research has focused on post-secondary courses rather than entire full-time programs delivered online at the elementary or secondary level (U.S. Department of Education, Office of Planning, Evaluation, and Policy Development, 2009). Some researchers believe that the distinction of the age of the learner and the amount of time spent in the online learning environment (part-time versus full-time) is irrelevant to the discussion regarding the effectiveness of online learning. "The small body of research focused on the effectiveness of K-12 virtual [cyber] schooling programs supports findings of similar studies on virtual courses in higher education" (Tucker, 2007, p. 1). However, adults learn differently than children and adolescents (Cavanaugh, Gillan, Kromrey, Hess, & Blomeyer, 2004; Gagné, 1985; Vygotsky, 1978). Therefore, minimal research pertaining to adult online learning has been included in this review of related literature.

The confusion of using the term *cyber school* to describe different types of entities had also contributed to the difficulty of determining the exact number of cyber schools, and students in those schools, in existence at any given time in the United States. Across studies, authors and researchers used the terms virtual school, virtual education, cyber school, cyber education, distance learning, and distance education interchangeably when discussing education delivered via the Internet. Distinction between supplemental and full-time courses was often ignored by researchers when reporting their work, making it problematic to develop a pure analysis of cyber schools as defined by this study. For example, in Clark's heavily cited 2001 study, the term virtual schools was defined as "educational organizations that offer K-12 courses through Internet or Web-based methods" (Executive Summary), which covers full-time, as well as

supplemental programs. Additionally, researchers have sometimes reported numbers of enrollees for cyber charter schools or state-sponsored schools at the exclusion of each other. As Clark (2007) reported:

> Some [cyber schools] are sponsored or sanctioned as statewide or state entities, while others are virtual charter schools with a statewide reach. Numerous local and regional-education agencies have developed online schools, mainly to supplement local course options. Private for-profit and nonprofit schools have developed online courses and programs to serve academic and vocational curricula. Virtual schools developed by public and private consortia and nonprofit organizations have also had a national impact. (p. 477)

Due to the lack of clarity found in the literature, information related to numbers of schools and students should be regarded as general figures. It is the direction and pace of changes in cyber education activities that are relevant to this study.

Design

It is difficult to describe a typical cyber school, for they are as diverse as their traditional counterparts. Historically, the missions behind the creation of cyber schools were multifaceted; but, ultimately, the goal was not unlike that claimed by traditional schools - to offer high quality instruction regardless of location or school size. Because cyber schools can transcend location, many students who choose to attend a cyber school do so to avoid what they perceive as either an inadequate quality or inflexible nature of education offered at their local public school. Some of the students who benefited from early cyber schools were high achievers, including students who sought intensive college preparatory content to enhance admission into a top notch college, while some were low achievers who dropped out of regular school (Maeroff, 2003). Still, others

simply could not be bound by the time and place of traditional classrooms due to participation in sports, parents whose jobs required the family to travel or move frequently, severe illnesses, incarceration, or physical disabilities (Blaylock & Newman, 2005). Former students of high minority, low performing, and rural schools are a significant portion of the populace in the Florida Virtual School (Rice, 2006). In California and other states employing transient, seasonal, agricultural workers, virtual schools enable consistent, continuous coursework for the workers' children. The Social Science Research Council Project (2007) points to these students when calling for research to "demonstrate the effectiveness of academic preparation programs aimed at fostering college going and success among various disadvantaged and underserved subgroups" (p. 2).

Early cyber schools touted the ability of enrollees to set their own pace of instruction; although, over time, some schools found the need to alter this aspect of cyber education by inserting more structured timetables for coursework completion in place of original, entirely open-paced models. However, students' control over pace remains a significant feature (Blaylock & Newman, 2005). From the beginning, delivering education full-time via the Internet required online schools to infuse the traditional format of brick and mortar school design with significant changes, affecting the way schools were managed, the mechanics by which content was delivered, and the way in which material was conveyed to students (Tucker, 2007). The design of cyber schools continues to evolve (Johnson, Levine, Smith, & Smythe, 2009). Table 1 is a summary by Rice (2006) of provider options, originally listed by Watson, Winograd, and Kalmon (2004), currently in use across the United States.

Table 1

Watson, Winograd, and Kalmon's Five Categories of Virtual Schools

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

Note. Adapted from "A comprehensive look at distance education in the k-12 context", by K. Rice, 2006, *Journal of Research on Technology in Education, 38*(4), p. 425-448. Reprinted with permission.

Cyber schools, as defined by this study, fall only into the last three categories on the chart. Maeroff (2003, p. 6) described the range of means by which cyber instruction is delivered:

1. Real-time, online, synchronous instruction, in which students communicate with teachers from their computers as the teachers teach the lessons.
2. Asynchronous instruction in which students work on their own and later receive messages on their computers from the teachers.
3. Web-based, packaged programs consisting of a pretest, a tutorial, a practice, and a post-test that the student submits electronically, without teacher contact.

4. Traditional, book-based courses in which students working online, at a pace that they set for themselves, get assignments, turn them in, and receive responses from teachers.

Regardless of the format, typical cyber schools provide enrolled students with a computer, Internet access, lesson plans, and a cyber teacher holding a teaching certificate (Center for Digital Education, 2008; Watson et al., 2008). In cyber schools which have experienced both longevity and increased enrollments over time, effective teachers are specifically trained in online teaching techniques before they are given teaching assignments (North American Council for Online Learning & Partnership for 21st Century Skills, 2006). Enrollees in most cyber schools are generally required by their school to have supervision, which is normally provided in the home by a parent or guardian (Watson et al., 2008).

In recognition of added needs that arise when students and teacher are physically separated, established cyber schools usually assign support personnel to each student. The title of support personnel differs by school, but common names include learning mentors, learning coaches, instructional supervisors, and teacher facilitators (Cavanaugh, Barbour, & Clark, 2009; North American Council for Online Learning & Partnership for 21st Century Skills, 2006; Ohio Virtual Academy, 2009). Support personnel act as liaisons between the student, the family, and the school. Because students are often expected to set their own pace of learning, support personnel track student progress and encourage adequate pace to ensure completion of coursework in a reasonable period of time (Tucker, 2007). They are responsible for contacting students and their families on a regular basis to monitor satisfaction with the program. School administration uses support personnel to report issues encountered by students and to act as a

conduit for feedback to administration from students and families who are often only seen in person at social outings arranged by the school.

As previously stated, cyber education differs most significantly from traditional public school education in its flexibility. Traditional teaching models are bound by time and location, but cyber schools are not. The motto at the Insight School of California (2009) is "my future, my way, my high school" epitomizing the personalized nature of cyber learning. In the cyber environment, students can often move at a pace that works for them. In many cyber schools, students can choose between a traditional, extended, or accelerated pace for each course (Branson School Online, 2009; Florida Virtual School, 2009).

Students in some cyber schools are able to choose between two class formats: virtual and self-paced (Berge & Clark, 2005; Elkhart Kansas Cyber School, 2010; Zucker & Kozma, 2003). Virtual classes are typically synchronous in nature. Attending a virtual class involves all students logging into an interactive classroom at a set day and time. The teacher sets the pace and the class operates much like a class in a traditional school. Interaction within the class is dictated by the technology employed by the school, but most virtual classes involve student-teacher and student-student interaction using technologies such as e-mail, video via web-cams, and online chat. Typical virtual classes consist of around 20-25 students (Berge & Clark, 2005). But, it should be noted that cyber school design is not consistent across the country, and it would be inaccurate to imply a standard classroom structure (Cavanaugh, Barbour, & Clark, 2009).

Self-paced classes are typically conducted asynchronously. The student works independently with material, engaging with the teacher and needed support personnel via e-mail or phone. In some schools, interaction for help can be synchronous. Students can log into scheduled tutoring sessions and interact directly with a tutor. Technologies, such as interactive

white boards connected to the tutor's and student's computers and programs like Skype, are available in some schools to mimic the interaction that can occur in a traditional tutoring session (Pennsylvania Cyber Charter School, 2008). The pace of completing coursework is determined by the students; but, they are not entirely without real-time interaction with teachers and tutors.

Depending on the capabilities of the particular cyber school, students may utilize a combination of course designs. For example, a student may take English as a self-paced course while taking math as a member of a virtual class. Some schools require students to log in at a specific time, even if they are following a self-paced curriculum, while others let students work at any time of day they choose (Watson et al., 2008).

As can be expected by the wide range of school design and control, course content and control over content varies greatly between cyber schools. For example, some schools and their teachers have complete control over content and design, while others abdicate control of content and design to external vendors. According to Cavaluzzo (2004), decisions regarding content are influenced by school management, finances, time, and other factors.

Historical Background

Distance education has been a common learning format in the United States since the inception of correspondence study for post-secondary students at the University of Chicago in 1892 (Conceição & Drummond, 2005). Supervised, independent-study opportunities were offered to high school students in the early 1920s. One of the first predecessors of cyber high schools began as a correspondence program delivered by the University of Nebraska-Lincoln in 1929 to high school students. By 1996, the program had evolved into a high school curriculum delivered entirely over the Web (Clark, 2007).

Statistics from a Gallup poll reflected the lack of information on cyber schooling available to the general public (Ferdig, 2008). In 2001, only 33% of respondents to *The 33rd Annual Phi Delta Kappa/Gallup Poll of the Public's Attitudes Toward the Public Schools"* supported the idea of cyber education (Rose & Gallup, 2001), yet over 41% believed that homeschooling was a good idea. Maeroff (2003) noted that the general public has had a difficult time adjusting to the idea of using technology to deliver learning content, even though the idea of distance education/homeschooling utilizing print materials had been accepted. He stated that "the newness of online learning is not the use of distance education or the idea that students might pursue education on their own, but the fact that it harnesses digital technology for this purpose" (p. 24). Regardless, the acceptance of cyber schools began to climb over time and full-time online (cyber) schools represented a steadily growing segment of K-12 educational options (Powell & Patrick, 2006).

In the 2004-05 school year, cyber schools were operating and officially recognized by 18 states, and an estimated 31,000 students attended 86 cyber schools in 16 states (Clark, 2007). Even though this number is a minor portion of the 48 million K-12 students in the United States, it had more than doubled from just two years before and tripled the following year. In January 2007, over 92,000 cyber students were reported by the Washington, DC based Center for Education Reform to be attending 173 virtual charter schools (Courrege, 2009). By fall of 2008, significant full-time online programs were found in 21 states. Interestingly, by that time, only six states (Maine, Oklahoma, New York, New Jersey, Rhode Island, and Vermont) had neither supplemental nor full-time online programs available for students (Watson, et al., 2008). By June 2009, the number of students attending cyber schools had grown to over 100,000 (Scolforo, 2009). Again, it should be noted that conflicting terminology may prohibit an exact accounting

of the increase in full-time cyber students (Clark, 2007), but it is apparent from research that cyber schools represent a noteworthy development in education in the United States over the past 12 years. Evidence of this trend exists in research of cyber schooling in individual states (Cavanaugh, Barbour, & Clark, 2009).

The Florida Virtual School, the country's first public Internet-based cyber school, was started in 1997. Florida was joined by Ohio and Pennsylvania in 2000 as pioneers in offering online coursework to K-12 students, but in those states the schools were run by non-profit organizations (Borja, 2005). By 2001, the state of Nebraska boasted at least five independent-study, state-funded high schools offering full-time, online, diploma-granting programs (Clark, 2001. Some of the popularity of cyber schools evolved from the school reform begun in the 1980s in response to fears of low performance of public school students. As parents became disillusioned by the public education available to their children, politicians offered school choice as a solution (Hassel & Terrell, 2004). Legitimized by the 2001 *No Child Left Behind Act*, school choice enabled students to attend publicly-funded charter schools, which became "a subset of public schools supported by public monies" (Ellis, 2008, p. 148). That trend continued under the Obama administration through the Department of Education's *Race to the Top* campaign "that encourages more charters as one of the criteria for more states to qualify for a piece of the pie" (Chaker, 2009, p. D1). Cyber school developers may see charters as a means to gain public funding and acceptance of full-time online education for elementary and secondary students.

In 2002, Pennsylvania had seven cyber charter schools. As of 2009, students across the state were served by 11 sanctioned cyber charter schools (Pennsylvania Department of Education, 2009b). Pennsylvania Cyber Charter School, operating out of the small western

Pennsylvania town of Midland, was the largest full-time, online program in the country that responded to the 2008 annual *Keeping Pace* survey. In a report of the survey findings, Watson, Gemin, and Ryan (2008) stated that 7,798 students attended the school that year.

In the mid-1990s, Alabama joined other states, implementing distance learning initiatives statewide. Enrollment in supplemental online courses went from 425 students in 2005 to 4,500 students just one year later (Maddox, 2006). Beginning with the class of 2013, Alabama public school graduates will be required to pass at least one full-time online course in mathematics, science, social studies, or English (Watson et al., 2008). A similar acceptance of this schooling option occurred in Louisiana after students displaced by Hurricane Katrina found this to be a means to continue their education relatively unaffected by the 2005 storm's destruction. Enrollment in the Louisiana Virtual School jumped from 130 students in 2000 to roughly 3,000 by June 2006 (Fox, 2006). In June 2008, 43 students comprised the first graduating class of the Minnesota Virtual High School (Riedel, 2008).

As cyber schools became more prevalent, enrollment in cyber schools was supplemented with students who had already moved from traditional schooling to homeschooling. In 2006, former homeschooled students comprised more than 60 percent of Pennsylvania's cyber school enrollees (Ellis, 2008). However, it is interesting to note that the cyber school concept historically has not been embraced by all homeschool proponents. For example, when some families of homeschooled students in Missouri began switching their children into cyber schooling, the Home School Legal Defense Association (2007) warned them to forego the state funded cyber school option with this message on its website: "The government's virtual [cyber] school program offers you a choice: free stuff—or a free way of life. We urge you to choose a free way of life" (para. 12). The distinction between cyber schooling and homeschooling is

clearly drawn by this statement. Cyber schooling may alter the pace and place of public education, but homeschooling allows extended freedom over more substantial components of the curriculum, such as the inclusion of religion-based content.

Events like Hurricane Katrina and news regarding possible further school closures to prevent the spread of the H1N1 virus gave new value to the idea of increasing the number of cyber schools nationwide (Davis, 2009). Borja (2005) reported that state education departments throughout the country also embrace this schooling option. Borja quoted William R. Thomas, Educational Technology Director of the Southern Regional Education Board, whose mission is to improve education in 16 Southern states: "...policymakers are making the connection between virtual learning and school reform, economic development, and equity of access. State virtual schooling is going to become an established, institutionalized way to meet a variety of student needs" (p. 22).

While the design and control of cyber schools continues to need refinement, the cyber school option has evidently outlasted many of the critics and problems encountered in the late 1990s and early years of the new millennium. Cyber schools are now an acknowledged option to traditional education (U.S. Department of Education, Office of Innovation and Improvement, 2008). Identifying the academic and social performance of cyber students will enable a clearer understanding of the skill sets cyber high school graduates either lack or bring to the transition experience.

Cyber School Achievement

According to a report by the U.S. Department of Education, Office of Innovation and Improvement (2008), the critical issue faced by all concerned with K-12 cyber education is the ability to "ensure it does what people hope it will do: improve student learning" (p. 6). In a 2006

review of existing K-12 distance education research, Rice stated that research in K-12 distance education continues to expand, including comparative studies and those attempting to pinpoint factors that enhance instructional quality and effectiveness. Four years after the Rice (2006) study, data relevant to cyber education research continues to come from studies comparing the quality of online learning to the quality of learning attained in traditional classrooms.

The vast majority of studies of online education have focused on adult students (Beard & Harper, 2002; Cavanaugh, Barbour, & Clark, 2009; Chen et al., 2008; Ikpeze, 2007). Additionally, a large number of the studies evaluating children in online environments involves comparisons between traditional classes and supplemental online classes attended while sitting in a traditional school or while at home (Cavanaugh, 2007; Cavanaugh et al., 2004; Frid, 2001; Kramarski & Mizrachi, 2006; Sun, Lin, & Yu, 2008). The U.S. Department of Education report (2008) notes a severe lack of rigorous, research-based evaluation of K-12 cyber learning to date.

One reason for the void highlighted by the Department of Education may be due to the uniqueness of each virtual setting, which precludes widely applicable research from being performed (Berge & Clark, 2005). Because of the newness of the format and variety of ways in which online delivery can be used to support or replace traditional delivery of K-12 education, significant variation exists across courses and cyber schools as well as substantial differences in the meaning behind terminology used in studies. "Because of the lack of descriptive information regarding course structure and learning activities, it is impossible to make inferences about the nature of this variation" (Rice, 2006, p. 436). The difficulty of making comparisons of cyber schools to traditional schools was acknowledged by the U. S. Department of Education in 2008 through the publication of a guide for evaluation of both full and part-time online programs (U.S. Department of Education, Office of Innovation and Improvement, 2008). However, multiple

non-research based studies have yielded some noteworthy comparisons between the two delivery formats that enable an understanding of achievement in the cyber setting (Barker & Wendel, 2001; Hughes, McLeod, Brown, Maeda, & Choi, 2007; Wang & Huay, 2007).

The Florida Virtual School (FLVS) offers both supplemental and full-time cyber courses. Students have a choice of enrolling in the school's full-time cyber school curriculum, or they can take individual courses that supplement their traditional school curriculum. A study conducted by researchers at Florida State University evaluated compliance by the FLVS courses with standards of learning for the 1999-2000 school year (Blaylock & Newman, 2005). In particular, they verified whether content requirements were appropriate for grade levels set by the state of Florida, whether instruction met Gagné's nine Events of Instruction[1], whether higher-order thinking skills were promoted in all courses, whether sufficient interactivity occurred between instructors and students, and whether stated course objectives and assessments were linked. Results of the study were used to improve or maintain the course content offered by the school, and the school claimed course quality was evidenced by student achievement on standardized tests.

In 2002, students attending FLVS full-time scored higher than the national average on advanced placement (AP) tests in biology, English, and computer science. Fifty percent of the students scored fours and fives (on a five point scale) on the 2002 standardized advanced placement tests, compared to a national average of 33% of students scoring fours and fives on the same tests. While these results could be interpreted by some to indicate that students who

[1] Gagné's (1985, p. 304) Nine Instructional Events: 1) Gaining attention; 2) Informing learner of the objective; activating motivation; 3) Stimulating recall of prior knowledge; 4) Presenting the stimulus material; 5) Providing learning guidance; 6)Eliciting performance; 7) Providing feedback; 8) Assessing performance; 9) Enhancing retention and transfer.

attended the online school full-time were already capable of achieving superior test scores regardless of their cyber experiences, the data showed noteworthy positive outcomes by cyber-educated students. The quality of the full-time online school was reported again through the achievements of students attending the Daniel Jenkins Academy in rural Polk County, Florida (Blaylock & Newman, 2005). Students in Academy grades nine through twelve take all of their classes online from the FLVS because of the small numbers of students and lack of qualified teachers available in their school district. In 2005, 88% of the school's graduating seniors were accepted into higher education. Since 2002, the national rate of high school graduates enrolling in college has fluctuated between 64 and 69 percent (US Department of Education, National Center for Educational Statistics, 2010).

Since 2004, several meta-analyses have compiled results of studies comparing either full or part-time online education to traditional education. One of the first and most significant was an analysis of 116 effect sizes from 14 K-12 cyber education programs evaluated between 1999 and 2004. The meta-analysis was designed to enable comparisons between students learning in cyber programs (the experimental group) and students learning in classroom-based programs (the control group) and to determine additionally if specific factors influenced cyber learning (Cavanaugh et al., 2004). The meta-analysis compared performance data from a combined sample of 7,561 students in grades 3-12 web-based distance learning (cyber) programs compared to control groups of students in traditional learning programs. The analysis indicated that students from cyber programs had no significant positive or negative effect in achievement performance than students in traditional format classrooms. Factors included "academic content area, grade level of the students, role of the distance learning program, role of the instructor, length of the program, type of school, frequency of the distance learning experience, pacing of

instruction, timing of instruction, instructor preparation and experience in distance education, and setting of the students" (p. 4). The authors note that the results of their study should be interpreted with caution due to the small sample size and variety of studies included in the meta-analysis.

Individual studies included in the Cavanaugh et al. (2004) meta-analysis revealed positive and negative attributes of cyber education. On the positive side, Barker and Wendel (2001) reported cyber students had improved more than non-cyber students in independent learning, problem solving, creative and critical thinking, and time-management. Their research was conducted in Canada over the two school years beginning in fall 1998 and ending in spring 2000. The purpose of the study was to evaluate cyber schools' effectiveness and to make comparisons to traditional schools. The primary focus was on student characteristics, comparative achievement and course completion rates, and satisfaction levels of the cyber school students with the cyber environment.

Students from six cyber schools were contrasted to students in three traditional schools. The study findings revealed two distinct characteristics of students attending the cyber schools: students who were underachievers in traditional schools who attended cyber school as a last resort and students who were self-directed learners with clear expectations and goals. As might be expected, the latter group was more academically successful in the cyber environment. Illustrating the distinctiveness of schools cited by Berge and Clark (2005) above, Barker and Wendel (2001) found significant variations between the schools in the study and could not draw specific academic comparisons. However, they were able to conclude from the data available that cyber students did as well as traditional students overall in provincial exam scores.

As previously noted, not all the results of this and other studies in the meta-analysis were positive for cyber schooling. Bond (2002) evaluated the acquisition of musical skills and knowledge by students in an Australian web-based music class. He found that the online delivery, which included audio and video components, had a negative effect on quality of performance, level of engagement, and refinement of skills and knowledge. Schollie's study (as cited in Cavanaugh et al., 2004) found that students in traditional format Canadian math and science classrooms outperformed cyber classroom students on end-of-year exams in the subjects.

One of the disadvantages of cyber education is the need for an internal locus of control. Older children have a stronger locus of control than younger ones (Gershaw, 1989). Therefore, cyber school instruction must be delivered with enough structure to enable successful experiences for all students (Cavanaugh et al., 2004). Documentation of other disadvantages that cause students to drop out of cyber school prior to assessments of performance is difficult to find in existing literature. According to Zucker and Kozma (2003), dropout and lack of initial participation can occur for many reasons. The digital divide issue of lower income families having a lower percentage of computer use likely prevents some students from participating in cyber education. Although many cyber schools address this issue by providing students with computers, students and families without computer access have one less opportunity to learn of the option of cyber schooling and may assume they lack the technological prowess to participate in a cyber format. Even when access is gained, students with limited literacy and/or second language skills may struggle with learning information that is primarily text-based. Dropping out may result from being unable to handle the delayed feedback inherent in asynchronous learning, and students may find no time to study if they cannot discipline themselves properly.

Two studies funded by the Rand Corporation comparing charter school student achievement in traditional and cyber charter schools found that cyber students had lower achievement than classroom-based charter students. Zimmer et al. (2003) reported California cyber students had lower test scores than students in classroom-based charter schools. However, the report cautioned that the cyber students in the study may have been pulled out of the traditional classroom for reasons that make comparisons across schools invalid. These reasons include students who are emotionally or academically unable to sustain attendance in a traditional school format.

Additionally, the pedagogy of online instruction and "autonomous learning style supported—perhaps demanded—by online courses may require a high degree of motivation and benefit only those students with strong study skills and habits" (Zucker & Kozma, 2003, p. 5), in their opinion, students "are especially likely" to have experienced poor performance in a traditional public school, whereas students attending non-cyber charters are less likely to be attending a charter school due to low performance (p. 41). Whether this assumption is grounded in fact is unable to be determined from the data reported in the study.

Following the meta-analysis by Cavanaugh et al. (2004), additional researchers sought to expand the understanding of the differences and commonalities between cyber and traditional format delivery of K-12 education. Ferdig, DiPietro, and Pananstasiou (2005) conducted a study comparing learning outcomes of 410 students (68 cyber compared to 342 face-to-face). Data were collected over six months to compare results from Algebra I, Algebra II, Geometry, Health-Life Management Skills, and Personal Finance Management classes. The study was designed to evaluate whether students in cyber courses performed equal to or better than students in the face-to-face classes. The researchers investigated whether it was possible to predict academic success

of new cyber students using the Educational Success Prediction Instrument (ESPRI) (Roblyer & Marshall, 2003) and whether students in cyber classrooms would display significant differences compared to students in the traditional classrooms on the What is Happening In This Classroom (WIHIC) (Fraser, Fisher, & McRobbie, 1996). The WIHIC is an instrument that measures students' perceptions of the learning environment. It includes subscales on task orientation, student cohesiveness, teacher support, involvement, investigation, cooperation, and equity. The WIHIC was used to compare students' reactions to classes across the two delivery formats.

Comparison of student achievement in cyber and traditional classrooms indicated no significant differences in overall achievement scores. The ESPRI was found to predict accurately the course grades for 202 cyber students in the courses. Based on results using the WIHIC, significant differences were found between perceptions of student cohesiveness and cooperation between student groups. Students in traditional classrooms scored higher in (reported a greater perception of) collegiality and collaboration in work efforts than did their cyber classroom counterparts. The researchers stated that the study indicated a need for further understanding of the differences in interactions within the cyber and traditional classrooms.

In an effort to address prior research findings (Cavanaugh et al., 2004; Ferdig, DiPietro, & Pananstasiou, 2005) that showed full-and part-time online students as having comparable achievement but less satisfaction with overall course content and interaction. Hughes, McLeod, Brown, Maeda, and Choi (2007) conducted a study comparing student achievement in traditional and cyber algebra classes and student perceptions of the learning environment in the same classes. The purpose of the study was to understand the characteristics of each setting and their impact on the learning environment and observed outcomes. The researchers used the Assessment of Algebraic Understanding (AAU) instrument designed by the Educational Testing

Service (2005) to measure algebraic understanding. The WIHIC instrument employed in the study conducted by Ferdig, DiPietro, and Pananstasiou (2005) was again utilized in this study to obtain student perceptions of the classroom environment. Six schools in three different states were included in the study. Scores for students enrolled in three cyber classes were compared to scores for students in three traditional algebra classes closely matched by curriculum, student population, and state.

Over 80% of students in the traditional classes reported being enrolled in a college preparatory program while fewer than 34% of the cyber students (n = 23) said they were in a college prep program. However, students in the cyber classrooms consistently and significantly more frequently exhibited higher algebra achievement as measured by the AAU. Findings from the study related to the WIHIC indicated that students in traditional classrooms were more likely to score higher *(*reported a greater perception of) in collegiality, involvement and cooperation in work efforts than did their cyber classroom counterparts. Cyber students were more likely to report a greater perception of teacher support. This finding focuses on the learner-teacher interaction identified by Moore (1993) as critical to a successful online learning experience. As stated above, Ferdig, DiPietro, and Pananstasiou (2005) used the same instrument (WIHIC) and also found cyber students perceived significantly more student-teacher interaction than did their non-cyber counterparts. It is apparent from this and other studies that there is often significant interaction in the cyber classroom between student and teacher, and that this interaction is valued by the students (Cavanaugh, Barbour, Brown et al., 2009; Davis & Roblyer, 2005).

On a less positive note, the Ferdig et al. (2005) data also indicated that cyber students do not have a strong sense of interaction with their peers and do not sense collaborative learning developing as a result of peer interaction (Hughes et al., 2007).

Concern over the quality of education being delivered to students in rural Canada spurred an extensive examination by Barbour and Mulcahy (2008) of student achievement in Canadian cyber school courses. Scores on standardized tests and final course grades earned by students of the Center for Distance Learning and Innovation (CDLI) in the province of Newfoundland and Labrador were compared to corresponding scores earned by students in traditional schools in the Province. The 2004-2005 school year study compared achievement of 1,171 students receiving instruction via the web to 69,879 students receiving instruction in a traditional classroom in 31courses including, but not limited to, math, career exploration, art and design, science, music, and geography. The two groups were further classified as rural or urban, yielding four comparison populations. For this period, the final course average of rural, web-delivered courses was 69.6 compared to an average of rural classroom delivered courses of 69.0. The average achievement rank for urban, web-delivered courses was 71.8 compared to an average of urban classroom delivered course of 68.5. As can be seen, both rural and urban students receiving web-delivered content performed slightly better than students in traditional classrooms. Because of the small difference, the researchers urge caution in overstating the differences shown.

However, additional data were compiled comparing performance on standardized exams. Twelfth grade students in the province are all required to take the exams, which include both essay and multiple choice questions. Two hundred ninety-three rural students enrolled in the online CDLI achieved an average score of 63.4 on the 2004-05 exam, compared to an average score of 61.7 attained by the 6,558 students taught in rural classrooms; the eight urban CDLI students achieved an average score of 66.4 on the exam compared to a 62.6 average attained by the 9,304 students in the urban classroom. Again, the average score attained by students in the web-delivered courses was higher than that achieved by rural and urban students in classroom-

delivered courses. These data are consistent with prior research. Students in supplemental web-delivered courses and in full-time cyber schools perform as well as, or better than, students in traditionally delivered courses and in traditional brick-and-mortar schools.

The U. S. Department of Education, Office of Planning, Evaluation, and Policy Development published a new meta-analysis in 2009. It specifically evaluated rigorous experimental or quasi-experimental studies comparing online and traditional education. The report introduction states "an unexpected finding of the literature search, however, was the small number of published studies contrasting online and face-to-face learning conditions for K-12 students" (p. 1). Of the 46 studies included in the analysis, only five involved K-12 coursework, evaluating seven effects. None of the five K-12 studies included full-time cyber education programs. Instead, the studies reported comparisons between achievements attained in supplemental online courses and achievement attained in traditional format classes. The conclusion of the report states:

> When learners' age groups are considered separately, the mean effect size is significantly positive for undergraduate and other older learners but not for K-12 students. Another consideration is that various online learning implementation practices may have differing effectiveness for K-12 learners than they do for older students. It is certainly possible that younger students could benefit more from a different degree of teacher or computer-based guidance than would college students and older learners. (U.S. Department of Education, Office of Planning, Evaluation, and Policy Development, 2009, p. xvii)

This statement highlights the current trend in cyber learning studies attempting to identify student, teacher, course, and interaction characteristics critical for student success in the cyber classroom. It has been found that students need to be able to maintain self-directed learning and

have a strong locus of internal control (Carr, 2007; Kramarski & Mizrachi, 2006; Powell & Patrick, 2006; Roblyer & Marshal, 2003). According to Ruban and Nora (2002), self-regulated learning is a function critical to all learners because it increases students' abilities to perform well academically. Characteristics identified by Blaylock and Newman (2005) necessary to be a successful online student included being a self-directed, goal-oriented worker capable of independent work at a somewhat self-defined pace.

Cyber schools recognize that they may be limited in their ability to ensure achievement of some enrollees due to their lack of certain characteristics (Blaylock & Newman, 2005). For example, the Minnesota Virtual High School (n.d.) website states that students must be self-motivated, independent learners with basic understanding of Internet navigation, while other cyber schools provide lists of questions to be answered by students considering the cyber option (Branson School Online, 2009). Questions on the Florida Virtual School (2009) website fall under two categories: a) Technical Competencies and Access and; b) Learning Styles. Answering "NO" to more than three of the eleven questions posed signals likelihood the prospective candidate will struggle as an online student. Technical Competencies and Access questions focus on students' comfort level with technology and ability to commit the same or more time to online courses as they currently do to their traditional courses. This question acknowledges that while cyber-learning sometimes employs a flexible schedule, the effort needed to succeed in a course is no less than the effort needed for success in a traditional format. Learning style questions focus on students' capability for task-management and independence as well as possession of above average writing, reading, and communication abilities.

Interaction is a key component in the cyber classroom (Holmberg, 2003). While it was once true that distance education meant students were taught as individuals and not in groups,

technological advances have been developed which permit students to interact regularly in large or small groups for didactic, instructional, and socialization purposes. Moore (1993) identified three paths of online interaction as learner-teacher, learner-content, and learner-learner. The quality of experience on these three paths is determined by a fourth interaction, learner-interface, which determines how well the learner can use the technology for interactions with course content and/or others in the learning environment (Hillman, Willis, & Gunawardena, 1994). Results of studies indicate that it is not the setting but rather the quality of interaction with materials, instructors, peers, and support personnel that affects student success (Berge & Clark, 2005; Rice, 2006).

A study conducted by Zucker (2005) evaluated the impact of student-student interaction and collaboration in eight online courses offered by the Virtual High School (VHS) based in Maynard, Maine (Virtual High School, 2010). VHS offers online courses to high school students across the country and around the world. VHS believes that student-student interaction increases achievement, engagement in school, and student attitude toward high achievement. The heart of the study was whether benefits of interaction and collaboration in a cyber classroom can be identified and measured. Because of a flaw in the administration of the study, Zucker was unable to conclude whether students assigned increased value to courses with increased interaction. But more than 90% of the students agreed or strongly agreed that participation in the online course was valuable. Over 65% agreed that student-student communication was important. Students stated that student-student interaction allowed them to learn and think critically about the other students' points of view, and almost one third of the students agreed that the interaction motivated them.

It may also be true that rather than possessing all of the skills needed to do well in the cyber environment, the experiences encountered in cyber learning may instill or encourage traits that enhance achievement. The North American Council for Online Learning and the Partnership for 21st Century Skills (2006) state that well-designed cyber schools offer students expanded learning opportunities which include global awareness, self-directed learning, information and communication literacy, problem-solving skills, time-management skills, and personal responsibility. Virtual coursework can benefit students who are easily distracted, easily intimidated by teachers or peers or who "just need a longer time to think before responding" (McLester, 2002, p. 4). Nevertheless, the cyber setting is not the best for everyone.

Written discussion replaces oral discourse in online classes. This emphasis may benefit those with strong writing skills and even encourage those with weaker ones. However, the emphasis on writing inhibits participation by students who lack confidence in their ability to translate their thoughts clearly and eloquently into the written word (Maeroff, 2003).

Most individuals develop increased metacognition and self-regulated learning skills as they mature (Kramarski & Mizrachi, 2006). These skills are critical to success in post-secondary education where students are expected to become increasingly responsible for their own learning. One means of determining if cyber education has prepared a student for success in a traditional university is the evaluation of students' autonomy and demonstration of the ability to regulate their own learning (Cavanaugh et al., 2004). Conclusions from Frid's (2001) study of students in grades 2-7 and Tunison and Noonan's (2001) study of high school students indicated that experience in cyber education can improve learner autonomy and control over learning. Through high levels of teacher and peer interaction during instruction, students were able to develop metacognition skills. The studies highlighted that desirable academic skills can be increased in

cyber education because the online instruction takes place over a distance and often lacks non-verbal and spontaneous interaction between members of the learning community. Therefore, the researchers found that for quality instruction to occur, the teacher must increase the level of communication with students, as well as include substantial interaction between students during academic instruction.

Weiner (2003) supported students' need to receive a significant amount of feedback from, and interaction with, the teacher and fellow students to prevent feeling isolated in the cyber classroom. Weiner also agreed with the Frid (2001) and Tunison and Noonan (2001) contentions that students can learn increased self-discipline and self-motivation in the cyber classroom. Weiner's survey-based study of 118 students in cyber classes from 1999 to 2002 found that motivation "had to be seen as an umbrella term, because it plays such an integral part in every aspect of online learning...and determines the success of adolescent students who study in cyberspace" (p. 46).

One of the most pressing issues surrounding achievement in cyber schools is the need to document that cyber schools are held to the same outcome standards as public schools, and that cyber teachers are held to the same standards as traditional teachers. Whether schools are, in fact, held to such standards would likely influence cyber high school graduates' perceptions of their academic preparedness for transition to college. Cyber schools in most states have been required to meet state curriculum standards and to verify that a specified percentage of the cyber school staff are state certified (Hassel & Terrell, 2004). As in many other states, teacher quality in Pennsylvania-funded cyber schools is monitored through the same evaluation procedure required of all state teachers; supervisors with proper state certification or eligibility perform cyber teacher evaluations. All students attending cyber charter schools in Pennsylvania take the

state assessment test, and cyber schools are evaluated under the *No Child Left Behind* guidelines (Pennsylvania Department of Education, 2009b; Watson & Gemin, 2008). A few states, like Colorado, failed to monitor early cyber schools' quality, but have become more diligent in doing so as the prevalence of cyber schools has grown (Watson, Gemin & Ryan, 2008).

A 2006 state audit of online charter schools in Colorado revealed that many of the cyber schools failed to provide highly qualified teachers and had little accountability (Davis, 2007). But cyber schools in Colorado have joined the majority of cyber schools across the country and now regularly assess their product (Watson et al., 2008). Interestingly, in its 2008 *Evaluating Online Learning: Challenges and Strategies for Success* report, the U.S. Department of Education states that evaluation is often difficult to define because some cyber and online program goals are to increase student engagement or increase access to highly qualified teachers, and comparisons such as test scores may be inadequate in evaluating these goals. In a recent analysis of evaluative instrumentation for K-12 online learning, Black, Ferdig and DePietro (2008) reported that "perhaps the most obvious implication from this overview is that there is a relative dearth of valid and reliable surveys and instruments that could be used to improve K–12 virtual schooling" (p. 38).

In a comparison of cyber education to traditional education, Ali-Salmani-Nodoushan (2008) identified four significant differences: a) "controlled and managed by individual learners but is intuitional based" (p. 1); b) "teachers and learners are separated in terms of knowledge of the content and concepts to be taught, time, and geography" (p. 1); c) "requires that some form of telecommunication hardware and software (electronic or otherwise) be available for students to interact with the learning materials, teachers, and peers" (p. 1); and d) "employs learning and instructional environments that are conducive and facilitative to learning" (p. 2).

Due to the lack of similarities of cyber schools across the country by the beginning of 2010, the level of academic preparation of cyber high school graduates for post-secondary work at traditional universities remained uncertain. In part, cyber school administrators may be responsible for this void. Critiques of online learning often occur in a politically loaded context, and "like educators in any setting...they may feel a natural trepidation about inviting evaluators to take a critical look at their program, fearing that it will hamper the progress of their program, rather than strengthen it" (U.S. Department of Education, Office of Innovation and Improvement, 2008, p. 6).

K-12 cyber programs vary widely. Rigor, personal attention, and flexibility are found in some, while others are poorly designed, with unchallenging lessons and minimal quality control. Time and ongoing research will cause the best designs to surface (Tucker, 2007). Some states control the quality of cyber schools by authorizing them under state guidelines for charter schools and holding them accountable under *No Child Left Behind* testing. Other states do not have built-in oversight, resulting in varying documentation of quality that prohibits a clear picture of cyber school performance. It is possible that the characteristics (such as self-directed learning and time-management) found by researchers to be necessary to succeed in the cyber environment will aid cyber high school graduates in succeeding academically when they transition to college. Conversely, it is possible that inconsistent accountability of cyber schools across the United States may result in cyber high school graduates being unprepared to face the academic rigors of collegiate life, especially when the delivery format of their coursework has changed.

"The full promise of virtual [cyber school] learning is dependent...on its ability to incorporate 21st Century skills in its instructional design, delivery and implementation" (North

American Council for Online Learning & Partnership for 21st Century Skills, 2006, p. 1). Cyber school personnel are responsible for ensuring that cyber students are gaining the skills they will need to compete as productive citizens in the 21st century. How we measure whether students are achieving these gains is still in question. Cyber school leaders join others in education arguing that test scores alone are an inadequate measure for capturing important differences between traditional and online learning and for measuring the success of cyber students.

It is understood that some students will thrive and some students will fail in either the brick and mortar or online environment. Maeroff (2003) summed it up when he stated that "for now we are content to know that online education is a significantly convenient alternative to traditional instruction that already has a firm foothold in education. Achievement in the online setting depends on factors identified in individual students" (p. 265).

Self-regulation skills acquired in secondary education likely carry over to post-secondary education and increase with use (Astin, 1999). Rice (2006) theorized that cyber students may experience more student-centered instruction than many traditionally-schooled students. Thus, cyber students may develop skills that enhance future academic performance. Another conclusion may also be drawn. Rather than possibly increasing self-regulation and independence, graduates of cyber high schools may develop a greater reliance on extensive guidance and interaction from post-secondary instructors than do non-cyber educated peers. Whichever is the case, academic and social experiences of high school influence students' transition into post-secondary education.

Cyber School Socialization

The environment of cyber schools works to benefit some students who are susceptible to distress in a traditional classroom. Shy students who were previously inconspicuous in school

often find their voice in the anonymity of the cyber classroom. Indeed, cyber education may level the playing field for students with low self-image by preventing visual cues from prejudicing peers and instructors (Hassel & Terrell, 2004). However, the isolation inherent in the physical distance between members of the cyber school community may also contribute to a withdrawal by students from the types of interactions they would normally have in a traditional classroom. Students may be content to become recluses in the comfort of their homes and may either never develop the ability to interact appropriately in social settings or lose their social skills the longer they are able to dodge interpersonal interaction during their educational experiences (Maeroff, 2003).

It is the isolated nature of cyber education that sits at the foundation of socialization concerns (Simpson, 2004). Matters related to socialization are one of the first, and most persistent, apprehensions expressed by individuals comparing traditional and cyber education, whether they are academicians or consumers of cyber education (Cavanaugh et al., 2004; Watson & Gemin, 2008). What is of interest to researchers and non-researchers alike is gaining insight into how students learning in cyber schools develop and utilize socialization skills. "Online public schooling programs represent a fundamental change in the ways that students interact with teachers, administrators, and other students, raising important questions about the impact on children's intellectual and social development" (Sivin-Kachala & Bialo, 2009, p. 4). Tucker (2007) highlighted that much of the controversy over cyber schools came from worry over the socialization of full-time online students and over the use of parents as teachers. Supporters of cyber schools point to increased personal attention from teachers, customization of learning, and the opportunity for socialization in non-academic and community activities. Nevertheless, parents have concerns that their children will miss out on peer interaction and collaboration.

Many students have the same fears. It is likely that "nearly every student who ventures into the realm of online learning has wrestled or will wrestle with the question of online socialization at some point" (Irwin & Berge, 2006, abstract), but researchers believe that interaction and socialization are program-dependent; some schools focus heavily on interaction, while others do not (Hurt, 2008; Tucker, 2007). As noted in the prior discussion of cyber school achievement, quantity and quality of interaction between teachers and learners in any cyber school are undoubtedly a critical measure of overall quality and likely a predictor of ongoing success (Maeroff, 2003).

Few studies have been conducted which focused directly on cyber students' social adaptations (Sivin-Kachala & Bialo, 2009), but some of the gap in research was filled by reports from Watson and Gemin in 2008. Their series of reports, *Promising Practices in Online Learning,* prepared in response to growing interest in K-12 online education, addressed specific issues relevant to cyber education. One report, devoted entirely to socialization, described efforts implemented by online education providers to address concerns of inadequate socialization of students attending online programs. Anecdotes from teachers and students included in the report offered insight into participants' view of socialization in the cyber school world. For example, a cyber school teacher described a situation involving a student disabled with cerebral palsy. In the cyber classroom, the student freely shared his disability with the other students and a frank discourse followed between the classmates about the student's disability. The cyber teacher believed that because social interaction in this class did not have a visual component allowing students to see each other, the disabled student was able to feel more comfortable than he would have in a traditional classroom. He willingly revealed his medical condition and participated as an equal in the cyber classroom.

The sentiment that cyber classrooms break down barriers of visual prejudice, time, and place, is commonly expressed in literature citing positive aspects of cyber classroom interaction (Beard & Harper, 2002; Hurt, 2008; Maeroff, 2003). "The online environment eliminates, or greatly reduces, issues that may create social friction, such as appearance, gender, age, ethnicity, physical disability, academic progress, or socio-economic status" (Watson & Gemin, 2008, p. 5). Through the online school, students are able to have a "safe environment in which to interact with peers and see the world through a different set of eyes" (Watson & Gemin, 2008, p. 9).

On the other hand, Watson and Gemin (2008) argued that the physical separation inherent in cyber learning creates a potential sense of isolation, which has led cyber schools to exert extra effort toward providing deep and rewarding online and offline social experiences to students. In comparison, they contended that socialization in a traditional school can be limited to activities considered by teachers to be appropriate for their classroom, and social interaction between students is often relegated to lunch time and recess with no oversight or guidance from traditional classroom teachers. Watson and Gemin asserted that being unbound by geography enables deeper multicultural interactions, and reduces the limitations on interaction with outsiders that can occur in geographically defined brick-and-mortar neighborhood schools. In traditional schools, some students may be unable to afford the cost of social activities, such as field trips not wholly funded by the school. In a cyber school, all students can attend cyber field trips. Interaction cuts across boundaries found in the physical school world. Socialization online offers means by which students can gain appreciation for and understanding of cultural views other than their own. Structured interaction possibly offers an unbiased environment for communication.

To provide a clearer understanding of how socialization skills are gained in the world of cyber education, five categories of online socialization were offered by Watson and Gemin (2008):

1. Interaction with teacher/adults in the online class.
2. With other students in the online class.
3. Online communication and activities facilitated by the school but outside of class activities.
4. Activities that bring students together in physical locations.
5. Social networks and Web 2.0 technologies.

Interactions with teachers and other students influence the development of academic and social skills. It is difficult to separate the influence of one group from that of the other. Engagement via interaction with others in the learning community is positively related to academic areas (such as high grades and persistence) and to social skill areas, such as satisfaction and meaningful friendships. As stated by Chen, Gonyea, and Kuh (2008) "by being engaged, students develop habits of the mind and heart that promise to stand them in good stead for a lifetime of continuous learning" (p. 1). Educators and those skeptical of the cyber format for full-time education express concern that students in the cyber classroom will have minimal interaction with teacher and with peers, and that flatness to, or lack of depth and spontaneity in these interactions will occur, especially if most of the interaction happens asynchronously (Maeroff, 2003). However, well-designed cyber schools recognize and address such concerns. Watson and Gemin (2008) described activities incorporating student-with-teacher and student-with-peer interactions that are lacking in neither depth nor spontaneity. Many cyber schools use threaded discussion, journaling, wikis, and blogs as a regular part of classroom instruction,

which forces students to engage in critical thinking and communication with the other members of the learning community. The Michigan Virtual School has an Online Scholars Advanced Research program in which cyber students acting in online teams conduct academic research. Students in this school also regularly interact with students from other cultures. For example, class members conversed online with Chinese students impacted by the 2008 Sichuan earthquake. While these types of activities could be included in traditional school classes, they are the rule rather than the exception in high quality cyber school classes (Cavanaugh, Barbour, Brown et al., 2009).

Social skills are developed in cyber schools via student interactions outside of the classroom as well. Many cyber schools, such as Pennsylvania Cyber Charter School, Florida Virtual School have joined schools like Connections Academies and K12 Inc. (both of which have schools offered in multiple states), in offering virtual clubs, which are similar to clubs found in most traditional high schools. Cyber school club membership facilitates large numbers of students from diverse backgrounds interacting with each other (Florida Virtual School, 2009; Pennsylvania Cyber Charter School, 2008; Watson & Gemin, 2008). Virtual clubs include debate, book discussion, national newspaper, yearbook, chess, conservation, and photography. In addition, cyber school providers who run multiple cyber schools, such as Connections Academy, are able to offer All Schools Assemblies where speakers address large, geographically separated audiences of students. Activities such as these are not typically possible in traditional schools. Cyber schools also often arrange events where students and families meet in the same physical space, such as monthly field trips to educational and recreational activities. Many schools also hold proms and graduation that students physically attend. According to Watson and Gemin (2008), the problem in many cyber schools is that they have worked so hard to

combat the concern of isolation and poor socialization that students and families report having too much to choose from and "they have to cut back on activities, not look for more" (p. 13).

Consumers of the *Promising Practices in Online Learning* (Watson & Gemin, 2008) reports need to be aware that the report was funded by organizations directly or indirectly involved in providing online education. Therefore, information from the report could be viewed as possibly slanted toward a positive perception of socialization in this setting. However, the report addressed an ongoing "problem in defining socialization and its role within the context of online classrooms" (Sivin-Kachala & Bialo, 2009).

Cavanaugh, Barbour, Brown et al. (2009) conducted research identifying cyber school policies related to interactions between students, teachers, and parents. Of the 81 cyber schools that responded to their survey, 65 had policies regarding the amount or kind of teacher-student communication, 3 had policies only addressing student-student communication, and 13 had no policies regarding communication. For schools with synchronous learning formats, teachers were required to interact with students during instruction and to respond to out-of-class inquiries from students within 24 hours. The researchers reported that cyber schools are increasingly requiring teachers to hold regularly scheduled office hours.

While much of this interaction is academically based, just as in traditional schools, messages conveying socially accepted norms are often intermingled in conversations (Irwin & Berge, 2006). For example, guidelines for communication issued by the schools in the Cavanaugh, Barbour, Brown et al. (2009) survey generally included phrasing that students and teachers were to treat each other with respect and were to engage in positive interactions including use of respectful language.

In a study evaluating the social skills of full-time, online public school students**,** Sivin-Kachala and Bialo (2009) assert "there is a growing amount of evidence indicating that the post-adolescent performance and adjustment of children are not dependent upon the socializing agents of traditional schools" (p. 6). The researchers studied the social skills of more than 250 students in grades 2, 4, and 6 attending four cyber schools; one each located in Arizona, California, Idaho, and Ohio. All schools employed state-certified teachers and instruction (student-teacher interaction) was delivered synchronously and asynchronously. Online and offline learning activities and materials were used. Student-student interaction occurred via online discussions and online field trips.

The study used a post-test treatment design to compare parent, teacher, and student self-assessments of student activities to the national norming sample population for the Social Skills Rating System (SSRS) developed by Gresham, Evans, and Elliot in 1988. The SSRS has been determined to be reliable and valid and has been used in many other studies (Sivin-Kachala & Bialo, 2009). Additional data were gathered by a survey of parents' perspectives regarding the impact of cyber schooling on their child's social skills and behaviors, their child's involvement in non-school social activities, and their reasons for choosing cyber education. The authors of the study reported that findings show "no cumulative long-term decrease in social skills" (Sivin-Kachala & Bialo, 2009, p. 2), measured by the SSRS, because of attending cyber school. Findings revealed that students in the research population engaged in significant group and independent social activities outside of school and, frequency of involvement in activities outside of school resulted in higher social skills ratings measured by the SSRS.

Cyber school students of particular interest to socialization discussions are those who have previously experienced negative social interactions. Some students who transition from

traditional schools to cyber schools do so as a result of problems encountered in the social world of their former school (Hassel & Terrell, 2004; Williams, 2008). Hassel and Terrell joined other researchers in citing positive social outcomes of cyber education for students not well served by traditional classrooms. Students who are bullied, are timid, or have low self-esteem may not thrive in classrooms where they are overrun by more aggressive students or overlooked by teachers, for one reason or another. These students, in particular, report that being removed from their traditional classroom culture is more beneficial to their ability to excel in academics than sitting side by side with their peers in a classroom (Jackson, 2007).

In a dissertation study of perceptions of advantages and disadvantages of online courses offered through New Jersey public high schools, Carr (2007) stated that the reaction to learning via computer depends upon students and their learning/socialization style. She wrote, "The social ramifications of online learning can be argued from both sides of the coin; while some students find e-learning isolating, others see an increased access to their peers" (p. 25). Students in Carr's study reported that having an online teacher felt like having a private tutor, and the nearly instant feedback made the online experience preferable to their experiences in the traditional classroom. Additionally, students believed that their social interactions with peers were not impacted negatively by the online environment.

Insight from Home School Socialization Research

Much of the data regarding the socialization of K-12 students removed from the daily physical interactions with their peers comes from homeschooling research (Sivin-Kachala & Bialo, 2009). Research conducted by Smedley in 1992 used the Vineland Adaptive Behavior Scales (structured interviews of parents) to assess and subsequently compare socialization of home and traditionally schooled students. Smedley concluded that traditionally schooled

children were socialized by their same-age peers, while homeschooled children were socialized by their parents. This difference may be less pronounced in the high-technology world of students 17 years later, but the point may still be valid. Cyber-educated students spend more of their school days either alone or with cyber-educated siblings under the supervision of their parents or other adult guardians.

Medlin (2000) also conducted a study of homeschooling and the question of socialization. He reported that students suffered from feelings of seclusion and insufficient interaction with friends, citing this as a significant drawback to homeschooling. This sense of isolation was also reported by Simpson (2004) as one of the major reasons that cyber school students drop out and return to traditional schooling.

Ray (2003) argued that homeschooled students gain socialization skills through their interactions with family and friends, the community, and the culture at large. A study evaluating homeschooled students' activities outside the home found that 98% of the students were involved in two or more regularly scheduled activities interacting with peers and adults in the community. Nelsen (1998) asserted that homeschooled children interact with a wider range of individuals in their daily lives than do traditionally schooled students whose interaction is often limited to similar age peers. In the process, the homeschooled student acquires increased social skills and greater maturity than a student whose social life focuses on traditional school activities. In a later study evaluating how well homeschooling prepared students to be contributing members of society, Ray (2003) reported that when they graduated, homeschooled students were more active in society than traditional public school students. His research revealed that while 37 percent of traditionally schooled adults participated in public service activities, 71 percent of homeschooled graduates from comparable age groups were actively

engaged in civic projects. While Ray's research cannot be generalized to imply that students who are homeschooled are ultimately more civically engaged than traditionally schooled students, evidence does support that they are actively engaged in their communities and they "appear to be functioning effectively as members of adult society" (Medlin, 2000, p. 119).

Jackson (2007) developed a case study of homeschooled students in Australia. Three students who chose homeschooling for very different reasons were interviewed in-depth. Jackson stated that socialization of homeschooled children is an individual issue that depends entirely upon the parent's and student's determination to develop strong socialization skills via involvement in activities. According to Jackson, what makes homeschooling unique is that students are able to work at an academic level that does not impact their socialization with peers.

Students who are either ahead or behind their peers are not subjected to teasing and other antisocial behavior from their classmates. Cavanaugh, Barbour, Brown, et al. (2009) found this to be true in cyber schools as well. Students who are moved from the traditional school to a cyber school because of lagging coursework often find they are more easily able to progress through coursework at a continuous and acceptable pace when they are not distracted by peer interactions. Cyber students have more control over peer interactions, as well as the content and depth of such interaction. Even though there may be an issue with a lack of positive spontaneous interaction, the cyber setting limits some of the negative communication that can occur behind the back of the classroom teacher.

To address the potential for cyber students to feel isolated, school administrators have increased efforts to offer a wide range of activities and interactions in the cyber setting. Typical socialization activities are reflected in the Watson and Gemin (2008) categories previously listed. School administrators know that many students find full-time online learning to be too isolating

because they miss the socialization of the traditional school community (Hurt, 2008). Evidence of whether or not actions taken to date are sufficient for the majority of cyber students to be at least as socially adept and aware as their traditionally-schooled peers will continue to be revealed. Because technological advances continue to alter the way in which, and with whom, all students interact, the discussion of socialization will continue to evolve (Oblinger, 2008). As Taylor (2006) states:

> Many of their interpersonal relationships exist primarily online, and the lines between the online and the live are blurred or nonexistent. The explosive growth in enrollment in online courses, even by native and resident students who can take "live" classes, indicates their preference for life online, and frequent lack of interest in traditional live academic activities. (p. 49)

For the time being, it may simply be that "some feelings of isolation may come with the territory; isolation may be a trade-off for the convenience and access provided" (Hurt, 2008, p. 10). Cyber education is not for every student, but evidence suggests that many cyber schools provide the means by which students can develop socialization skills, both in and outside of the classroom (Zucker & Kozma, 2003).

Controversy surrounding cyber students' socialization is founded in the concern that they may not develop social skills enabling appropriate interaction with others in the world at large. Additional questions exist for cyber high school graduates transitioning to non-cyber post-secondary education. In particular, parents and educators want to know if cyber educated students are different from non-cyber educated peers in their ability to handle the social pressures found in college, and if their cyber high school education impacts students' preparation for college-level coursework and future employment. Research on the transition issues students

typically encounter as they move from high school to college can shed light on whether cyber high school graduates' transition experiences are significantly different.

Transition

Transition to college can be an exciting and stressful experience. It is a time of expected and unexpected change, new friends, new responsibilities, and, for many, a first home-away-from-home (Astin, 1999; Clark, 2007; Larose & Boivin, 1998). Students in college "come from diverse backgrounds, went through different secondary school environments and experiences, have varying levels of academic preparation, and seek different types of college experiences, but all will go through the process of adjusting to their new lives" (Keup, 2004, p. 8). Transition for cyber educated students is additionally complicated with the shift from an individualized online learning environment in the privacy of their homes, to the often impersonal, traditional college community of learners. Many students become overwhelmed in the transition process, leading them to engage in behaviors that result in poor social and academic success, such as excessive drinking or failure to attend to coursework (Dyson & Renk, 2006). A complex mix of factors, including pre-existing conditions and demographics, has been found to influence students' behaviors when they encounter difficulties in the transition process.

According to Kuh (2007), college success is "related to precollege academic preparation and achievement, as well as other factors such as family income and parent's education" (p. 4). Success and failure are also tied to actions taken and decisions made by students upon their arrival at school (Barefoot, 2004; Robbins, Allen, Casillas, Peterson, & Le, 2006). Dynamics of academic and social self-concept, perceived control, and motivation have been shown to affect the quality and speed with which students assimilate into their new surroundings (Bergerson, 2007; Robbins et al., 2006; Ruthig et al., 2008). Judgments by new students, such as how much

to study, how often to attend class, where to live, and whether to be involved in campus-based organizations have all been shown to influence success or failure in college transition (Astin, 1999; Bergerson, 2007; Kelly et al., 2007). Personality traits and personal beliefs, including extroversion and self-concept regarding one's ability to succeed, regardless of prior and current conditions, have also been shown to play a sizable role in aiding or inhibiting successful transition (Bandura, 1977; Chemers et al., 2001).

In an attempt to identify commonalities of the transition experience, Tinto (1988; 1997) proposed three stages experienced by students, regardless of background, in their transition to college: separation, transition, and incorporation. According to his model, separation occurs when an individual's basis of identity changes. For college students, it begins when they realize they can no longer identify themselves as members of their high school community or as adolescents dependent upon the daily oversight and guidance of parents and other family. The separation stage is often identified by feelings of isolation and loneliness, while the transition stage is frequently marked with sadness of giving up an old way of life for a new one.

During the initial period in college, students progress through emerging adulthood (Arnett, 2000) and into Tinto's (1988) transition stage. In this stage, they encounter new cultures and related expectations of the roles they will play in them. They begin to understand the need to abandon some of their prior habits and beliefs along the way. Students enter the incorporation stage when they accept and adopt new, more effective views of themselves and their new role. Feelings of being overwhelmed by new rules and expectations mark the second stage, as students come to understand that they must adjust to their new setting to fit in and succeed. Tinto argued that the degree of stress experienced by a student in this stage was likely related to the measure of difference between the student's old environment and new one. While many new college

students encounter sizable incongruities comparing their former lives to their college life, differences in educational environments are distinct for students who have been educated at home rather than in a traditional classroom (Sutton & Galloway, 2000). How capable students prove to be at managing the transition stage determines how quickly they are able to reach incorporation and embrace the social and academic culture of their new world (Robbins et al., 2006; Tinto, 1997).

Astin's (1999) *Theory of Involvement* offers an explanation of how one progresses through the phases of transition. It emphasizes active participation of students as key to their academic and social success. Involvement in academics includes the investment of physical and psychological energy in academics and social engagement. He proposed that the amount of learning and sense of connectivity in a college experience is directly proportional to the quality and quantity of student involvement. Astin contended that every theory related to college student success could be rationalized in terms of the involvement concept. He stated that "the factors contributed to student's remaining in college suggested involvement, whereas those that contributed to the student's dropping out implied a lack of involvement" (p. 523). In Astin's view, the prior educational experiences of students, including the type of schools they attended, become secondary to the effort students exert once they arrive at college.

Research on the transition experiences of cyber high school graduates that would confirm or negate this premise is quite limited, but transition of non-traditionally educated students is informed by findings in homeschooling research. Lattibeaudiere (2000) used Tinto's (1988; 1997) framework to describe the adjustment to traditional universities and colleges of 25 students who were homeschooled during their high school years. She found the homeschooled students progressed through Tinto's stages in a similar fashion as non-homeschooled students,

and all were able to successfully assimilate into their new setting. Lattibeaudiere concluded that students adjusted to college well and went on to perform as well as or better than their traditionally-schooled peers. Her study indicated that factors of individualized instruction and the ability to self-regulate learning, which are also found in cyber education (Blaylock & Newman, 2005), contributed to academic success in college. However, the speed with which social integration was attained was negatively impacted by homeschooling. According to college officials responding to the study, homeschooled students were perceived to take more time to adjust to the social aspect of collegiate life than their non-homeschooled peers. This finding is in contradiction with results of studies by Medlin (2000) and Ray (2003), which found homeschooled students to be more socially adept in some areas than traditionally schooled peers.

Bolle, Wessel, and Mulvihill (2007) also conducted a qualitative study of the transition experiences of students who were homeschooled during high school. Using an interview-based approach, six students' transition issues and experiences were documented. Findings of the study revealed few differences between transition experiences of homeschooled and traditionally educated students. In particular, students in the study revealed that the degree of separation issues, such as loneliness and sense of belonging, differed among students depending on the strength of their pre-transition desire to gain more independence from their parents and families. This would indicate students' varying progression through the process of emerging adulthood (Arnett, 2000). However, all of the students in the Bolle et al. (2007) study were able to eventually move through the stage of separation and begin to see college as their new home.

Bolle et al. (2007) reported that changes in students' attitudes in the separation and transition process were facilitated through the development of new friendships and through connections established with college faculty. Homeschooled students often rely on strong

connections with adults in the learning environment which may carry over into post-secondary settings (Ray, 2003). Watson et al. (2008) found that similar relationships between adults and students existed in many cyber education environments. Some students in the Bolle et al. (2007) study struggled at first with using their newfound freedom and independence to make the right choices regarding attending classes and allocating enough time to studying. These behaviors increase the likelihood of academic success (Clark, 2005; Kelly et al., 2007). As in the Lattibeaudiere (2000) study, some homeschooled students experienced a delayed integration into the social life of the institution. All of the students in the study ultimately found the increased exposure to new social circles to be positive, but some students reported taking longer than others to feel they were where they belonged. Bolle et al. (2007) reported no surprise with this finding because they acknowledged homeschooled students are used to entertaining themselves. Therefore, they had to learn how to interact more socially with their peers while assimilating into college life.

All students in the study reported a belief that homeschooling gave them the time-management and study skills needed to succeed in college. Students said they had to develop self-discipline and self-motivation to succeed in homeschool and that this made them well-prepared for college. Additionally, they did not perceive being socially inept because of their homeschool experience. What students did report was the adjustment of having to attend classes in a traditional setting. They were not accustomed to having to leave their residence to go to school. Adjusting to teaching styles that were different from the customized delivery they experienced in homeschool was also cited as somewhat difficult. On the whole, participants believed that activities and resources made available by the university, such as orientation, student organizations, and support programs, aided their transition experiences. However, some

felt that student fraternities and sororities were over-reported by the college as being valuable to the majority of students' transition.

One of the most interesting findings of the Bolle et al. (2007) study involved the reactions to and reflections on students' prior homeschooling experience. Students stated that their non-homeschooled peers reacted with negative stereotypes of homeschooling. They reported that they spent a significant amount of time explaining their experiences with homeschooling and were surprised that other students were amazed at how normal a homeschooled student could be. Some of the participants were taken aback by the notion that they were seen as being any different than non-homeschooled students. Others reported being relieved to have the college experience confirm their own beliefs that they were not lacking more socialization skills than their average college peers.

Correlations are found in the literature between the experiences of homeschooled students described by Bolle et al. (2007) and Lattibeaudiere (2000) and the experiences of cyber-educated students. Cyber students often work in an environment where they learn independently of other students, are generally able to set their own pace of learning, receive significant support from adults leading their learning experiences, such as cyber teachers, cyber support personnel, and parents or guardians monitoring their activities at home (Cavanaugh, Barbour, & Clark, 2009; Ohio Virtual Academy, 2009). Cyber students may experience adequate interaction while in the cyber classroom, but it is different from the interaction that occurs in a traditional classroom (Ferdig et al., 2005). In several studies, students were shown to have higher perceptions of teacher support but lower perceptions of student cohesiveness and cooperation between student groups, although other studies documented significant positive student-to-student interaction (Zucker, 2005).

Supporting the value of pre-existing academic skills for successful transition, Gerdes and Mallinckrodt (1994) found that adjustment issues differed depending on whether students demonstrated strong academic skills. Students with weak skills failed to survive the transition process for different reasons than those with strong skills. Smith and Zhang (2009) joined others (Tierney, Corwin, & Colyar, 2005; Tinto, 1997) contending that the rigor and quality of high school curriculum is a key precursor to collegiate academic success. While the academic preparedness of cyber-educated students is difficult to establish because of the lack of similarity among cyber schools (Irwin & Berge, 2006; Tucker, 2007; Watson, Gemin, Ryan, & Wicks, 2009), a large number of existing studies indicate that cyber students are likely to perform as well as their non-cyber educated peers, assuming they attended cyber schools that were held to high quality standards by the schools' administration and/or governing bodies. However, a noteworthy void in cyber education research still exists (Cavanaugh, Barbour, & Clark, 2009; Watson et al., 2009). Although several studies indicate that the method of delivery of instructional content does not negatively impact the academic outcomes as measured by performance and standardized exams (Barbour & Mulcahy, 2008; Cavanaugh et al., 2004; Hughes et al., 2007), data from other research imply that effective learning in the online classroom is heavily dependent upon the quality of communication from and with the online teacher; if sufficient quality and quantity of communication is lacking, students will not perform well academically (Cavanaugh, Barbour, Brown, et al., 2009).

Students' perceptions have been previously acknowledged through research to be as critical to collegiate success as prior academic performance. Using Bandura's (1977) concept of self-efficacy, Gresham et al., (1988) indicated that students' reported perceptions of their own academic achievement and social self-efficacy were the best predictors of their academic and

social performance. A longitudinal study of first-year university students conducted by Chemers et al. (2001) evaluated factors potentially influencing students' adjustment. Over 250 students participated in the study, which found that those who held a strong sense of self-efficacy performed better academically than those with a lower perception of their ability to succeed. This study concluded that even when superior academic ability, as reflected by high school GPA, was accounted for, students' academic self-efficacy was a predictive factor in their academic performance. To measure academic self-efficacy, the researchers created an eight-item Academic Self-Efficacy (ASE) measure "designed to reflect a variety of specific skills pertinent to academic achievement" (p. 59). The eight ASE items were used with the permission of Chemers et al. in the first part of the survey developed for this dissertation study.

Ruthig et al. (2008) conducted a study of the interactive effects of perceived control and emotions on academic achievement. Results of surveys completed by 620 students at the beginning of the semester were compared with achievement at the end of the semester. The study findings revealed that emotional feelings related to course content, such as desire to learn new material or boredom with content, did not override perceptions of students regarding their ability to control their academic outcomes.

Barker and Wendel (2001) and Cavanaugh et al. (2004) reported that cyber education encouraged the development of good time-management and study skills. Kelly et al. (2007) suggested that intervention in teaching these kinds of skills prior to beginning college would help ease negative transition experiences of most students. Indeed, students often reported that the hardest aspect of the transition to college is not the difficulty of course content. Rather, they claimed the toughest part of transition is the new rhythm and structure of college-level work (Strong American Schools, 2008). In the Strong American Schools' *Diploma to Nowhere* report,

students often claimed they were not prepared for the self-regulation demanded by postsecondary courses. Elsewhere, one student stated, “one of the things that they don't teach in high school is time-management" (Colleges spend billions to prep freshmen, 2008, p. 1).

Perceptions relative to significant-others in students’ lives were found by some researchers to influence positive outcomes from college. Perceived closeness to parents and expectations of support were found by Larose and Boivin (1998) to improve transition to college experiences. Students with a strong bond to parents were found to be more responsible, to engage in fewer high-risk activities, and to have a greater sense of self-reliance. Cognitive attachment replaces physical attachment in the years of emerging adulthood (Arnett, 2000). Students who have been educated at home have been found to have a strong perceived closeness to parents (Medlin, 2000; Ray, 2003). Moreover, Perry, Hladkyj, Pekrun, and Pelletier (2001) found a significant correlation between self-regulation and achievement.

Summary

A review of literature has shown that cyber education is on the rise; as the number of schools grows, more and more students will graduate and begin college—many of them at traditional universities. Cyber schools across the country are diverse in their design, but all offer flexibility and pace options not traditionally found in non-cyber settings. To succeed, students in cyber schools rely on qualities of effective time-management, self-directed learning, and a strong locus of self-control (Berge & Clark, 2005; Cavanaugh et al., 2004; Weiner, 2003). Although it is early in the life of full time cyber education, researchers have begun to find evidence of how well students do or do not fare in this realm as compared to traditional education format.

Some data have shown that cyber school students perform as well or better than non-cyber school students on standardized tests and in particular courses, and that they can develop

strong supportive relationships with their teachers and tutors (Blaylock & Newman, 2005; U.S. Department of Education, Office of Planning, Evaluation, and Policy Development, 2009). Still other data indicate that students in cyber setting may not gain the skills needed to succeed academically (Zimmer et al., 2003). Some researchers have found that the reason students are attending a cyber school influences the academic and social outcomes of the experience. Zimmer et al. (2009) found that some students who are moved to cyber schools as a result of being dismissed from their traditional public school may not do as well; but Cavanaugh, Barbour, Brown, et al. (2009) documented the opposite. Their study found some students did better when they transitioned to cyber school where they were not distracted by other activities occurring in the regular classroom.

Concern over development of social skills is cited frequently by non-supporters of cyber education (Nichol, Minty, & Sinclair, 2003). Several recent studies have focused on what cyber schools have done to address this concern. Sivin-Kachala and Bialo, (2009) joined Watson and Gemin (2008) in documenting the substantial socialization activities offered by cyber schools and reported that cyber students appear to interact with peers and others both in and outside of the cyber classroom.

Transition research presents a complex puzzle of factors contributing to social and academic success. Pre-existing academic skill, family ties, personality, and self-perception have all been assigned degrees of importance by researchers in the field. Whether or not the type of educational environment students come from is relevant to their transitional experiences has received limited attention to date (Bolle et al., 2007; Lattibeaudiere, 2000). As the prevalence of full-time cyber schools increases (Clark, 2007), the transition experiences of graduates of such

schools grow in importance. Chapter III of this study describes the methodology used to understand the academic and social transition experiences of cyber-educated students.

Chapter III

DESIGN AND METHODOLOGY

Introduction

The problem of this study was to identify cyber high school graduates' perceptions of the effect of a cyber high school education on transitioning successfully to a traditional university. The study seeks to add to the limited existing research regarding K-12 cyber education. Chapter III includes a description of the study design and methodology, including study settings, selection of participants, quantitative and qualitative instrumentation, procedures of gathering data, and methods of data analysis. The study was designed to collect data from a survey and focus group interviews to answer the following research questions:

1. What difficulties do cyber high school graduates perceive inhibited their success at a traditional university?
2. What advantages do cyber high school graduates perceive contributed to their success at a traditional university?
3. How do cyber high school graduates perceive their high school education affects their academic performance at a traditional university?
4. How involved in university based social activities are cyber high school graduates compared to their university peers?

To examine the questions, a mixed method study was used. The qualitative portion was designed on the framework of Merriam's (2002) contention that "basic interpretive qualitative study … [provides] insight into the meaning a phenomenon has for those involved" (p. 37). Qualitative data gathered through discussions with study participants offered an insider's view of the world of cyber high school graduates as they assimilated into the university setting. Focus

group meetings, and in some cases one on one interviews, were used to allow students opportunities to explain what it was like to attend a cyber high school, to give examples of the advantages and disadvantages they now see, and to explore how, if at all, their unique education impacted moving on to a traditional, brick and mortar college setting. These discussions allowed students to use their own words and emotions to describe their experiences. Additionally, the unstructured discussions gave students a chance to expound on experiences they believed were noteworthy to understanding their distinctive circumstances.

Qualitative data alone cannot fully address questions researchers have regarding this phenomenon; "those matters worth knowing well are rarely understandable from a single perspective" (Hutchings, 2008, p. 5). Much of the interest and concern over elementary and secondary cyber educated students is expressed as a question comparing them to students educated in traditional schools.

> There still is widespread agreement...that schools for younger pupils should play a role in character development, socialization, transmission of a common culture, and preparation for citizenship. Two of the main reasons why critics wonder about the appropriateness of online courses below the college level are because of these objectives and because of the doubts about the suitability of e-learning for less mature students who may not so easily function on their own. (Maeroff, 2003, p. 275)

How cyber-educated students compare to non-cyber educated students, especially in regard to socialization, gives interested parties a means of evaluating the worth of K-12 cyber education in general. Survey data were used to enable such a comparison for this study. As described in the analysis of data, cyber educated students' answers about engagement in campus-based activities were measured against answers given by a sample of the general student body,

on the same college campus. Qualitative and quantitative data were used to add depth and validity to the findings of the study (Creswell, 2005).

Study Settings: Four Universities

This study was conducted at four of the fourteen Pennsylvania State System of Higher Education (PASSHE) universities across the commonwealth. Sites were selected based on three criteria: their location in the state, undergraduate population in 2008, and participation in the National Survey of Student Engagement (NSSE). The NSSE is a validated survey used by universities across the country to obtain data on enrollees' academic and social involvement (Kuh, 2003). To potentially obtain a larger and more diverse representation of students across the state, the universities with the largest population in each of the four geographic quadrants (north, south, east, and west) were selected. Due to time and travel constraints, no more than four universities were included in the study. Final sites for the study were: Indiana University of Pennsylvania, Slippery Rock University, Bloomsburg University, and West Chester University of Pennsylvania. Table 2 lists each school's name, location, and Fall 2008 enrollment, as reported on the PASSHE website.

Table 2

Study Site Names and Enrollment

Sites	Location in state	Fall 2008 enrollment		
		Undergraduate	Graduate	Total
Bloomsburg	Northeast	8,081	774	8,855
Indiana	Southwest	11,928	2,382	14,310
Slippery Rock	Northwest	7,691	767	8,458
West Chester	Southeast	11,482	2,137	13,619

Note. Adapted from "Headcount enrollment by university, level and status, fall 2008" by Pennsylvania State System of Higher Education, 2009, *Fact Book, 2008-09*, p. 39. Retrieved from http://www.passhe.edu/executive/it/research/use/Documents/ CompleteRevised.pdf

The participation by students at the listed universities in the National Survey of Student Engagement (NSSE) helped answer the fourth research question regarding a comparison of involvement in university-sanctioned social activities of cyber schooled students compared to their non-cyber schooled peers. The results of the survey created for this study (Appendix A) were compared to the NSSE results for a representative sample of all students at the study sites. As discussed below, the quantitative survey instrument designed for the study includes four selected questions from the NSSE. These questions were the same on the 2008 and 2009 NSSE. All sites selected for the study participated in either the 2008 or 2009 NSSE. Answers from survey respondents to the four questions were compared to answers given by the representative sample of students from their university.

Participants

Participants in this study consisted of students aged 18 to 25 who attended a cyber high school for a minimum of the last full year of their high school education and who were enrolled at one of the four study sites during the 2009-2010 academic year. To identify potential

participants, phone calls were made to the admissions department of each school explaining the study and asking for help with the identification process. The most efficient way to name cyber high school graduates was to use the College Entrance Examination Board (CEEB) codes associated with the high school and SAT scores for students admitted to the university and visually scan lists of enrollees' high school names. A request for a report of cyber high school graduates attending the university was emailed to the admissions departments along with name and corresponding CEEB code for all Pennsylvania cyber charter schools, as well as the names and CEEB codes for identifiable cyber schools in the surrounding states of Maryland, New Jersey, New York, Ohio, and West Virginia. In addition, an employee from each study site's admissions office or Institutional Review Board office was asked to scan enrollee lists for other high schools whose names included keywords such as *virtual*, *digital*, *cyber*, and *online*.

Once this was accomplished, the appropriate department personnel at the study sites compiled lists of identified students and their email addresses. The lists for Bloomsburg (BU), Indiana (IUP), and Slippery Rock (SRU) were sent to the researcher. An email describing the study was prepared and distributed to the study population (Appendix B). A unique link for each study site was inserted in the emails so that student responses would be grouped by location. At West Chester University (WCU), the student email addresses were considered to contain sensitive information, so the Director of Institutional Research sent the email directly to the students from her office. Text of the email sent by the researcher to students at all other sites was copied into an email from WCU Research with the statement: "This email is being sent to you from an unmonitored WCU Institutional Research account on behalf of the PASSHE contact listed below. Questions regarding this email or the Cyber School Study should be directed to the researcher listed below at IUP" (L. Yannick, email communication, October 2, 2009). Student

information was not sent to the researcher for individuals at any of the sites with a restricted access designation for their records at any of the study sites.

All identified students were sent an email explaining the study. They were asked to complete the survey and respond to the researcher with a consent form (Appendix C) indicating their willingness to participate in a focus group. Note that all willing participants responded directly to the researcher, including those from West Chester University, thereby making it possible to send further communication to participants at that school without the intervention of the Director of Institutional Research. Those who agreed to participate in the focus group interviews were contacted via email to set up the interview date, time, and place. Participants were informed of the confidential nature of the data to be gathered and of their right to withdraw from the study at any point prior to completion of the dissertation. Table 3 is a summary of the number of students initially contacted, the number of survey respondents, and the number of participants in focus group interviews.

Table 3

Study Population Data by School

Pennsylvania State System of Higher Education University	Identified cyber high school graduates	Survey respondents	Participants in focus group interviews
Bloomsburg	5	4	2
Indiana	16	13	5
Slippery Rock	13	6	4
West Chester	11	10*	3
Total	45	33*	14

* Includes response by one student under the age of 18

Quantitative Data

The survey developed for the quantitative portion of this study was intended to document how well cyber high school graduates believed they were performing academically during their

university experiences, and to allow for a comparison of the social involvement of cyber high school graduates in university social activities to the involvement of the general body of students at their respective schools. Surveys were submitted by participants through Qualtrics survey software. A separate "Cyber Student Transition" survey and corresponding hyperlink was created for each study site so that responses were compiled separately for Bloomsburg, Indiana, Slippery Rock, and West Chester. Survey responses were compiled for each study site and responses were downloaded to Statistical Package for Social Sciences (SPSS) software for statistical analysis.

The survey instrument designed for this study consists of three sections: demographics, selected questions from the 2008 NSSE, and all questions from the Academic Self-Efficacy (ASE) scale (Chemers et al., 2001). Permission to use certain questions from the NSSE was obtained from The College Student Report, National Survey of Student Engagement, copyright 2001-09, from the Trustees at Indiana University in Bloomington, Indiana (Appendix D). Permission to use the ASE scale was received from Dr. Chemers of the University of California, Santa Cruz (Appendix E).

In the demographic section, on survey questions 1 through 3, participants indicated their age, name of cyber school attended, and dates they attended the cyber school. On survey questions 4 and 5, participants were asked to indicate the date they took their first college classes and their current enrollment year in school. Specific information about participants' engagement in school-sponsored clubs while attending cyber high school was requested in survey question 6. This question was included to enable an exploration of possible relationships between students' participation in high school activities and their involvement in university activities.

Survey questions 7, 8, 9, and 10 of the study survey were duplicated from questions 8a, 9d, 23, and 24 of the 2008 NSSE. These questions specifically address the student's involvement in university activities. Every year NSSE is used by participating universities to gather information about time spent by students in a variety of academic and social activities. The subjects explored by the NSSE have been linked to prior research on student success in college (Chen et al., 2008; Kuh, 2003). University personnel with access to their schools' NSSE reports were contacted to obtain the university's data for questions 8a, 9d, 23, and 25. Statistical data (using t-test and chi-square analysis) generated for the four questions were used to compare cyber high school graduates' involvement in university activities to the involvement reported on the NSSE for each study site's student body as a whole.

The final eight questions on the survey were used with permission from the Academic Self-Efficacy scale (ASE) developed by Chemers et al. (2001). The ASE scale has been shown to predict academic adjustment (Chemers et al., 2001; Zychowski, 2007). Research questions 1, 2, and 3 of this study address cyber high school graduates' perceptions of how experiences of attending a cyber high school affected the success of their adjustment to a traditional university. Student responses to the ASE were used to identify the perceptions of the study population regarding their own preparedness to succeed academically at the sites in this study. Survey questions (demographic, NSSE scripted, and ASE) were also used to guide the qualitative discussions in the focus group interviews.

All survey respondents between 18 and 25 years of age were contacted to solicit participation in a focus group on their respective campus. It should be noted that after survey data were gathered, a flaw in the first question of the survey was discovered (Appendix A). Participants for this study were restricted to between the ages of 18 and 25, but the question

provided boxes for respondents to indicate their ages as less than 18 yrs., 18 yrs., 19 yrs., 20 yrs., 21 yrs., or 22 yrs. and older; thus allowing for non-identification of respondents falling outside the upper age range for the study. This issue is discussed further in Chapter IV of this study. Follow up discussion in the focus group interviews revealed the identity of the only respondent who checked the over 22 yrs. and older box. It was determined that the participant was indeed 22 years old, thus not over the age limit. Ultimately, only the data submitted by the student younger than 18 was eliminated from the data pool.

Qualitative Data

The qualitative portion of this study centered on gathering cyber high school graduates' perceptions of their experiences in cyber high school and their transition to college at a traditional university using focus group interviews. Data for the qualitative portion of this study were gathered from the participants in February, 2010.

Identified cyber high school graduates were sent an email requesting their participation in a focus group discussion of their cyber school experiences on their campus. To obtain the maximum number of participants, a second email requesting participation was sent a week later. Students willing to participate in the study responded to the emails and provided an informed consent form along with contact information. Focus group meetings were initially set up to take place at each of the sites during late January and early February, 2010. However, multiple delays were encountered due to severe winter weather. When attempting to reschedule, the Bloomsburg University participants were unable to find a common date to reschedule the focus group meeting. Because of the small sample size and the researcher's concern over obtaining data from this site, these participants were interviewed over the phone.

All conversations were recorded using a high quality digital recorder after permission to record the sessions was obtained from each student. At each site, except Bloomsburg, participants sat around a table with the recorder placed off to one side of the table so it was less obtrusive. Discussions with Bloomsburg participants were recorded by placing the recorder next to a speaker phone. Each participant was asked to read and sign an informed consent form on letterhead from the researcher's university (Appendix G) prior to the start of the session. Signed informed consent forms were obtained from Bloomsburg participants prior to their telephone interviews.

Recordings were started as soon as all participants were seated and consent forms were collected. An overview of the purpose of the study and discussion of procedures for the focus group were given, and then students were asked to introduce themselves and tell the name of the cyber high school they attended. Discussion questions were asked in generally the same order for each study site. Participants were asked to give their responses in the order in which they were seated around the table but were also encouraged to add commentary at any point. They were reassured that digressing from the researcher's initial questions was encouraged so that discussions would lead to discovering unexpected aspects of their experiences. All participants appeared to willingly share comments on their personal opinions about their cyber high school and transition to college experiences and did not hesitate to indicate when they either disagreed or agreed with the comments made by fellow students.

At the end of each session, participants were asked if there were any responses they wanted to clarify or any additional comments/issues they wanted to add. Participants were encouraged to email the researcher with any concerns or thoughts about the study at a later date. Following each session, the researcher listened to the audio files to ascertain if there were any

problems with the files or any clarifications needed from the participants. No clarifications or corrections were found to be needed. Files were then given to a professional transcriptionist for transcribing. The transcriptionist did not know the location of the study sites, thereby maintaining the confidential nature of the study. After transcription was completed, each participant's name in the text files was replaced with a pseudonym to further ensure confidentiality. These pseudonyms were used for the duration of the study, and only the researcher knows the identity of the student associated with each pseudonym. The data for this research will be maintained in the researcher's safe deposit box for at least three years from the end of the study, in compliance with federal regulations.

Discussions were initiated by the researcher with the questions designed to elicit conversation about participants' academic and social experiences while attending cyber school and how those experiences influenced transitioning to a traditional university. The questions were based on the researcher's understanding of prior research on cyber education and transition to college (Watson & Gemin, 2008; Zychowski, 2007). However, the nature of this study centered on the idea that we do not know, and need to further understand, how students perceive their cyber education in hindsight—particularly how it interplayed with their transition to college. The qualitative portion of this study was primarily inductive, with information being gathered to build understanding rather than to test hypotheses of the researcher (Merriam, 2002). Therefore, many of the questions asked in the discussions were developed as participants shared their experiences and perceptions.

Once data were transcribed and pseudonyms were assigned, transcripts were uploaded to NVivo8, a qualitative data analysis program. The software allowed the researcher to apply open coding in the first level of analysis of each participant's comments. Open coding occurs when

events, beliefs, and ideas are classified under a name or code that clearly represents the concept (Merriam, 2002). Coding began with in vivo codes, which use the "participant's actual words" (Creswell, 2005, p. 238), such as *sleep in*, to create initial codes. These words were used to prevent initial bias in coding, such as the researcher substituting her perceptions of participant meaning and initially miscoding data. The coded transcripts were then reviewed.

Having to reread and analyze data in the words used by the student participants allowed the researcher to give additional time and consideration to the participants' meanings before filtering ideas into fewer categories (themes). Next, coding was refined and narrowed to eliminate "overlap and redundancy, and collapse these codes into broad themes" (Creswell, 2005, p. 237). Themes were then correlated to each research question they addressed by making a notation of the question number next to the theme. The ultimate use of a limited number of themes allowed a clear description of the phenomenon of the study to be developed.

Summary

Chapter III described the design and implementation of this mixed-method research. The problem of the study was to explore how cyber high school graduates believe their experience in cyber education affected their transition to a traditional university. This chapter presented an explanation of the selection of study sites and identification of participants. Procedures employed to recruit participants were provided along with a description of the final study population. Design of the quantitative instrument used and procedures of analysis of data were included. Additionally, explanation of qualitative procedures and problems encountered were given. Chapter III presented a background to the discussion of the data to be included in the following chapters. Chapter IV will provide the results obtained from this mixed-method study.

Discussion of the quantitative and qualitative data gathered will be summarized using statistical and analytical evaluation of the findings.

CHAPTER IV

DATA ANALYSIS

Introduction

Transition experiences of students moving from secondary to post-secondary education have been extensively documented (Chemers et al., 2001; Ruban & Nora, 2002; Zychowski, 2007). However, little research exists on the transition of online learners to the campus-based classroom and possible adjustments needed for social and academic success. The problem of this study was to identify cyber high school graduates' perceptions of the effect of a cyber high school education on transitioning successfully to a traditional university. Particular emphasis was placed on perceptions of academic performance and social engagement and comparison of engagement to that of their university peers.

Chapter I outlined the purpose of the study by illustrating the growth of K-12 cyber education and introducing some issues that have developed along with this growth. Chapter II provided a background of the study with a review of relevant literature related to cyber education and issues surrounding the transition of students from secondary to post-secondary schooling. Chapter III described the mixed methodology of the study designed to investigate the concepts of the research. This chapter presents findings of the study as they pertain to the research questions:

1. What difficulties do cyber high school graduates perceive inhibited their success at a traditional university?
2. What advantages do cyber high school graduates perceive contributed to their success at a traditional university?

3. How do cyber high school graduates perceive their high school education affects their academic performance at a traditional university?
4. How involved in university-based social activities are cyber high school graduates compared to their university peers?

Descriptive Analysis

Response Rates

Of the 45 students ($N = 45$) contacted for this study, 33 completed a survey. However, one of the survey respondents was under the age of 18. The survey provided by this student was excluded from the data, as required by the study protocol. In the end, 32 students completed the survey ($n = 32$), resulting in a 71% response rate. In addition to the survey, all students in the population sample were asked to contribute to a focus group discussion. Fourteen students, including two from Bloomsburg University ($n = 2$), five from Indiana University of Pennsylvania ($n = 5$), four from Slippery Rock University ($n = 4$), and three from West Chester University ($n = 3$), agreed to participate in the discussions. This represents a participation rate of 31% of the original study sample (14 of 45).

Demographic Data

The mean age of the 32 students who responded to the survey was 19 years. Class ranks of survey participants were broken down as follows: 56.2% freshmen ($n = 18$), 9.4% sophomores ($n = 3$), 21.9% juniors ($n = 7$), 9.4% seniors ($n = 3$), and 3.1% graduate ($n = 1$). All respondents were graduates of one of the 11 existing Pennsylvania public cyber charter schools, as shown in Table 4. Of the 32 students, 62.5% ($n = 20$) attended the Pennsylvania Cyber Charter School, which is the largest cyber charter school in the state (Pennsylvania Department of Education, 2009b).

Table 4

Number of Respondents by PA Cyber High School

Name of Cyber High School	Graduates responding to survey	Percentage of total survey respondents
21st Century Cyber Charter School	3	9.37%
Achievement House Charter School	0	0.00%
Agora Cyber Charter School	0	0.00%
Central PA Digital Learning Foundation Charter School	0	0.00%
Commonwealth Connections Academy Cyber School	2	6.25%
PA Cyber Charter School	20	62.50%
PA Distance Learning Charter School	1	3.13%
PA Leadership Charter School	0	0.00%
PA Learners Online Regional Cyber Charter School	2	6.25%
PA Virtual Charter School	2	6.25%
SUSQ-Cyber Charter School	2	6.25%
	32	100.00%

Criteria for participating in the study included attending at least the last full year of secondary education in a cyber high school prior to enrolling at one of the four traditional universities in the study. Descriptive statistical analysis of survey results revealed that participants attended a cyber school for a mean of 2.69 years, which indicates that, on average, they spent at least their junior and senior years of high school online. Twelve of the students went to cyber school for their last three years of school, and eight attended all of their high school years online.

To understand students' perceptions of their cyber education, it is worthwhile to know the reasons they chose to go to cyber school. Findings of this study supported the report by Cavanaugh et al. (2004) stating cyber education meets the needs of a variety of students. Reasons given by the fourteen students in this study for attending cyber high school were as varied as their personalities and replicated findings of prior studies (Hassel & Terrell, 2004;

Hughes et al., 2007). For example, Kelly opted for cyber school because her family was moving, and she did not want to start her senior year at a new high school while Averil's school closed, and she did not want to move. Two students, Cassie and Ted, were unhappy with the quality of education at their public school. Ted felt unchallenged by the academics at his small rural school, while Cassie was concerned she was not getting the academic preparation at her inner-city school needed to do well in college. Five students said the main reason they went to a cyber high school was the flexibility it gave them. One of these students was a ballerina who did a large part of her cyber school work at the dance studio; another liked to run in competitive races across the country and needed the ability to travel and not miss school. Two listed the ability to gain early college credits through dual enrollment as the main reason for choosing a cyber high school over a traditional one. Some students moved to cyber education from traditional public school, and over 40% had been homeschooled at some time in their lives.

For Valerie, the decision to move to cyber high school was based on several reasons, including the online format and need for flexibility with her class and out-of-school time.

> There are a few reasons. One, I thought it was a pretty interesting idea. We had moved around a lot when I was a child, so I was used to going to different types of schools. I had gone to religious-based schools, public schools, private schools, and this was just kind of a way sort of like homeschooling, but I had that support of teachers. I thought it was something really innovative, so that was interesting, and I also, at the time, was showing dogs. So, I really wanted to have a schedule that brick and mortar schools couldn't offer me to be able to travel and also get my academic work done. And then, I also found that I tend to really excel in certain subjects such as English and social studies. And, subjects that like just math that need a lot more time, so I would get really frustrated in a traditional school setting where you have an hour class...Some classes I would be finished [with] the work for that day in the first five minutes and I would be sitting around with nothing to do, and then other classes I felt like I needed three times as much time. So, the cyber schooling was a way to kind of make my schedule more flexible in terms of travel and also being able to focus on different academic strengths and weaknesses.

Some students went to cyber high school against their will. Dana said her parents took her out of public school after first grade, and from then on she was homeschooled or in private schools until moving to cyber education. She believed her education had both negative and positive effects on her college experiences, but disliked cyber education in general.

> I think the reason I didn't have a good experience with it is because my mom was a truck driver and she was over-the-road all week and she wasn't there to help me at all, and my dad worked long hours and he was never there to help me, and it was like me on my own with like whatever I had online.

The most outspoken opponent to cyber high school was Averil, whose public high school was closed just before her senior year. She reluctantly chose to go to cyber school as a way to stay with her family and avoid a long commute to the public school in the next district. Although it served her initial purposes, cyber school ended up being a poor choice for Averil, as the isolation from other students, the pace of the work, and the quality of the courses were not what she expected.

> I would not recommend it to anybody; it was horrible. I didn't get any education from it. I didn't get any skills from doing it. I mean, I would wait until like the last week and do a whole bunch in one week and then not have to do anything for the next three months, because that just—I don't know, I guess they are all self-paced classes. I didn't know that either, I was just uninterested. I just wanted to get done and go to college.

It is evident that any number of reasons caused students to opt for a cyber high school education over one at a traditional high school. Also evident is the fact that students are continuing to find sufficient reasons to make the same choice (Viadero, 2009). Therefore, it is important for students, families, cyber schools, and traditional universities to begin to understand the effects of that choice.

The findings of this study are discussed in response to each research question. Questions 1 and 2 were designed to obtain cyber high school graduates' perceptions of difficulties and

advantages affecting their success in moving to a traditional college. Students' responses about the affective skills described in the review of literature, such as increased learner autonomy and independence, augmented communication skills, and higher levels of motivation, self-efficacy, and self-regulated learning (Frid, 2001; Kramarski & Mizrachi, 2006; Roblyer & Marshall, 2003) are discussed under each of these questions.

Question 3 focused on students' perceptions of whether cyber school helped them develop skills needed to do well in college academics. Data from survey questions developed from the ASE scale (Chemers et al., 2001) are analyzed along with findings of focus group discussions. Question 4 sought a comparison of social involvement in campus-based activities of cyber high school graduates to that of other students. Results of survey questions duplicating NSSE 2008 items are compared to data for the general undergraduate population at study sites and triangulated to results of focus group discussions to answer Question 4.

This study was designed to obtain perspectives of cyber high school graduates and present them using students' own words. Therefore, a large number of direct quotes were included in the data analysis in Chapter IV.

Inferential Analysis

Question 1: What Difficulties Do Cyber High School Graduates Perceive Inhibited Their Success at a Traditional University?

Students were asked during focus group discussions to share their positive and negative attitudes about having attended a cyber high school. Participants were encouraged to explain how they believed the experiences affected their transition to a traditional university, either as a source of difficulties or advantages.

The difficulties identified by the students often stemmed from the very reasons they chose cyber high school in the first place - the flexibility and the control over pace, especially in asynchronous (self-paced) classes. Much like Averil, the young woman who regretted her decision to attend a cyber high school, several students cited the difference between the pace of cyber high school and that of college as one source of difficulty in their transition process. Students said they struggled early on because, in self-paced cyber school classes, they had complete control over how quickly, or slowly, they did their work. Often, they were able to complete all of their coursework in a short time period compared to a regular high school. It was common to have substantial free time left over at the end of a grading period or to have the ability to take extended periods of time off of their studies during the school term. However, when they got to college, this flexibility was not available. Students did not have control over how quickly course content was covered, and the difference was disconcerting. Students from all four universities said they were frustrated over having to meet deadlines they did not set. For example, Ted said:

> I think the hardest thing about college has been deadlines. I am used to just getting it done whenever it gets done, and now basically everything is on a deadline.

Cyber high school students in self-paced classes also had control over how much time they scheduled between coursework. Many of the students reported to have done their work in chunks during cyber school. They would work consistently on a course, or several courses, until the assignments for a week, or even a semester, were completed. Their pace was not dictated by how quickly the instructor covered the material, nor by the hours and days of the week the class was scheduled, as it was when they became a traditional college student. The inability to self-determine class times and the lack of control over the amount of time between university classes

were sources of frustration for several students. Participants said they eventually adjusted to campus schedules, but admitted it was initially difficult to be productive between classes.

Other students said the pace differential had the opposite effect. These students said cyber high school course work was more demanding than what they encountered early in college. This perception resulted in either being bored by the slow pace of college work or impatient with being regulated to the pace of the class as a whole. Some students, like James, said the pace of some freshman level classes was completely unchallenging.

> Sometimes, I am like, oh, my gosh, this is so slow, why can't you; why can't everyone, understand this, and we can move on to the next topic?

Others indicated they were frustrated by the lack of control over the pace of coursework. Dana said:

> I found the most difficult part to be—[if] it is something I already knew, with the[cyber] home school I could just skip over that part,...but I hate missing class, so I am not just going to skip it, so that was like hard for me having to sit there through all that.

Sarah added:

> With cyber school, it was kind of like everything was kind of spaced out. Like we took it like one step at a time, you know. With college it is—college, it depends on your course and your instructor obviously, but sometimes it feels like you have so much to do for just one course. And then, in addition to that, you have got four or five other courses that you are taking, and for me at the beginning it was just adjusting to the courses and how they were set up. But now, I am kind of like not freaking out [like] at the beginning. I just need to look at this. I just need to take it one step at a time, and I mean, it is so hard.

Conversely, as discussed later under Questions 2 and 3, many participants said self-paced courses in high school gave them an advantage in college because they gained time management skills from being in charge of how quickly they covered course material. One student said he did not have difficulty transitioning from cyber school to college because he found the pace of both formats to be inferior to what he experienced in home schooling.

Cyber high school students were able to take classes in almost any location they wished - a bedroom, a living room, or even a ballet school. To attend traditional format college classes, cyber high school graduates no longer had a choice over where to learn; they were required to come to a classroom on campus at a set time. Ted said:

> Another thing is going to class, which I am obviously not used to. I haven't been going to class for six years. But, I have—have gone to pretty much all my classes, and I meet all my deadlines, so, I mean—I have adjusted fairly well.

Two of the participants said the thing they missed about cyber school was not having to get out of bed on time. Even Averil, who disliked cyber school in general, said one thing she did like about it was being able to sleep in whenever she wanted.

Tied to the concept of pace, one of the unique features students experienced in self-paced cyber school classes was the ability to interrupt studying at will. Not being able to leave in the middle of a college lecture to make breakfast, call a friend, or run an errand was a new experience for cyber high school graduates in a face-to-face classroom. In fact, inability to maintain attention for long periods was cited by James as another difficulty in the transition experience.

> Yeah, the cyber school probably wasn't the best thing for my study skills. I was more wanting [sic] to go watch YouTube.

Because cyber education is based in modern technology offered over the Internet, the differences between technologies used in cyber school and traditional format classes were not surprising. Joan spoke of one difficulty she experienced from not being able to replay lectures after college classes. While she said she could have audio recorded lectures during class, doing so is a cumbersome process that would likely have drawn unwanted attention. Instead, Joan taught herself to pay closer attention in class and to take better notes - two skills she did not

acquire in cyber school. This finding is closely related to academic success and is discussed further under Question 3.

Critics of K-12 cyber schools have expressed concern that students taking classes exclusively online miss the experiences of being part of a learning community that are found in traditional schools (Maeroff, 2003; Simpson, 2004). Brad said he knew cyber students are perceived as socially awkward by some people:

> I think people thought, you know, I couldn't handle some stuff. Also, that I would be a little more narrow-minded, because, like home schooling sometimes can get that rap. And, I don't know, that the kids coming out of there are just not well-educated, not keeping up with work, or whatever, and social stuff. Whereas, I kind of found the opposite, to where, even though coming here was a big change, and it was kind of a shock and awe experience. I learned to adapt. I felt like I adapted through home schooling, and through charter school, and through my experience at the high school. And so, I am in my second semester now as a freshman, and I feel like I am getting the hang of things pretty well.

Students were asked if, because of learning on their own for at least the last year of high school, they sensed feeling different than, or unable to connect with, other students in the classroom when they came to college. Mai, who attended cyber school for most of her high school years, said she did experience that sensation. She believed her lack of experience speaking in front of peers left her feeling uncomfortable about doing so when she came to college. Dana agreed, saying she was very shy about speaking out in class in her freshman year because of unfamiliarity with being in a classroom with other students. Both said that time and experience helped them to feel more comfortable; they are no longer hesitant to speak out in class. Somewhat surprisingly, these were the only students who said they struggled with being a bit uncomfortable around peers in the classroom.

When questioned about the differences in interpersonal relationships students had with teachers in cyber high school compared to college, none of the participants offered any examples

of problems. This may be because, although the majority of participants' cyber high school classes were self-paced, the students all had regular contact (typically weekly) with a supervising adult from school. Therefore, even if students did not interact regularly with their cyber school teachers, they were comfortable communicating with personnel in the cyber school. In fact, some students reported having very good relationships with certain teachers in high school and in college. As Eleanor said:

> It depends on the teacher, not whether they are from high school or college. For example, some of my professors now are harder to talk to than others.

In regard to social transition issues outside of the classroom, cyber high school graduates said the most difficult adjustment resulted from frustration over their college peers' emotional upheavals (referred to as *drama* by participants), and their careless behaviors. Even though the majority of cyber high school graduates said they felt socially prepared for college, many said they were surprised by the behavior of some of their college peers. As Brad stated:

> Coming and seeing the party scene and whatnot, you know, I am like I can understand that, I can understand controlled parties, that is fine, but some of the carelessness towards academics, I was—I must say that I was surprised by it quite a bit.

Several participants said they became annoyed in their first few months at college with the way some of their college peers dealt with private interpersonal issues in a public forum. Mai explained:

> I got over [feelings of not wanting to stay at college] pretty quickly because I have awesome friends, but, yeah, at first because it is just—I would like go away to a swing set and try to find like the solace that I was used to, because it is just so many people with so many different dramas.

Comments from Dana support the concerns over social isolation education researchers stated previously:

> I guess this is kind of a negative side I had with being home schooled. I was really sheltered as a child. The only time I ever got out was to go to work, and work was with a bunch of older women, so I felt like really comfortable around like the older generation, and so that is like who became my friends and stuff. And like I went to church—and a lot of the people in my youth group were all home schooled…but we were all kind of socially awkward, I guess you could say. So, coming to here was definitely a transition, like to meeting all these people, and it is like, "Oh my God, you drink!" I didn't want to believe it, but that is how college students are. But, I have gotten used to it.
>
> I have transitioned pretty well. Freshman year was a little rough, but I got through it. I was used to hanging out with older people. Here everyone is my own age. They are out partying and I don't do that—that is like one of the big consequences I had. I feel like I missed out on like the social life and I have kind of gotten over it, because like I guess there are pros, too. I really am happy that I was—because I became an independent person.

Another student, Sarah, had lived a somewhat sheltered life prior to college. Sarah also said the biggest adjustment was being around so many people at one time. In addition, the exposure to diversity was difficult for her, at first. Sarah's freshman year was spent on a satellite campus, where, she said:

> Every other person that I see is a different skin color and it was just kind of like, for once, I am a minority…I feel a little bit inferior sort of just because I am not, you know, used to being around people, you know, different colors and everything on a daily basis, but I feel like it has really helped me too—to be able to broaden how I interact with people and interact with different people.

In focus group discussions, cyber high school graduates also stated it was hard to understand and deal with the extent of partying and lack of academic focus of other students. In particular, participants found moving from a world where they interacted frequently with adults, to a world full of peers, was socially difficult. Brad said:

> I don't think virtual charter school was necessarily a good thing in that aspect because then it was quite a shock and awe experience. You are used to kind of thinking that people are academically minded. You don't get—you know, you don't necessarily see how the flip side can be with people. So, I mean, I interacted at all with adults, too, and so coming to college was just different.

Several students said they did not feel secluded in cyber high school. For example, Kelly said:

> There weren't any clubs through the cyber school or any ways to reach other kids who were in cyber school. It might have been a neat experience to be able to meet other people who were going through the same things. [But], I had other friends I still hung out with. I don't think school was necessarily a necessity to meet people.

Both Ted and Averil said they do not think of themselves as highly social people, adding they did not interact much with others in high school or in college. They said that, while they did not believe attending cyber school affected their socialization patterns, the cyber setting was not bothersome. They said they preferred living in isolated settings, and preferred having a small numbers of friends.

In contrast, Tara said the hardest part of going to cyber school was the lack of social contact during her school day. Tara did not want to go to cyber high school and she had a very different reaction to the social aspects of transition to college:

> I am a very social person, and I hated just being in there being in my room doing my schoolwork. Like I would go sit out on my roof to do my schoolwork, because that was a better atmosphere than sitting inside my house. So, I am definitely doing a lot better here than I—than I did in cyber school. I didn't like it. I didn't want to do it. My parents made me because they thought I was too social in school, even though, you know, I had good grades there.

Although Tara did not want to go to cyber school, the lack of socialization she experienced did not seem to have dampened her desire to socialize when she got to college. She said that she is happier now that she is in a more social setting. The cyber school Tara attended did offer some courses in a virtual classroom format, delivered in real time. Later in the focus group discussion, Tara said she actually met a good friend in a virtual class.

In summary, it appears that students transitioning from cyber high schools to traditional universities experienced difficulties because of differences in pace, student control, and especially because of the isolation of learning in cyber space. Even though students did not

report difficulties communicating with instructors in high school or in college, some had problems adjusting to being in a classroom and on a campus with other students. Students cited shyness, and a lack of cultural exposure, as obstacles to successful transition to the university setting. Most importantly, cyber high school graduates had to learn to integrate into a setting where their lives were affected by other students' emotions, interactions, and behaviors.

Question 2: What Advantages Do Cyber High School Graduates Perceive Contributed to Their Success at a Traditional University?

Following the analysis of Question 1 on difficulties resulting from cyber education, Question 2 addresses the opposite viewpoint. This question generated substantial conversation among focus group participants; they interacted more with one another and added to each other's comments. The additional contributions made by students may be attributed to individuals' preference for seeing themselves as successes and to their belief that reporting positive experiences make cyber high school graduates seem unique and intriguing.

Some difficulties mentioned in the discussion under Question 1 were side-effects of self-paced classes. For students who took synchronous (virtual classroom) classes, the difficulty of pace was turned into an advantage during transition to college. Tara said that in spite of struggling with deadlines imposed in virtual cyber high school classes, the format of those classes probably prepared her better for college. Although she said she frequently had a hard time paying attention to the teacher's voice as PowerPoints flashed on the computer screen, she believed it taught her to focus and to stay on track. Sarah agreed. Her virtual classroom classes met on a Monday-Wednesday-Friday or a Tuesday-Thursday schedule, with a design similar to college classes, including having a syllabus with deadlines. Sarah said this format made her transition to college easier, and she preferred virtual classes over self-paced ones.

With the exception of Sarah, every student who said he/she enjoyed going to cyber high school gave working at his/her own pace as a primary reason. Kelly explained:

> One of the advantages was that like, I know I had to go to school for a certain amount of hours every day, but I could do it on my own terms...and just make sure I finished it by the end of the day. I could do it whenever I felt up to it. (Kelly)

Students believed having control over pace and the accompanying need to take charge over their own learning were advantageous to transitioning to college. They cited better study skills, greater independence, organizational skills, and especially, increased maturity—mirroring findings of some cyber education researchers (Frid, 2001; Kramarski & Mizrachi, 2006; Roblyer & Marshall, 2003). These skills were mentioned often in each of the study's discussion sessions. Participants said doing in well in cyber school required discipline, which helped them to focus and stay on track when they came to college.

When Mai was asked if she believed attending cyber school helped her be more organized for college, she responded:

> Oh, absolutely. And, keeping a calendar; I had to do that in cyber school as well, give myself my own duties. That helps a lot, too. For example, I have a big speech coming up. I have to write a speech in Russian, and I am breaking it down into parts; whereas I will watch other people wait until the final weekend. I have given myself four due dates instead of one, so I am going to get all my research done by this due date. I am going to write it out in Russian by this due date—I am going to, you know, as opposed to pulling an all-nighter on the last day and probably getting a C.

For Cassie and Ted, cyber school had a different advantage. Each chose cyber high school to avoid low-level academics in their home school districts and believed themselves better prepared for college due to superior curriculum and atmosphere in cyber high school. The advantage was not the delivery format; being online was merely an added feature that permitted them to change schools without moving. Cassie came from an urban high school and was concerned she might not get into a good college program if she stayed in her city school, so she

followed her sister's lead and transferred to cyber school. Currently a college senior, Cassie felt strongly that she was afforded a better education in cyber school, and because of it, was able to do well throughout her college career. Ted, on the other hand, left a small rural high school for cyber school. He also believed the curriculum in his former school would not have prepared him as well for college as his cyber education did.

For Brad, the delivery format was exactly what gave him an advantage coming to college:

> Academically, I feel like I was extremely prepared for college because at the PAVCS [Pennsylvania Virtual Charter School] the classes were scheduled as a semester, so, you had block courses, and I mean, I found very little difference between my senior year of high school and this [freshman] year.

Whatever their reason was for attending cyber high school, several students sensed they were less dramatic, more mature, and more open-minded than many of their non-cyber educated peers when they came to college. Mai spoke about being initially bothered by the dramatic emotional displays and immaturity of other college freshmen. Eleanor mentioned drama and immaturity too, citing them as reasons for her move to cyber high school:

> It was more personality issues. I was tired of the drama [at public school]. I was tired of immaturity. I just wanted out of there, and that is what I did...I was more mature coming here and that really frustrated me, because a lot of people first coming to college are so immature.

Other students echoed the sentiments. Ted simply stated:

> I have seen it, too. I mean, I feel more mature than most of the people around here.

While Dana expanded on why she felt more mature, saying:

> I definitely do feel more mature. I think it is because I had such a routine down that it was almost like—like real-world stuff…I would get up in the morning and then I would like exercise and then do my work, and then go to work at like noon and like work until

> 5:00 or something, and come back, and I would cook dinner then, because my mom wasn't home, and cook dinner for my dad.

At some point in the discussions, all of the participants used descriptions of *independence*, *organizational skills*, *motivation,* and/or *discipline* when they described attributes developed in cyber school which benefitted their successful transition to college. Participants, like Tara, felt the nature of cyber education, where the student is in charge of staying on task, caused them to increase skills in these areas.

> I think that might be where the cyber school really helped...I was used to being my own advocate with time management and asking questions. So, I was able to go right to my professors.

However, the temptation to slack off in their studies was present in cyber school, and indeed, four students specifically mentioned being tempted to watch YouTube or get distracted in other ways, which caused them to fall behind in coursework. As happens for many college students, they found themselves racing at the end of a year or semester to catch up. Because of these experiences in high school, these students said they were aware of the potential to fall behind, so they stayed more focused and disciplined early in college than many other freshmen.

Two students also said learning in cyber school made them more self-aware of learning styles and preferences. As a young woman from West Chester University said, she spent most of her time during the day at her ballet school rather than at home, including study/school time. She found she was easily distracted by the other people around her at the school, so she learned to make herself do her school work in the morning before allowing herself to dance or socialize. She said it took a while for her to find a schedule that worked best, but under threat from her parents (one a college professor and one a high school teacher) to pull her out of cyber school, she learned to buckle down and stay on top of her work. Another student disclosed having been diagnosed with an attention disorder. The student said cyber education helped her deal with the

disorder because distractions were limited. Attending cyber school also increased self-awareness. The student believed she carried this awareness into college, saying it is now easier to identify when a break is needed and when study time will be effective.

Kelly knew she was headed for trouble if she did not get away from what she felt was a negative social environment in her public school. She moved to cyber school midway through her junior year. She believes it was a wise choice which gave her time to work independently and focus on her studies rather than issues at school. Kelly said doing well in college for the entire time she has been there. She attributed her success to time management and self-discipline learned in cyber high school.

In addition to advantages already listed, the ability to communicate well was also mentioned as a skill students believe cyber high school enhanced. Cassie said the lack of face-to-face interaction with teachers made students in her cyber classes develop better communication skills. Another listed benefit was that of having time for paid work outside of school. Opportunities to interact with adults on a regular basis, often during shifts other students could not work, was mentioned by 29% of the students. They stated several advantages that included (a) the ability to hold more important jobs while working with older employees, (b) the ability to work jobs with unusual hours, (c) the ability to increase earnings for college expenses, and (d) the ability to multitask. Eleanor said she valued the time she was able to work in high school and how she thought it helped her when she came to college:

> I think for me, too, is like because I had a bigger role outside of like school, like more professional working and things like that, and I understand that these professors, they are professional people, and you understand you are going into that role now. You are a student working towards that goal, and for me it is like...I have a better understanding that I know what they are looking for.

Dana said she was able to work during regular business hours for her father's business which helped her gain a greater sense of responsibility and increased interpersonal skills. Interacting with people online and traveling made possible by the flexible schedule of cyber school was stated by Mai as another advantage of cyber education.

> I got a lot of opportunities as a cyber schooler [sic] that you might not have as a normal schooler. I got to meet people from all around the world, from Russia, from Hong Kong, from Japan, and got to interact with like so many different types of people, which I think really developed my social skills in this world that is quickly becoming more and more global.

In summary, students provided a wide range of advantages they believe they gained in cyber high school which benefited them in their transition to college. Control over the pace of learning was the overarching advantage of cyber high school. But, it was the skills and attitudes gained from having that control that students said benefited them in their transition process. Students believed they gained advantages of increased maturity defined by increased motivation toward academics, greater self-discipline, and enhanced self-awareness. Some students believed they improved their academic skills because their cyber high school's curriculum was better than the curriculum in their prior school. Finally, participants cited benefits of increased social skills and income from being able to work more hours in a job outside of school. Further analyses of findings related to perceptions of academic skill are presented in the discussion of Question 3.

Question 3: How Do Cyber High School Graduates Perceive Their High School Education Affects Their Academic Performance at a Traditional University?

Results from statistical analysis of survey data and content analysis of focus group interviews were evaluated to corroborate responses. Table 5 below includes the last section of the study survey which incorporates the Academic Self-Efficacy (ASE) scale developed by Chemers, Hu, and Garcia (2001). The ASE scale measures respondents' perceptions regarding

their abilities (self-efficacy) to perform tasks that may lead to academic success in general. It includes eight non-subject specific questions, such as '*I know how to study to perform well on tests*'.

An analysis of descriptive statistics for the scores from the scale explored the attitudes of cyber high school graduates at the four study sites regarding academic issues at college. Thirty-two students responded to the first five demographic survey questions, but two students failed to complete the survey beyond this point. Ultimately, responses from 30 students were tallied to provide interval/ratio data for analysis of the ASE scale questions. Measures of central tendency (mean), variability (standard deviation), and frequency tables were computed for each of the eight items in the ASE scale. Mean scores were used to indicate the average response on a seven point Likert Scale where 1 = very true and 7 = very untrue. Note that no label was assigned by Chemers et al., (2001), the authors of the scale, to values 2 through 6. Table 5 illustrates the results of the analysis.

Table 5

Descriptive Statistics for Academic Self-Efficacy Scale Items

Scale item	N	Min	Max	Mean	SD
I know how to schedule my time to accomplish my tasks	30	1	7	1.87	1.46
I know how to take notes	30	1	7	2.00	1.60
I know how to study to perform well on tests	30	1	7	2.07	1.64
I am good at research and writing papers	30	1	6	2.03	1.33
I am a very good student	30	1	7	1.90	1.42
I usually do very well in school and at academic tests	29	1	7	2.00	1.54
I find my university academic work interesting and absorbing	30	1	7	2.23	1.55
I am very capable of succeeding at the university	30	1	7	1.83	1.51

Note. Scale items adapted from the Academic Self-Efficacy scale developed by M. Chemers, L. Hu, and B. Garcia (2001). Scale: 1 = Very true to 7 = Very untrue.

Schedule time. According to statistical data illustrated in Table 6, the majority of the cyber high school graduates responding to the survey felt confident that they know how to schedule their time to accomplish tasks. The mean ranking for this task was 1.87. Table 6 is the frequency table for this question. It reveals that 90% of the participants ranked themselves with a 1, 2, or 3 on the 7-point scale where 1 = very true for the ability to schedule time to accomplish task.

Table 6

I Know How to Schedule My Time to Accomplish My Tasks

Count	Scale Value	Frequency	Percent	Valid Percent	Cumulative Percent
	Very True 1	16	50.0	53.3	53.3
	2	10	31.3	33.3	86.7
	3	1	3.1	3.3	90.0
	4	1	3.1	3.3	93.3
	5	0	0.0	0.0	93.3
	6	1	3.1	3.3	96.7
	Very Untrue 7	1	3.1	3.3	100.0
Response Total		30	93.8	100.0	
Missing		2	6.3		
Total		32	100.0		

Scheduling time to accomplish tasks was often referred to as *time management* in focus group discussions. Students in focus group discussions supported the survey findings. For example, Tara did not consider her time management skills to be superior, but said she was able to allocate time appropriately to accomplish the task of learning chemistry in cyber high school. When asked by the interviewer, “How do you think the cyber school prepared you for college?” she said:

> I am not the best at time management. I am still not, but that did help me discipline myself a little more…I actually failed [chemistry] when I was going to a school before cyber school, and when I did cyber school and had to learn it on my own, I did. I did spend a lot more time on that, but then it helped me with like other stuff that I learned faster, I didn't have to spend as much time on.

In addition to this excerpt of the dialogue, Tara said she had problems knowing how to schedule her time when she first entered cyber school. She was one of the students mentioned under Question 1 who had difficulty in cyber school because it did not offer a structured daily schedule. Near the end of her senior year, Tara had three classes that she had not yet started. This difficulty was coupled with an advantage:

> When they did the dual enrollment, the full scholarship program with the college classes, it helped me a lot because, you know, I went and took college classes while I was in—still in high school, and you would actually go to the college. Instead of taking AP classes like they did in high school, you would actually go to the college and get that feel and everything for the college. I did [develop better time management skills].

Eleanor, however, indicated that she was very good with time management in high school and subsequently in college, and that cyber school was better for self-motivation. Cassie expressed a similar perception:

> I would have to agree … I did feel independent, and my time management wasn't such a big deal with me. And then coming here, you know, I had a lot of free time on my hands, and I didn't have a job starting off here, here on campus. Before, when I did cyber school, I had a job and things were a lot more strict as far as my schedule, and when I first started off here it was lot[s] more free time. But I still remember academics came first, because that was the main reason why I came to Slippery Rock. [It] was for the academics, of course.

Much like Tara, Mai indicated she learned time management during cyber school. Although, unlike Tara, she believes she has maintained this skill in college.

> I would really fall behind my first couple of semesters [of cyber school]. I would fall really behind and have to take off [ballet] a couple days and catch up…So, we figured out the best way to do my work was in the mornings so I would wake up every morning at about 5:00 to start work at 6:00 and do work from about 6:00 to, you know, 6:00 to

10:00 and get as much of it done as possible before I would go to ballet, which would start at 10:30.

Take notes. Frequencies on the scale in Table 7 show that over half of the participants believed it to be very true that they know how to take notes. The confidence on the measure for the entire population was a little lower than for knowing how to schedule their time; 90% ranked themselves in the 1 to 4 range as compared to the 90% in the first three levels of confidence for knowing how to schedule time to accomplish tasks. The mean for knowing how to take notes was 2.00, which indicates the average cyber graduate felt confident in this ability. Table 7 is the frequency table for this question.

Table 7

I Know How to Take Notes

Count	Scale Value	Frequency	Percent	Valid Percent	Cumulative Percent
	Very True 1	17	50.0	56.7	56.7
	2	6	18.8	20.0	76.7
	3	3	9.41	10.0	86.7
	4	1	3.1	3.3	90.0
	5	1	3.1	3.3	93.3
	6	1	3.1	3.3	96.7
	Very Untrue 7	1	3.1	3.3	100.0
Total		30	93.8	100.0	
Missing System		2	6.3		
Total		32	100.00		

The lower end of confidence on the ability is illustrated by comments made by James. When asked if he felt he was as well-prepared as non-cyber high school graduates when he came to college, he said he was more prepared than some and less prepared than others. He listed

taking notes as one of the things he had trouble with when he transitioned to college from cyber high school.

> The only thing I would say [I had trouble with] is maybe like note taking, because I wasn't used to that, deciding what exactly to take notes on. I find myself taking like so many notes and being like, I have too much here. I have to try to figure out what I actually need to study for stuff and what is needed and what is not needed and stuff like that.

Students may have previously learned the skill of taking notes in public school, private school, or home school. This item does not measure whether cyber high school graduates gained the skill of note taking in that setting, but does measure students' perception that they were comfortable with knowing how to take appropriate notes after they transitioned to college. Tara said she learned basic skills, like note taking, in her nine years of public school prior to going to cyber high school. In cyber school, she did not always take notes; she was easily distracted until she grew accustomed to the format of virtual and self-paced classes. But, now in college, Tara believes she takes the notes she needs to write. Joan also believes she knows how to take the necessary notes, claiming she does so in all of her classes and reporting herself to be extremely good at taking notes. These comments appear to complement the findings of the survey that cyber-educated students are confident they know how to take notes, although experiences in cyber education may not reinforce this skill.

In the discussions, students indicated that the majority of their classes were self-paced. The course content for a self-paced class is generally in the form of a book, online text materials, or audio files the student can replay as often as needed. Therefore, as in the case of James, students may not need to record notes to document course content. Text and audio files already available may or may not be sufficient for students in cyber school to analyze or synthesize content, resulting in differing experiences with note taking in cyber high school.

Study for tests. Descriptive statistics in Table 5, for responses to this item, indicate the majority of the cyber high school graduates responding to the survey felt confident they know how to study to perform well on tests. The mean ranking for this task was 2.07. Table 8 lists the frequency results and cumulative percentages for this question. Again, 90% of the participants ranked themselves with a 1, 2, or 3 on the 7-point scale. Of the 8 items in the scale, findings on this item reveal the second highest mean, indicating the respondents as a group were less confident on this item than on six other items representing academic self-efficacy. In other words, respondents were slightly less confident about their ability to study to perform well on tests than on many of the ASE items determined by Chemers et al. (2001) to be predictors of students' academic success.

Table 8

I Know How to Study to Perform Well on Tests

Count	Scale Value	Frequency	Percent	Valid Percent	Cumulative Percent
	Very True 1	16	50.0	53.3	53.3
	2	6	18.8	20.0	73.3
	3	5	15.6	16.7	90.0
	4	0	0.0	0.0	90.0
	5	0	0.0	0.0	90.0
	6	2	6.3	6.7	95.7
	Very Untrue 7	1	3.1	3.3	100.0
Total		30	93.8	100.0	
Missing System		2	6.3		
Total		32	100.0		

Responses of the discussion groups provided support for the entire range of answers on the scale for this question. As discussed under Question 1, Averil did not believe she acquired

any good skills in cyber school, James found studying to be a difficulty in cyber school, and Sarah said that cyber school taught her study skills she continues to use to be successful in college. Cassie spoke of the process of enhancing her study skills when she transitioned into college:

> But, that first exam, you know, you never know what to really expect and even for each class you go through, you never know how each professor is, what they are looking for. So, at first, once you kind of adjust just like every other student, it becomes a lot more familiar and a lot easier to study for because you know what to expect.

Kelly, on the other hand, believed she gained better study skills than she demonstrated in public school, but she did not maintain the habits consistently in college. When asked if she thought she would be on the upper end of studying, in about the middle, or on the lower end, compared to other people, she replied:

> I would probably have to say in the middle. I do,to be completely honest, I don't study as much as I should. I still get distracted pretty easily, but I feel that there are a lot of times that I will study a little bit and still get a decent grade. So then, when I study a lot, I feel like I do well. Sometimes it is still difficult for me to study, though.

As will be discussed under Question 4, Kelly indicated she had a bit of a tough time adjusting to her freshman year and went home almost every weekend, which may have impacted her studying as well. She said she is a very social person and, late in freshman year, became more involved in campus events.

Research and writing papers. Cyber high school graduates responding to the survey also indicated they were more sure than unsure they were good at research and writing papers. The mean ranking for this task was 2.03, as seen in Table 5. A review of the data shows this was the only item not ranked by a student as *very unsure*; the maximum score the item received was a 6, on the 7-point scale. Table 9, the frequency table for this question, indicates 86.7% of respondents ranked this item below a 4, which is the middle of the scale.

Table 9

I Am Good at Research and Writing Papers

Count	Scale Value	Frequency	Percent	Valid Percent	Cumulative Percent
	Very True 1	14	43.8	46.7	46.7
	2	8	25	26.7	73.3
	3	4	12.5	13.3	86.7
	4	2	6.3	6.7	93.3
	5	1	3.1	3.3	96.7
	6	1	3.1	3.3	100.0
	Very Untrue 7	0	0.0	0.0	100.0
Total		30	93.8	100.0	
Missing System		2	6.3		
Total		32	100.0		

In discussions, students identified English and writing as subjects about which they were very confident. In fact, 11 of the 14 students (78.6%) specifically mentioned they had stronger English and writing skills than other skills. The three remaining students deemed their skills were fine in all areas and did not think they were ill-prepared in English. Even though students rarely mentioned research alongside their writing skills, it seems likely that participants would score their research and writing abilities closer to *'very true'* (as a 1, 2, or 3) and further from 'very untrue'. Of all 30 survey respondents, 86.7% ranked their research and writing abilities at a 1, 2, or 3.

English composition and communication skills were the most commonly-cited academic skills cyber high school graduates said were strengthened by cyber high school. Eleven of the 14 students interviewed said they had strong communication skills and performed well in English classes in college as well as in high school. Several students gave significant credit to their cyber

education for those skills. When asked, "Do you think there were any subjects you did better in at college because of going to a cyber high school?" James said:

> I think my writing classes, I mean, my English composition classes….Before I was in cyber school, like, you know, I hated writing. As I got into cyber school, I kind of—it wasn't something that I didn't enjoy, but I would do, you know, in college if the teacher gives me an assignment, I can look at it and be like, oh, this is just like the thing in high school or this is how I did it in high school, so it will be easy.

Brad indicated his accelerated cyber high school English classes also helped him:

> I had more homework in my senior year of high school than I do here. I mean, there is definitely a lot of reading material, but I took AP English as well in my senior year, and it was—it was definitely rigorous. I mean, we were writing roughly two papers a week probably, and going through novels and things at a decent rate.

Ted was not as certain about stronger preparation in one subject. After hearing the other students' comments, he said:

> I don't really see any difference from—I guess pretty neutral. Some areas may be better, like English. I did a lot of writing. I think I did a lot more writing than I would have at my public school, prepared me a lot for writing I am doing now, but I don't really think in any particular subject.

However, the following students perceived they were better prepared in English and drew contrasts to pre-collegiate preparation in other subjects. Mai said:

> Absolutely. I feel I am way more prepared in writing classes - English and just writing in general. Probably not math or sciences, but definitely writing, because cyber school is all writing. And, also the research that goes into writing classes. I did so many research papers in cyber school. I came here being used to writing ten-page research papers.

Sarah repeated the comparison to math, stating a belief in having poor math skills in general:

> I have always been good at English. I have never been good at math at all. But, like with English, I have always been good with putting my thoughts down on paper and like writing about my subjects and topics. And I actually took English 101. I believe it was last semester, and I did really well in it and I think I have also had like a knack for writing and I think that has kind of helped me with writing papers and everything for classes….The teachers wouldn't let you slack or anything with your writing skills. You are supposed to correspond with proper—proper English, you know, because you are a high school student. You are to use the right language and everything. And even here in

> college, they are like that, too. I remember, last semester in my religion course that I took …my professor said that, you know, when you e-mail me, I expect proper English. You are in college. You should know how to write. You should know how to explain yourself in a professional college manner. I have always been good at [that], so it hasn't been that difficult to adapt for me. But, it [English skill from cyber school] has definitely helped me.

Perhaps the student who most clearly described the English skills gained in cyber education, and sense of efficacy stated by participants, was Valerie:

> I don't think it necessarily helped me with clarity or succinctness, but I think that the benefit obviously was the practice, repetition of, you know, having to write things out fully. I think what it gave me was a good work ethic when I got to my advanced course work and we had to write 20, 30, 40, 50-page papers. I have no problem setting down sketching it out. I have the practice to be able to organize my thoughts in a way that is going to directly translate onto paper in an organized fashion so that my papers all make sense, all the way through, clear transitions and everything, and I think a lot of my peers that went to more traditional schools who weren't used to having to write out their thoughts in organized manners versus a third party to read, I think they had a much deeper learning curve and also just the hesitancy to have to go through that process.

Good student. As indicated in Table 5, mean for this item was 1.90. On average, students ranked their confidence in being a very good student less than one measure below *'very true'*. Over half of the students responding to the survey believed the statement was very true of their overall abilities. Thus, there is a strong sense among these cyber high school graduates that they are good students, capable of doing well in college.

Table 10

I Am a Very Good Student

Count	Scale Value	Frequency	Percent	Valid Percent	Cumulative Percent
	Very True 1	16	50.0	53.3	53.3
	2	9	28.0	30.0	83.3
	3	1	3.1	3.3	86.7
	4	2	6.31	6.7	93.3
	5	1	3.1	3.3	96.7
	6	0	0.0	0.0	96.7
	Very Untrue 7	1	3.1	3.3	100.0
Total		30	93.8	100.0	
Missing System		2	6.3		
Total		32	100.0		

All of the students in the focus groups were still in college, and none indicated they were having any major problems. Students offered comments similar to Eleanor's:

> I am more of like an average in the classroom. I get good grades, more As than Bs, but learning-wise I am just like everybody else.

Do well in school. Eleanor's statements would also apply to the next item in the scale *I usually do very well in school and at academic tests.* Descriptive statistics shown in Table 5, and frequencies shown in Table 11, indicate a mean of 2.00, although one student of the 30 respondents did not complete this item. Again, the majority of students believed it to be *'very true'* that they usually do very well in school and at academic tests.

Table 11

I Usually Do Very Well in School and at Academic Tests

Count	Scale Value	Frequency	Percent	Valid Percent	Cumulative Percent
	Very True 1	16	50	55.2	55.2
	2	5	15.6	17.2	72.4
	3	5	15.6	17.2	89.7
	4	1	3.1	3.4	93.1
	5	0	0.0	0.0	96.6
	6	1	3.1	3.4	96.6
	Very Untrue 7	1	3.1	3.4	100.0
Total		29	90.5	100.0	
Missing System		3	9.4		
Total		32	100.0		

Averil explained the reason she believes she does well in college, tying together the two items of studying and enjoying her university from the survey,

> I am happy where I am. Yeah, I mean, I put a ton of time into studying. I mean, I never went out and met people—that was probably one of the worst things about cyber school, obviously, as we mentioned earlier, is the social lack….But, I work really hard studying, and I guess my grades reflect it.

Find academic work interesting. Interestingly, the lowest mean for the beliefs evaluated on the ASE scale was for the item *'I find my university academic work interesting and absorbing'*. The mean of 2.23, shown in Table 5, was closer to the *'very true'* than the *'very untrue'* ranking. Frequency analysis shows that 63% of respondents scored themselves with a 1 or 2, and an additional 27% gave themselves a score of 3. Combined, 90% of respondents indicated the statement was more true than untrue regarding their perception of university academic work.

Table 12

I Find My University Academic Work Interesting and Absorbing

Count	Scale Value	Frequency	Percent	Valid Percent	Cumulative Percent
	Very True 1	13	40.5	43.3	43.3
	2	6	18.8	20.0	63.3
	3	8	25.	26.7	90.0
	4	0	0.0	0.0	90.0
	5	1	3.1	3.3	93.3
	6	1	3.1	3.3	96.7
	Very Untrue 7	1	3.1	3.3	100.0
Total		30	93.8	100.0	
Missing System		3	6.3		
Total		32	100.0		

Discussions with students in the study revealed that all 14 participants were relatively happy at the university they were currently attending. However, several students find the pace to be too slow at times. This would seem to corroborate frequencies reported in Table 12, which indicate students do not always find the coursework to be interesting and absorbing. Additionally, the majority of survey respondents were freshman, and the universities in the study are all liberal arts colleges. Students take introductory courses in their freshmen year at liberal arts schools. These courses, such as introduction to art, history, or psychology, may not appeal to students who already have specific interest areas, or who lack interest in a subject they are taking to meet liberal study requirements. While the cyber high school graduates may not be entirely interested in their academic work, they believed in their ability to perform well in college. The final item on the ASE scale measures students' perceptions of their overall ability to succeed at the university.

Capable of succeeding. Scores on this measure should reflect the results of other items in the ASE scale, and a sense of ability to do well should be influenced by the perceptions of being able to schedule time, take notes, study for, and do well on tests, conduct and report on research, as well as the perceptions of being a good student. Finding university work interesting and absorbing would not be theoretically necessary to success, although recent research on success in college indicates involvement/engagement plays a significant role (Astin, 1999; Chemers et al., 2001; Kelly et al., 2007; Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008).

Table 13

I Am Very Capable of Succeeding at the University

Count	Scale Value	Frequency	Percent	Valid Percent	Cumulative Percent
	Very True 1	19	59.4	63.3	63.3
	2	6	18.8	20.0	83.3
	3	1	3.1	3.3	86.7
	4	1	3.1	3.3	90.0
	5	2	6.3	6.7	96.7
	Very Untrue 7	1	3.1	3.3	100.0
Total		30	93.8	100.0	
Missing System		2	6.3		
Total		32	100.0		

Mean for this item was 1.83 (Table 5). Data analysis indicates that cyber high school graduates are generally confident in their abilities to do well in college academics. It is apparent most cyber high school graduates believe they possess skills leading to academic success. Responses shown in Table 5 to the measures of *'I am a very good student'* and *'I am very capable of succeeding at the university'* had means between 1.83 and 1.90. For these statements, frequency analyses, in Table 10 and Table 13, showed 83.3% of all respondents ranked

themselves at either 1 or 2 on the scale. Cyber high school graduates in this study had an overall positive sense of their abilities to be good students and succeed at the university. Reasons for this perception were reflected in remarks by study participants. Joan said:

> I am definitely for cyber school. I would say, if anything, it teaches you how to live on your own and prepares you for the real world, because you are not always going to have someone being, you know, like next class we are going to have a test, you know, like there is things that you have to remember and you have to learn to pace yourself and to write things down and make notes for yourself and take notes. So, I think they really did help in that aspect of the self-assertion for that, you know, and—I definitely think that I wasn't as—before the cyber schooling I never would have gone to a teacher with the sense – like the self-confidence that I have now.
>
> You know, when I would be in different public schools and having a problem, particularly in math, I would always have problems. I had a few—a few classes where I would fail tests and they would have me retake it a day later and I would fail it again and I would never go up to the teacher to say I need more help, because I felt sort of like so frustrated at that point that I didn't know what to do. You know, my parents would say, "Well just go and talk to them." My parents would go and talk to the teacher, but if the student doesn't go up and say to the teacher, "Here is what I don't get", or, "You are going too fast at this point in the classroom", and that is always my problem, you know, if you can't identify what you need as a learner, and then be able to communicate that to the instructor, you are never really going to get the benefits of self-advocacy and being able to, you know, be—I guess have strong intrapersonal skills and be able to, you know, communicate that to someone, so, I think it definitely developed that.

Brad was a student who said he was bored in cyber high school because he was ahead academically. He stated that the format of cyber high school classes was similar to college classes he has encountered in his freshman year. He said:

> Academically, I feel like I was extremely prepared for college because the classes were scheduled as a semester, so...I found very little difference between my senior year of high school and this year. In fact, I would probably say that college is more easy [sic]. In virtual charter school, they would go to class and they would give us a syllabus and we were in charge of getting an assignment submitted.

Additional academic success data. Educators have expressed concern about the ability to convey certain K-12 subject areas as well in cyber education as in face-to-face classrooms

(Maeroff, 2003). Study participants gave credence to these concerns by reporting that certain subjects were harder for them to learn online. In particular, 11 of the 14 students said they did not think they learned math in cyber school as well as other subjects. Somewhat surprisingly, though, none of the students said they took remedial mathematics courses in college. Dana said:

> I struggled with the format for some reason, and I also struggled with math a lot because whenever somebody is teaching me math, I have to have someone there with me, like, the online in the classroom, like the virtual classroom, it wasn't working for me. It is like, whenever I came here, I struggled in all the math classes. But I realized that once I have like a professor there and like I can go to them after class and like spend extra time with them and like have them like write it down and explain it to me, that was better.

Jeff believed the math program used by his cyber school was the source of his problems in math**.** In contrast, James, who attended a cyber school based in a building near his hometown, said learning math was made easy by the accessibility of the teachers. When he had a problem, he would simply stop by the teacher's office and meet face-to-face. Science was the only other course mentioned in discussions of academic preparation for college. Mai indicated she was not strong in science in cyber school, but James said he enjoyed taking cyber biology, partially because of not having to clean the lab when class was done.

Data gathered for Question 3 indicated participants' beliefs regarding perceptions and skills that may contribute to academic success at college. Overall, participants ranked themselves on survey items and in focus group discussions as well-prepared for academic success at their university. The final research question of the study was designed to gather information regarding students' social integration into university–sponsored activities.

Question 4: How Involved in University-Based Social Activities are Cyber High School Graduates Compared to Their University Peers?

Mixed-methodology was again employed to obtain data to address Question 4. Wording of questions on the survey sent to study participants was exactly the same as wording of the four

selected questions from the NSSE 2008 sent to the general student body at study sites. However, each question is numbered differently (i.e.: question 7 on the cyber student survey is question 8a on NSSE 2008). To eliminate confusion, variables assigned to each question will be used in the discussion of findings. Table 14 lists the variables, corresponding question numbers, and social activities measured.

Table 14

Variables

	Question Number		
Variable	Survey	NSSE 2008	Measure of social engagement with peers
ENVSTU	7	8a	Quality of relationship with other students
COCURR01	8	9d	Number of hours spent in a week participating in co-curricular activities (organizations, campus publications, student government, fraternity or sorority, intercollegiate or intramural sports, etc.)
FRATSO	9	23	Membership in a fraternity or sorority
ATHLETE	10	24	Membership on a team sponsored by the university's athletics department

Inferential statistics were run in SPSS to evaluate quantitative data gathered on the above four variables. Variables ENVSTU and COCURR01 measured social engagement using Likert scales. A one-sample t-test was used to compare the quality of relationships with other students and the number of hours spent in a week participating in co-curricular activities for cyber high school graduates at traditional universities and their peers in the general undergraduate population.

The 2008 NSSE surveys, which measured responses by the general undergraduate population on the variables, were distributed to first-year and senior-year students only. This

study included cyber high school graduates in all years of undergraduate work. Due to the limited size of the study population, all study participants were included in the comparison to NSSE results. To enable an appropriate comparison of answers provided by study participants to answers provided on the NSSE at the study sites, the following steps were applied to the survey data for the variables ENVSTU and COCURR01.

Step 1: School and class rank were identified for individual survey responses to variables ENVSTU and COCURR01.

Step 2: Student responses were segregated by university.

Step 3: For each university, differences of the means were calculated for individual freshman and sophomore scores for variables ENVSTU and COCURR01 on the cyber student survey and the university's First Year NSSE survey. Differences of the means were also calculated for individual junior and senior scores for the same variables on the cyber student survey and the Senior Year NSSE survey.

Step 4: Statistical analyses (one-sample t-tests) were run on the differences calculated in step 3. See Appendices G and H for actual calculations of differences of means.

Table 15 illustrates the results of t-test statistical analysis of the variables ENVSTU and COCURR01. An alpha of .05 was used for each variable to determine if there were significant differences between the variables measuring social engagement of cyber high school graduates at traditional universities and their peers in the general undergraduate population.

Table 15

One-Sample T-Test Results

	Test Value = 0					95% Confidence Interval of the Difference		Effect Size
Variable	N	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper	
ENVSTU	30	-1.19	29	.246	-.32	-.88	.24	0.22
COCURR0	30	-.78	29	.455	-.15	-.56	.26	0.14

Thirty of the 32 survey participants answered the questions for variable ENVSTU. Responses to the question asking students the quality of their relationships with other students were ranked on a Likert scale where 1 = unfriendly, unsupportive, sense of alienation, and 7 = friendly, supportive, sense of belonging. A t-test was calculated to determine the level of significance between cyber students' perceived quality of relationship with other students on campus (ENVSTU) and that of the general undergraduate population of students at the same traditional university. Using an alpha of .05, the t-test result indicated no significant difference between cyber high school graduates and the general undergraduate population of students with regard to the variable ENVSTU. The effect size (r = .21) indicates the difference in ENSVTU levels between the two groups was small according to Cohen's rule of thumb (Cohen, 1992).

Thirty of the 32 survey participants answered the questions for variable COCURR01. Responses to the question asking students the number of hours they spend in a typical week participating in co-curricular activities were ranked on a Likert scale where 1 = 0 and 8 = >30. Tests for significance were run for cyber students and the general undergraduate population of students at traditional universities. A t-test was calculated to determine the observed level of significance between the two groups of students and the number of hours they spent in a week

participating in co-curricular activities (COCURR01). The t-test result indicated no significant difference between cyber high school graduates and the general undergraduate population of students with regard to the variable COCURR01. An effect size of .14 is less than .3 and greater than .1; therefore, the effect size is small, offering further evidence that cyber high school graduates do not differ from the general undergraduate population in terms of their participation in co-curricular activities.

Memberships in fraternities or sororities on campus are recognized measures of a student's integration into the social world of college and may contribute to a student's success at the institution (Kuh et al., 2008). Membership in a fraternity or sorority is identified by the variable FRATSO (Table 14). Membership status of 30 cyber high school graduates was gathered by the study survey. Responses were compared to the membership status reported on the NSSE for 3,356 students at the four study sites.

Pearson chi-square analyses are done to identify the significance of a relationship between two categorical variables. For this study, Pearson chi-square analyses with a .05 alpha were run for the yes/no responses of students used to determine if cyber high school graduates were significantly different than their non-cyber schooled peers for the variable FRATSO. Results are shown in Table 16.

Table 16

Results of FRATSO Pearson's Chi-Square Test

Student * Response Cross-tabulation 2x2 Table				
		No	Yes	Total
Student	NSSE respondents	3002	354	3356
	Cyber graduates	29	1	30
Total		3031	355	3386

			95% Confidence Interval		
Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.649[a]	1	.199		
Continuity Correction[b]	.970	1	.325		
Likelihood Ratio	2.180	1	.140		
Fisher's Exact Test				.362	.162
Linear-by-Linear Association	1.649	1	.199		
N of Valid Cases	3386				

a. 1 cell (25.0%) has an expected count less than 5. The minimum expected count is 3.15.
b. Computed only for a 2x2 table

One of 30 (3.33%) cyber high school graduates was a member of a sorority or fraternity compared to 354 of 3356 (10.55%) of their non-cyber high school undergraduate peers. These percentages were not significantly different. $\chi^2(1) = 1.649$; $p = .199$. One of the four cells had an expected count of less than 5. Therefore, Fisher's Exact Test was used, also indicating that the variables were not significantly dependent ($p = .362$).

Table 17

Measures of FRATSO Effect Size

Symmetric Measures		Value	Approx. Sig.
Nominal by Nominal	Phi	-.022	.199
	Cramer's V	.022	.199
N of Valid Cases		3386	

Effect size is reported as the phi coefficient .199. The phi coefficient is a measure of the strength of the association between two nominal variables (Creswell, 2008). A phi coefficient of .199 gives additional support to the findings that frequency of membership in fraternities and sororities is not significantly different for cyber high school graduates than for their non-cyber high schooled undergraduate peers on campus.

Similar to belonging to a social fraternity, being a member of a team sponsored by the university athletic department is also recognized as a measure of a student's integration into the social world of college (Kuh et al., 2008). Pearson chi-square analyses with a .05 alpha were run for the categorical yes/no responses to determine if cyber high school graduates were significantly different than their non-cyber schooled peers for the variable ATHLETE. Membership status on a team sponsored by the university athletic department of 30 cyber high school graduates was gathered by the study survey. Responses were compared to the membership status reported on the NSSE for 3,356 students at the four study sites. Table 18 represents the results of the test. Only one of the 30 (3.33%) cyber high school graduates was a member of a team sponsored by the university athletic department compared to 261 of 3,348 (7.78%) of their non-cyber schooled peers.

Table 18

Results of ATHLETE Pearson's Chi-Square Test

Student	No	Yes	Total
NSSE respondents	3087	261	3348
Cyber graduates	29	1	30
Total	3116	262	3378

				95% Confidence Interval	
Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.835[a]	1	.361		
Continuity Correction[b]	.327	1	.568		
Likelihood Ratio	1.045	1	.307		
Fisher's Exact Test				.726	.309
Linear-by-Linear Association	.835	1	.361		
N of Valid Cases	3379				

a. 1 cell (25.0%) has expected count less than 5. The minimum expected count is 2.34.

b. Computed only for a 2x2 table

The Pearson chi-square test = .835, with a $df = 1$, resulted in a significance level (p) of .361, but one cell in the test had an expected count of less than 5. Therefore, Fisher's Exact Test for significance was used, resulting in a $p = .726$, which is greater than alpha .05.

Effect size was calculated, and results are shown in Table 19. Effect size reported as the phi coefficient = .361, which indicates a moderate effect size. Based on these tests, there was no significant difference between the membership of cyber high school graduates and the general undergraduate population on a university-sponsored sports team.

Table 19

Measures of ATHLETE Effect Size

Symmetric Measures		Value	Approx. Sig.
Nominal by Nominal	Phi	-.016	.361
	Cramer's V	.016	.361
N of Valid Cases		3379	

None of the participants in the discussion groups indicated being a member of a fraternity or sorority, nor a member of a university-sponsored team. The one student who was a member of each was not a part of the focus group interviews. Regardless, numbers from the NSSE indicate approximately 89% of students do not join a fraternity, sorority, or college athletic team. However, the variables discussed above are among many measures of student engagement on college campuses used to predict students' success and persistence in college (Kuh et al., 2008; Zychowski, 2007). To understand more fully the socialization of cyber high school students it is imperative to look at their level of socializing experiences while attending high school and after transitioning to college.

Difficulties encountered transitioning to college discussed under Question 1 included those brought about because of the isolation inherent in learning online as opposed to a brick and mortar school where students see and interact with one another daily. Question 4 was designed to analyze potential differences between students educated in cyber high schools and other students who were not. In particular, it was included to determine if going to a cyber high school increased the likelihood that students would be less involved in social activities when they transitioned to a traditional college.

Stereotypes depict students who are educated at home as socially clumsy. Kelly seemed to agree that some cyber students lack social skills, even though she did not see herself that way. Kelly said:

> When I went to cyber school, if you went on a field trip or anything like that, you could always tell which kids were the socially inept ones, like you could tell why they were in cyber school.

Ted explained how stereotypes affected his family's worries over social skills and cyber school:

> Some of my extended family was very opposed to [my going to cyber school]. They thought it would turn me into a hermit you know, take away all my social skills. I think it had a lot to do with most of the people in my family are teachers and they were teachers at traditional schools and I think they had felt threatened by it a lot.

In an attempt to understand whether students in the study were socially handicapped, as they have been labeled, it was relevant to determine if participants took part in group activities in high school. Revealing students' involvement prior to college may help our understanding of their involvement when they transitioned to college. To accomplish this, study participants were questioned on the survey and in focus group discussions about how socially active they were in high school.

Question six of the study survey was: Were you engaged in any school-sponsored clubs when you attended your cyber high school? Of the 31 students who responded to this question, two (6.5%) participated in school-sponsored clubs and twenty-nine (93.5%) did not. Mai was one of the affirmative respondents.

> Yes, I was part of the National Honor Society of my cyber school. And we—we got very involved, everybody, with the National Honor Society. That is where I kept my friends from. And my school had a number of other clubs as well that—like they really did want us to connect, even if it was just through e-mail.

James responded to a similar focus group question by indicating he was a part of groups outside of, but not tied to, his cyber school.

> The school had robotics club, etc. but I never had the time. I'm an Eagle Scout, so I was always in Boy Scouts doing stuff. I was also in martial arts, which I have my black belt in, and I was on a volleyball team. I was very active in my church.

His involvement in non-school activities was similar to other students interviewed for this study. Two students, Mai and Joan, said they chose cyber high school because of their non-school related athletic pursuits. Mai hopes to be a professional ballerina, and Joan runs marathons as a means of financial support and because she loves running. Brad said one of the best benefits gained from the flexible scheduling of a cyber school was the time made available for hobbies like photography and writing. Although his school didn't have clubs for either one, Brad said:

> Those were two things I really liked, so I was able to put together some things for the school and also use some of the work that I had done as a videographer for my graduation project, and they encouraged me a lot in those avenues.

Participants indicated they saw the worlds of their social lives and their school lives as being somewhat separate – they primarily attended to academics in cyber school and to social activities in the world around them. Some, like Mai, participated in school-based activities, while most engaged in community activities not grounded in the public school system. The low end of involvement in high school social activities was illustrated by Cassie who believed she was like many non-cyber educated students:

> I wasn't in many organized groups until I came here [to college], but, like my social life was pretty normal compared to anyone else, so – I mean, I wasn't – yeah, I wasn't really – I think I wasn't involved in any like structured organizations. I had no problems. I was still involved socially. I attended like school events. I went to football games, things of that nature. So, it didn't really have any effect on me. I was just – I got my education.

As she indicated, when Cassie transitioned to college she became increasingly involved in social groups on campus. In her second semester of freshman year she began to get involved in the university Program Board. She followed it up with becoming so involved that she said she

had to quit some organizations because they were taking up too much of her study time. Valerie was similar to Cassie. She said:

> I tried out a lot of different organizations the first two years before I settled down into heavy involvement with the Equestrian Team (I competed and serve as Treasurer), the Pre-Law Society (I served as President), and Phi Alpha Theta. But, my first two years I was into the Campus Crusade for Christ, the Linguistics Club, Young Republicans, and the History Club….and I went to a couple of leadership things sponsored by the university.

Jeff attended either a home school or cyber school for all of his teenage years. When he was asked if he felt uncomfortable getting involved in groups when he came to college, he said:

> I think college has definitely helped me a lot to be more involved, but I didn't ever feel uncomfortable joining things.

Later he added that he had been involved in a group called Resolved since his freshman year along with:

> The Management Association my freshman and sophomore years. This year I am the Vice President of Student Government Association and a Community Assistant. And, I was an IUP Ambassador in the fall semester.

Quantitative data collected for Question 4 provided a comparison of cyber high school graduates to their college peers regarding involvement in certain university-sponsored social activities. Results indicated no significant difference between the two groups' social involvement on these measures. Supporting qualitative data depicted cyber high school graduates' social involvement in activities beyond the scope of the quantitative instrument. Participants gave evidence of their participation in many social activities while in high school and in college and discussed their impressions of how cyber education affected their involvement in group activities.

Conclusion

Chapter IV presented the findings of survey data and focus group interviews to answer the four research questions: (1) What difficulties do cyber high school graduates perceive inhibited their success at a traditional university? (2) What advantages do cyber high school graduates perceive contributed to their success at a traditional university? (3) How do cyber high school graduates perceive their high school education affects their academic performance at a traditional university? (4) How involved in university-based social activities are cyber high school graduates compared to their university peers?

Instruments used to collect data for the study included a survey which incorporated elements from the 2008 National Survey of Student Engagement (2008) and scale items from the Academic Self-Efficacy (ASE) scale (Chemers et al., 2001). Data in response to Questions 1 and 2 were gathered from focus group interviews with 14 cyber high school graduates currently attending traditional universities. Interviews were transcribed and coded to identify common concepts. Thematic analysis revealed that students encountered difficulties in their transition to college due to the pace, content, and the isolation of learning in the cyber high school setting. Advantages were also revealed and included increased motivation toward schoolwork, access to better curriculum, increased sense of maturity, and enhanced skills of self-regulation.

Statistical analysis of survey data for Question 3 revealed participants were confident on measures from the ASE which have been used to predict academic success. Analysis of interview data supported findings for this question as well. Statistical analyses were also applied to data obtained for Question 4 on measures of cyber students' social engagement. Confirmation of data was obtained through comparison of the statistical analyses and findings of interview questions regarding the social engagement of cyber high school graduates in college.

Chapter V will present a summary of the findings of the study. It will include Conclusions and Recommendations. Finally, suggestions for future research will be offered.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

This chapter presents a summary of the study. Findings are then discussed relative to existing research, followed by a discussion of limitations of the study, and recommendations for research to continue to expand the understanding of cyber-educated students. The chapter ends with a conclusion, including reflections by participants.

The problem of this study was to identify cyber high school graduates' perceptions of the effect of a cyber high school education on transitioning successfully to traditional universities. The study sought to address the lack of research regarding effects of student transitions from K-12 cyber education to college.

Four questions framed this study: 1) What difficulties do cyber high school graduates perceive inhibited their success at a traditional university? 2) What advantages do cyber high school graduates perceive contributed to their success at a traditional university? 3) How do cyber high school graduates perceive their cyber high school education affected their academic performance at a traditional university?, and 4) How involved in university-based social activities are cyber high school graduates compared to their university peers?

Study participants graduated from cyber high schools and were attending four traditional universities at the time of data collection. Quantitative data were gathered from respondents' answers to a survey, (n = 32). In addition to demographic statistics, responses to the survey provided answers to research question 3, regarding participants' academic self-efficacy, and research question 4, regarding their participation in university-based activities. Responses to select survey questions from the 2008 National Survey of Student Engagement results for the

four study sites enabled comparison of cyber high school graduates' university-based involvement to that of their university peers. Qualitative data were obtained from participants' contributions to focus group discussions (n = 14) regarding their academic and social transition to college. Responses from the focus group discussions were used to answer each of the four research questions.

Summary of the Findings

Participation in this study allowed graduates of cyber education to provide feedback regarding their academic and social lives before and after transitioning to college. Students unveiled the affective and intellectual changes they believed were influenced by attending cyber school. Their responses addressed two issues surrounding cyber education: a) the academic achievement students can attain from instruction delivered online; and b) the social effect of being removed from daily physical interaction with school peers during formative years.

Question 1: What Difficulties Do Cyber High School Graduates Perceive Inhibited Their Success at a Traditional University?

Focus group discussions were the source of data used to answer Question 1. All study participants said they experienced some academic and social difficulties when they transitioned to college. Academically, the largest problem cyber high school graduates reported was the loss of flexibility and control over pace of learning. Socially, students stated most difficulties resulted from daily interpersonal interactions with their peers.

The loss of control over pace of learning affected the academic adjustment of study participants as they moved from high school to college. Most participants' cyber high school classes were self-paced. Students were able to determine, within reason, when and where to learn. Academic ability, level of motivation, and personal circumstances dictated the design of

students' learning experiences. Participants could interrupt learning short-term, with activities like eating, napping, or surfing the Internet; and long-term, with activities such as traveling and participating in out-of-school pursuits, as they chose. In other words, they were able to take full advantage of the flexibility proclaimed by cyber institutions as a key factor of online education.

Having this level of control over their schoolwork changed with transition to college. With rare exceptions of online college classes, study participants took classes in college that required physical attendance. During their first year of college, students frequently experienced difficulties resulting in frustration over the regimented structure of courses. In particular, frustration resulted from the speed at which professors covered material in class, the requirement to attend class during a fixed time frame, and the downtime between scheduled classes. Cyber high school graduates also reported difficulty adjusting to real-time lectures. Unlike the majority of their self-paced cyber high school classes, lectures in traditional college classes were presented in person. College lectures were typically not pre-recorded, and students could not listen to segments of the lectures at will, as they had with in high school. The demand of having to stay focused for the entire lecture caused initial difficulty for some study participants.

Upon transitioning to a college, cyber high school graduates had to learn, or re-learn, to accommodate a pace established by the instructor rather than the learner. Some fell behind because the pace was too fast; others became bored with a pace that was too slow. All participants reported they were able to adjust to this lack of control, although it took some students several months to do so.

Participants also reported experiencing social transition difficulties. At the time of the study, all of the participants said they perceived themselves as socially competent. But, in the early phases of transition to college, students said they had difficulty adjusting to some of their

social interactions with peers in and out of the classroom. In the classroom, two students said they were initially reluctant to contribute to class discussions because they were used to the anonymity of online school. These students said they were concerned about how their peers would judge them. In addition, they reported feeling unprepared for the public speaking component of many college classes. Study participants took more self-paced/independent classes in cyber school than real-time virtual classes. They had very few opportunities to become comfortable with sharing opinions during classes and limited experiences delivering presentations to a live audience. Surprisingly, participants reported having no difficulty interacting with college professors in person after having had online teachers in high school.

A common concern surrounding cyber education is that cyber school students will become social recluses over time, losing the ability to interact with others their age (Maeroff, 2003; Watson & Gemin, 2008). This difficulty was encountered by some study participants. In particular, students had trouble during transition because of the new experience of living with large groups of diverse students. Participants said they disliked having to deal with the "drama" of everyday college life and being witness to what they perceived, as the immature behavior of their peers.

In summary, academic transition difficulties primarily resulted from the loss of flexibility previously afforded to students while in cyber school. When cyber high school graduates came to college, they could not schedule academic time as they desired; they had to adjust to the pace set by their instructors. While difficulty adjusting to the pace of college classes may not be peculiar to cyber students, it is likely that cyber high school graduates' difficulties may be accentuated by the unique nature of their high school education.

Question 2: What Advantages Do Cyber High School Graduates Perceive Contributed to Their Success at a Traditional University?

Data to answer Question 2 were obtained from focus group discussions. In discussion sessions, participants' improving their ability to manage their own learning successfully was reported as one of the most advantages of cyber education. The control over pace, mentioned previously as a source of difficulty, was tied to this concept. Because students had to control their own pace to meet course requirements, they benefitted from good time management skills. Over time, students said they learned self-discipline, which enabled them to meet their learning goals. Participants created ways of doing this, such as Mai's scheduling self-selected deadlines on a calendar.

In college, many students coming from traditional high schools struggle early on with staying focused on coursework and learning how to pace themselves (Clark, 2005). Deadlines in traditional schools are usually established by the length of the course and managed by teachers. The ability to stay focused and pace school work to meet deadlines is a skill already learned by successful cyber students. Therefore, they had an advantage over many of their university peers during transition.

Study participants repeatedly stated a belief they were neither superior, nor inferior, to their non-cyber educated peers in regard to academics. Jeff's comment is an example of that sentiment:

> You've got public school, and it is pretty much like the bell curve, maybe plus a deviation. And then, you have got the kids that get expelled, and the kids whose parents just want them to be in the school and push them. And, I think cyber school is kind of the same thing. You have the talented athletes, musicians, just gifted learners all doing it so they could move themselves forward quickly. And then, some people just need to be put in [to cyber school] because public school won't work for them.

However, cyber students contended that learning in a cyber setting encouraged their development of good study and organizational skills. Participants stated the belief they gained self-awareness, independence, and high levels of maturity, along with appropriate time-management and self-motivation skills. They attributed acquiring these skills to having to learn on their own, away from the physical presence of teachers and peers. Students said possessing these skills provide advantages for successful transition to college, because the maturity to take charge of their learning to meet academic needs had already been developed.

Other advantages reported by students resulted from the ability to be employed for more hours and during times when traditional students were in school. In addition to the increased wage they earned, participants cited a benefit resulting from frequently working with adults. Several students believed this opportunity allowed them to be mentored by more experienced employees and to improve their ability to communicate with older individuals. The same students believed the exposure to adults in the workplace enhanced their own maturity and responsibility.

Question 3: How Do Cyber High School Graduates Perceive Their High School Education Affects Their Academic Performance at a Traditional University?

Mixed-methodology was used to answer this question. Quantitative results gathered from the eight item ASE scale measured students' academic self-efficacy on the following items: a) *I know how to schedule my time to accomplish my tasks*; b) *I know how to take notes*; c) I *know how to study to perform well on tests*; d) *I am good at research and writing papers*; e) *I am a very good student*; f) *I usually do very well in school and at academic tests*; g) *I find my university academic work interesting and absorbing*; and h) *I am very capable of succeeding at the university*.

Respondents ranked scale items between *'very true'* (1), and *'very untrue'* (7). On all eight items, statistical means fell between 1.83 and 2.23. These results indicate cyber high school graduates in the study perceived themselves to be well equipped with the tools to succeed in college. The item, *I am very capable of succeeding at the university,* had a mean of 1.83, which ranked closest to *'very true'* of all the scale items. This finding is significant to the study questions, because it indicates that graduates of cyber education believed they had gained the skills needed to be successful in college.

Data from focus group discussions were compared to the analytical results of the survey. Both sources revealed that cyber high school graduates believed they knew how to schedule time to accomplish tasks, take notes, study to perform well on tests, and perform well in school. Participants believed themselves to be good students, capable of succeeding in college.

Most of participants' cyber school communication was text-based. They believed this forced them to develop the skills needed to be good at collegiate level writing. Statistical mean on the scale item, *I am good at research and writing papers,* was 2.03. This result agrees with statements by over 75% of focus group members that cyber education reinforces communication skills, with an emphasis on capabilities in writing. These findings suggest that success in cyber school may depend on having, or developing, proficient written language skills. Enhanced written communication skills were also mentioned in the focus group data. The need to communicate clearly in writing was reported to have increased because of the design of self-paced classes. Students and teachers typically communicated in these classes via email or texting features of the instructional software used by the school.

The survey item with a statistical mean furthest away from *'very true'* was, *I find my university academic work interesting and absorbing,* (M = 2.23). Data from focus group

discussions, once again, supported survey results. In the discussions, students said loss of control over the pace of learning became a disadvantage, early in their transition to college. Students reported having been bored in college classrooms because of the inability to move ahead at their own pace. Boredom can lead to students disengaging with academic work, thereby creating a lowered perception of academic work being interesting and absorbing.

Another reason for this finding on the item is possible. The sites of this study were all liberal arts colleges where first year students are required to take introductory level liberal studies courses. Many of the students in the study either reported themselves as gifted, or at the least, reported themselves as academically capable. If they were advanced, compared to other students in first year courses, students may have been bored, regardless of pace. In addition, students may have been less engaged in some liberal studies courses simply due to a lack of interest in the topic. Regardless, the statistical and content analyses of the data indicated that overall, cyber high school graduates found their academic work interesting, even if the item was scored lower than others in the scale.

In summary, findings of Question 3 revealed cyber high school graduates believe they were given a sufficient academic background and possess adequate skills needed to do well in college. They believe the overall course work and academic exposure from cyber school were comparable in quality to that of their college peers, even though delivery was very different. With the exception of one student, all participants in the study said cyber education was a good choice for them, providing necessary prerequisite skills in a setting they, or their parents, desired. At the end of her focus group meeting, Cassie said:

> I feel that once I came here I transitioned in fine, and academically, I did the same as everyone else that had a [non-cyber] high school education background.

Question 4: How Involved in University-Based Social Activities are Cyber High School Graduates Compared to Their University Peers?

This study used statistical analysis of answers to NSSE (2008) questions to compare the social engagement of cyber students in university-based activities to that of their collegiate peers. Inferential statistics, using SPSS, were calculated for comparison of the two groups of students on measures of quality of relationships with other students, number of hours spent weekly participating in university-based activities, membership in a fraternity or sorority, and membership on a team sponsored by the university's athletic department. One-sample t-tests or chi-square analyses, alpha = .05, were applied to each comparison. In all four measures, data revealed social involvement of cyber high school educated students was not significantly different from social involvement of their university peers. Tests for effect size were also run for the variables; results further indicated no significant difference between the two groups. Therefore, findings of this study indicate that cyber high school graduates are as socially involved as their university peers in the measures of study variables.

Responses from discussions offer understanding of the quantity and types of activities the cyber high school graduates participated in while attending high school and college. Every one of the focus group respondents was involved at least one school, church, or community-based activity in high school. Once they assimilated into college, involvement increased. Twelve of the fourteen participants spoke of being involved in at least two campus-based groups since freshman year, including campus faith-based groups; major related groups, such as the Management Association; university support groups, such as the Program Board; and sports related groups, such as the school's equestrian team.

Although some cyber high school graduates in this study reported being shy when they arrived on campus, the same students ended up being very involved in university-based activities. Some study participants were very social from the beginning of their freshman year and still are. And, some cyber high school graduates came to college as reserved individuals with no interest in becoming involved in university activities and have chosen to remain that way. Ultimately, no matter what type of student they were, in this study, cyber high school graduates attributed their social transition in college to their individual personalities. They said they did not believe attending a cyber high school influenced their personality enough to have been a deciding factor in their ultimate status as a success or failure in the transition process. Eleanor said:

> It was really just who I am, who I was before, so I mean, it was from my family more than just going to online charter school, I mean, but I really think it wasn't determined by doing either public school or the online charter school. It was just, basically, my family and how they are.

Relationship to Existing Studies

Early in the evolution of primary and secondary cyber education, Maeroff (2003) predicted changes in learners' dispositions might evoke changes in academic and social interactions. Findings of this study support his predictions. Participants demonstrated a change in dispositions of how they interact with academic materials. As stated by Tucker (2007), students learning in a cyber setting, particularly in self-paced classes, had significant control over when, where, and how much time to devote to schoolwork over a reasonable amount of time. For students in this study, difficulties during transition to college resulted from the loss of much of this control.

Social dispositions were also changed by attending cyber school. Here again, students were able to have control over when, where, and how much interaction they had with other

students. In cyber school, students in the study were not exposed to the emotional upheavals (drama) of their peers, if they chose not to be. Like most college freshmen, 93% of focus group participants lived in dormitories their first year. Daily, intimate interaction with large numbers of peers is documented by transition researchers as a common source of stress in the beginning of college life (Clark, 2005; Gerdes & Mallinckrodt, 1994; Kelly et al., 2007). This study supports those findings and indicates that the stress of social adjustment may be accentuated because cyber school graduates come from a significantly more isolated academic setting than the majority of their peers.

Students in the study said they gained increased time-management and self-discipline skills from attending cyber school. This result confirms similar findings across K-12 grade levels in many other studies, including early research conducted by Frid (2001), Tunison and Noonan (2001), and Weiner (2003); and later work by Barbour and Mulcahy (2008), Blaylock and Newman (2005), and Cavanaugh (2007).

Qualitative data from this study found perception of maturity was enhanced in students who were academically successful in cyber school. Maturity was demonstrated by motivation to maintain academic and social behaviors that would lead to success in college. Weiner (2003) reported motivation as an overarching concept necessary for cyber students to be successful. Additionally, the data of this study support work by Smith and Zhang (2009) on academic ethics required for college transition.

Clark (2005) used participants' perceptions of their transition experiences to understand the process of transition to college. The current study results reinforce Clark's finding that, successful "transition to college is not something that just happens; it is something that students build; it is largely the result of conscious and intentional efforts to address challenges and pursue

goals" (p. 314). Participants in this study reported having to determine corrective actions to assist themselves in successful transition.

Research conducted by Barker and Wendel (2001), and by Roblyer and Marshall (2003), listed increased independence, strong study skills, increased self-efficacy, and improved communication skills as outcomes of cyber education. Data from this study concurs with their results, indicating the value of self-efficacy and involvement for successful transition to college (Gerdes & Mallinckrodt, 1994; Keup, 2004; Kuh et al., 2008).

Astin's (1999) Theory of Involvement states that successful transition to college is enhanced by on-campus residence of freshmen, membership in fraternities and sororities, and students being engaged in extracurricular campus-based activities (Astin, 1999). Research by Kelly et al. (2007), Kuh (2007), Kuh et al. (2008), and Larose and Boivin (1998) indicated the same. While findings in this study did not reveal large numbers of students participating in university-sponsored teams, or being active members of fraternities/sororities, the involvement of participants was not significantly different from that of their peers. Furthermore, data indicated 78% of participants, all of whom classified their transition as successful, were involved in campus-based activities.

The setting of most cyber education has similarities to home school education. Typically, cyber students and home school students learn independently in their homes. Findings in this study reinforce results of home school studies by Ray (2003) and by Sivin-Kachala and Bialo (2009), that students who graduated from home-based education were subsequently very active in university-based social activities. Lattibeaudiere's (2000) study, on transition experiences of home school graduates in college, is in agreement with results of the current cyber school study.

Data from each study revealed students educated at home were able to perform as well as their traditionally educated peers.

Limitations of the Study

Three potential limitations of this study were predicted in Chapter I.

1. Dual enrollment: As predicted, several students in the study participated in dual enrollment, taking college level classes concurrently with high school classes. Access to dual enrollment was found to be an advantage of attending a cyber high school. Students in the study believed taking classes in a college setting prior to attending college full time did, as predicted, ease psychological, emotional, and academic transition experiences because of gradual exposure to the differences between cyber high school and traditional university life. Therefore, more transition difficulties may have been revealed in this study if participants had not experienced dual enrollment.

2. Current college enrollment and self-selection bias: All subjects in the population sample of this study successfully completed cyber high school and were currently attending a traditional university. Graduates of cyber schools, who experienced enough difficulties to drop out of college, were not included in the study. In addition, participation in the study was voluntary. Underperforming students may not have had the desire to contribute to a study about transition in a focus group where other participants were likely to report successful experiences. Consequentially, opinions of students with negative transition experiences may be underrepresented in the findings.

3. Sample source: The study was limited to the number of participants able to be recruited from Pennsylvania State System of Higher Education universities. All participants were graduates of cyber high schools regulated by the Commonwealth of Pennsylvania. As

Berge and Clark (2005) indicated, one reason for the lack of research regarding online education is the uniqueness of each setting. A common set of curricular guidelines does not exist for cyber high schools in the United States. Thus, data gathered from graduates of cyber schools outside of Pennsylvania may vary significantly from data obtained in this study.

Upon completion of the study, other limitations were revealed. The self-reported nature of the data is an additional limitation. Participants' perception of their successful academic and social transition is subjective and may represent inflated notions of success. Participants in the study were not all freshmen. Having been in college for an extended period may have altered students' perceptions, or recollections, of transition experiences.

Finally, 62.5% of respondents to the survey graduated from PA Cyber Charter School, which was listed as the largest of the 11 cyber charter schools in the state of Pennsylvania (Pennsylvania Department of Education, 2009a). The possibility exists that data results are biased by this fact and may over-represent the effects of a cyber high school education received from that particular school.

Recommendations for Future Research

To address limitations of the study, longitudinal research is needed to document cyber students' achievement and involvement prior to graduation from high school and into college. Participation should be limited to students in their first semester of college coursework (excluding participants with dual enrollment experience). Such an endeavor would increase population size and decrease the pre-existing conditions that affected this study.

Limitations due to self-reporting of academic transition success could be addressed by research using other sources to triangulate data gathered from participants. Formative assessments during participants' first year and summative assessments in the form of academic

transcripts could be used to support reports of academic success. Perceptions of participants' transition process by family members, cyber high school and college-level instructors, and peers would provide corroborating data regarding successful social assimilation.

Pre and post-test experimental research is lacking for cyber education (U.S. Department of Education, Office of Innovation and Improvement, 2008). Additional rigorous experimental research of subject-specific achievement in cyber school would improve understanding of whether cyber high school students are better prepared for college transition in some subjects than others. Furthermore, achievement of cyber high school graduates in college courses could be compared to the performance of students who did not graduate from cyber high schools to determine if there was a difference in performance between the two groups. Also, research of larger numbers of cyber high school graduates attending post-secondary institutions, not in the PASSHE system, may deepen the understanding of academic and social preparation of cyber high school students for continuing education at other schools.

Participants in the study graduated from cyber high schools in Pennsylvania. The number of years they attended and their educational experiences prior to cyber school were widely varied. All participants attended at least one full year; but no participants attended cyber school from kindergarten through graduation. As cyber education unfolds, additional research will be needed to provide a more complete understanding of the effects on students attending cyber schools for all, or most, of their education.

Finally, additional research is critical to find reasons cyber educated students fail to persist in transition to college. This study offered findings of perceptions of cyber high school graduates regarding their transition to college. Data revealed participants, currently attending traditional universities, who are willing to contribute to research, have already demonstrated

academic and social transition success. The more pressing questions are, what causes failure, and what can be done to help students unable to succeed in transition to college? It appears that cyber education will continue as an educational option for K-12 students, making it imperative for researchers to seek insight into promoting cyber high school graduates' success in post-secondary pursuits.

Conclusion

The application of online (cyber) learning to the full-time education of students in grades K-12 may be one of the most significant events to occur in education in the past decade. The revolutionary use of technology allowing pre-collegiate level students to learn in their own homes is received with mixed reaction.

Concerns about the quality of academic achievement students can attain in cyber education, and about the residual effects of being removed during formative K-12 years from daily interaction with school peers, framed this study. Using a mixed-method approach, the study examined these issues through cyber high school graduates' perceptions of their academic and social assimilation into traditional colleges. The study was designed to gather perceptions of the effects from the individuals most intimately involved with the topic of the study. At the end of qualitative data collection, students were asked to reflect on their overall cyber experience.

Most, but not all, of the participants spoke fondly about cyber high school. The majority of students went to cyber school because it worked for them at the time. Some had the support of family; others had to demonstrate their ability to succeed before gaining final family approval. A minority of the participants attended cyber high school because their parents insisted, or because it was the best option available to them at the time. Regardless the reason, they all considered themselves successful in college by the time of the study.

Students who enjoyed the experience supported the reactions of those who did not. They said that, while cyber education worked for them, they would not recommend it for everyone. Kelly explained:

> I don't think it is for everyone, but at the same time, I think a lot of people who do get discouraged in high school, if they feel that being on their own can help them [they should attend cyber school]. And, sometimes that is the right decision, whether it seems like an odd thing to do for someone or not. Because, when I first went into cyber school, I thought it might be very odd for me, but I feel it was the right thing to do to get me back on track.

And, in the end, students who enjoyed the cyber experience in high school were very happy to be in a traditional college now. As Sarah put it:

> I enjoy[ed] cyber school and everything, for high school, but to be honest, I feel like maybe this is where I need to be right now.

Reflection

Working with the students in this study was a wonderful endeavor. I found them to be open, brutally honest, funny, and engaging as they described their cyber high school experiences; I have little doubt they will continue to be successful in college, and beyond. Each of them demonstrated the determination, and yes, maturity, to excel. I so greatly enjoyed getting to know a little about each of them, and I am thankful for the time and insight they shared.

One of the most rewarding outcomes of this process came after the completion of my fieldwork. In May 2010, Valerie graduated from the teacher education program from West Chester University. She and I corresponded by email in June, and she said she was having trouble finding a job. I encouraged her to use her experiences and look for a position teaching at a cyber school. She told me she had considered it, but didn't know how to contact some of them. I forwarded the information for schools in our state which I had gathered in research for this study. Soon after, Valerie emailed me to report that she was a new hire at one of those schools.

She was looking forward with excitement to working in the cyber environment and making it an engaging way to learn.

There is no greater testament to the successful transition of cyber high school graduates to traditional universities than their accomplishments in the end. What now remains is the ever-pressing need to help all students attain success like Valerie's. I sincerely hope this research has been of some benefit toward that goal.

REFERENCES

Ali-Salmani-Nodoushan, M. (2008). A critique of the brave new world of k-12 education. *Journal on School Educational Technology, 4*(2), 1-5.

Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist, 55*(5), 469-480. doi:10.1037//0003-066X.55.5.469

Astin, A. W. (1999). Student involvement: A developmental theory for higher education. *Journal of College Student Development, 40*(5), 518-529.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*(2), 191-215.

Barbour, M. K., & Mulcahy, D. (2008). How are they doing? Examining student achievement in virtual schooling. *Education in Rural Australia, 18*(2), 63-74.

Barefoot, B. O. (2004). Higher education's revolving door: Confronting the problem of student drop out in US colleges and universities. *Open Learning, 19*(1), 9-18. doi:10.1080/0268051042000177818

Barker, K., & Wendel, T. (2001). *e-Learning: Studying Canada's virtual secondary schools. Executive summary*. Retrieved from saee.ca - E-Learning: Studying Canada's Virtual Secondary Schools

Beard, L. A., & Harper, C. (2002). Student perceptions of online versus on campus instruction. *Education, 122*(4), 658-663.

Berge, Z. L., & Clark, T. (2005). *Virtual schools: Planning for success.* New York: Teachers College Press.

Bergerson, A. A. (2007). Exploring the impact of social class on adjustment to college: Anna's story. *International Journal of Qualitative Studies in Education, 20*(1), 99-119. doi:10.1080/09518390600923610

Black, E. W., Ferdig, R. E., & DiPietro, M. (2008). An overview of evaluative instrumentation for virtual high schools. *The American Journal of Distance Education*, *22*(1), 24–45. doi:10.1080/08923640701713422

Blaylock, T., & Newman, J. (2005, March 22). The impact of computer based secondary education. *Education, 125*(3), 373-384.

Bolle, M. B., Wessel, R. D., & Mulvihill, T. M. (2007). Transitional experiences of first-year college students who were homeschooled. *Journal of College Student Development***,** *48*(6), 637-654. doi:10.1353/csd.2007.0059

Bond, A. (2002). *Learning music online: An accessible program for isolated students*. Kensington Park, SA: Australian National Training Authority. Retrieved from ERIC database. (Accession No. ED476349)

Borja, R. R. (2005). Cyber schools' status. *Education Week, 24*(35), 22-24.

Branson School Online. (2009). *Educational overview*. Retrieved from http://www.branson schoolonline.com/index.cfm?pID=2429

Carr, H. (2007). *Administrator and teacher perceptions of the advantages and disadvantages of online course in urban/suburban New Jersey public high schools* (Doctoral dissertation). Retrieved from Dissertations & Theses: Full Text. (Publication No. AAT 3252199).

Cavaluzzo, L. (2004). *Organizational models for online education.* Alexandria, VA: CNA Corporation. Retrieved from http://www.cna.org/documents/p&p109.pdf?fromsearch=1

Cavanaugh, C. (2007). Student achievement in elementary and high school. In M. G. Moore (Ed.), *Handbook of distance education* (2nd ed.) (pp. 157-168). London: Lawrence Erlbaum Associates.

Cavanaugh, C., Barbour, M., Brown, R., Diamond, D., Lowes, S., Powell, A., Rose, R., Scheick, A., Scribner, D., Van der Molen, J. (2009). *Research committee issues brief: Examining communication and interaction in online teaching*. Vienna, VA: International Association for K-12 Online Learning. Retrieved from http://www.inacol.org/research/docs/NACOL_QualityTeaching-lr.pdf

Cavanaugh, C., Barbour, M., & Clark, T. (2009). Research and practice in k-12 online learning: A review of open access literature. *International Review of Research in Open and Distance Learning, 10*(1), 1-22.

Cavanaugh, C., Gillan, K. J., Kromrey, J., Hess, M., & Blomeyer, R. (2004). *The effects of distance education on k-12 student outcomes: A meta-analysis.* Naperville, IL: Learning Point Associates.

Center for Digital Education. (2008). *Online learning policy and practice survey: A survey of the states.* Retrieved from http://www.convergemag.com/paper/Online-Learning-Policy-and-Practice-Survey-A-Survey-of-the-States.html

Chaker, A. M. (2009, August 13). Expanding the charter option. *Wall Street Journal,* pp. D1-D2.

Chemers, M. M., Hu, L. T., & Garcia, B. F. (2001). Academic self-efficacy and first-year college student performance and adjustment. *Journal of Educational Psychology, 93*(1), 55-64.

Chen, P., Gonyea, R., & Kuh, G. (2008). Learning at a distance: Engaged or not? *Innovate, 4*(3). Retrieved from http://www.innovateonline.info/pdf/vol4_issue3/Learning_at_a_Distance-__Engaged_or_Not_.pdf

Clark, M. R. (2005). Negotiating the freshman year: Challenges and strategies among first-year college students. *Journal of College Student Development, 46*(3), 296-316. doi:10.1353/csd.2005.0022

Clark, T. (2001). *Virtual schools: Trends and issues. A study of virtual schools in the United States.* Distance Learning Resource Network. Retrieved from http://www.wested.org/online_pubs/virtualschools.pdf

Clark, T. (2007). Virtual and distance education in North American schools. In M. G. Moore (Ed.), *Handbook of distance education* (2nd ed.) (pp. 473-490). London: Lawrence Erlbaum Associates.

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*(1), 155-159. doi:10.1037/0033-2909.112.1.155

Colleges spend billions to prep freshmen. (2008, September 16). *Diverse Issues in Higher Education.* Retrieved from http://diverseeducation.com/article/11686/colleges-spend-billions-to-prep-freshmen.html

Conceição, S., & Drummond, S. B. (2005). Online learning in secondary education: A new frontier. *Educational Considerations, 33*(1), 31-37.

Courrege, D. (2009, April 16). Online charter schools a big hit. *The Post and Courier.* Retrieved from *http://www.postandcourier.com/news/2009/apr/16/online_charter_schools_big_hit78880/*

Creswell, J. W. (2005). *Educational research: Planning conducting, and evaluating quantitative and qualitative research* (2nd ed.). Upper Saddle River, NJ: Pearson Education.

Davis, M. R. (2007). How to ensure online courses are high-caliber. *Education Week, 26*(42), 11-13.

Davis, M. R. (2009). Breaking away from tradition. *Education Week, 28*(26), 8-9.

Davis, N. E., & Roblyer, M. D. (2005). Preparing teachers for the "schools that technology built": Evaluation of a program to train teachers for virtual schooling. *Journal of Research on Technology in Education, 37*(4), 399-408.

Dyson, R., & Renk, K. (2006). Freshmen adaptation to university life: Depressive symptoms, stress, and coping. *Journal of Clinical Psychology, 62*(10), 1231-1244. doi:10.1002/jclp.20295

Elkart Kansas Cyber School. (2010, January 3). *Find out more about us.* Retrieved from http:// www.onlineecs.org/

Ellis, K. (2008). Cyber charter schools: Evolution issues, and opportunities in funding and localized oversight. *Educational Horizons, 86*(3), 142-152.

Ferdig, R. (2008). The virtual school clearing house. In J. Watson, B. Gemin, & J. Ryan (Eds.), *Keeping pace with k-12 online learning*: *An annual review of state-level policy and practice.* (pp. 29-30*).* Evergreen Consulting Associates. Retrieved from http://www.kpk12.com/ downloads/KeepingPace_2008.pdf

Ferdig, R. E., DiPietro, M., & Pananstasiou, E. (2005). Teaching and learning in collaborative virtual high schools. In Smith, Clark, & Blomeyer (Eds.), *A synthesis of new research on k-12 online learning.* (pp. 35-40). Naperville, IL: Learning Point Associates.

Florida Virtual School. (2009). *About us.* Retrieved from http://www.flvs.net/Pages/default.aspx

Fox, C. (2006). Going virtual. *T.H.E. Journal, 33*(2), 6-8.

Fraser, B., Fisher, D., & McRobbie, C. (1996). *Development, validation and use of personal and class forms of a new classroom environment instrument.* Paper presented at the annual meeting of the American Educational Research Association, April, New York.

Frid, S. (2001). Supporting primary students' online learning in a virtual enrichment program. *Research in Education, 66,* 9-27.

Gagné, R. M. (1985). *The conditions of learning and theory of instruction.* (4th ed.). New York: Holt, Rinehart, and Winston.

Gerdes, H., & Mallinckrodt, B. (1994). Emotional, social, and academic adjustment of college students: A longitudinal study of retention. *Journal of Counseling & Development, 72*(3), 281-288.

Gershaw, D. A. (1989). *Line on life: Locus of control.* Retrieved from http://virgil.azwestern.edu/~dag/lol/ControlLocus.html

Gresham, F. M., Evans, S., & Elliott, S. N. (1988). Academic and Social Self-Efficacy Scale: Development and initial validation. *Journal of Psychoeducational Assessment, 6*(2), 125-138. doi:10.1177/073428298800600204

Hassel, B. C., & Terrell, M. G. (2004). *How can virtual schools be a vibrant part of meeting the choice provisions of the No Child Left Behind Act?* Chapel Hill, NC: Public Impact.

Hillman, D. C., Willis, D. J., & Gunawardena, C. N. (1994). Learner-interface interaction in distance education: An extension of contemporary models and strategies for practitioners. *American Journal of Distance Education, 8*(2), 30-42. doi:10.1080/08923649409526853

Holmberg, B. (2003). A theory of distance education based on empathy. In M. G. Moore & W. G. Anderson (Eds.), *Handbook of distance education* (pp. 79-86). London: Lawrence Erlbaum Associates.

Home School Legal Defense Association. (2007). *Missouri virtual instruction program: Ticket to mediocrity.* Retrieved from http://www.hslda.org/hs/state/mo/200704110.asp

Hughes, J. E., McLeod, S., Brown, R., Maeda, Y., & Choi, J. (2007). Academic achievement and perceptions of the learning environment in virtual and traditional secondary mathematics classrooms. *American Journal of Distance Education, 21*(4), 199-214. doi:10.1080/08923640701595365

Hurt, J. (2008). The advantages and disadvantages of teaching and learning on-line. *Delta Kappa Gamma Bulletin, Summer 2008,* 5-11.

Hutchings, P. (2008). The power of a big idea. In National Survey of Student Engagement (Ed.), *Promoting engagement for all students: The imperative to look within 2008 results.* Bloomington, IL: Indiana Center for Postsecondary Research.

Ikpeze, C. (2007). Small group collaboration in peer-led electronic discourse: An analysis of group dynamics and interactions involving pre-service and in-service teachers. *Journal of Technology and Teacher Education, 15*(3), 383-407.

Irwin, C., & Berge, Z. (2006). Socialization in the online classroom. *e-Journal of Instructional Science and Technology, 9*(1), 1-7.

Insight School of California. (2009). *Homepage.* Retrieved from http://www.insightca.net/

Jackson, G. (2007). Home education transitions with formal schooling: Student perspectives. *Issues in Educational Research, 17*(1), 62-84.

Johnson, L., Levine, A., Smith, R., & Smythe, T. (2009). *The 2009 Horizon Report: K-12 version.* Austin, TX: The New Media Consortium..

Kelly, J. T., Kendrick, M. M., Newgent, R. A., & Lucas, C. J. (2007). Strategies for student transition to college: A proactive approach. *College Student Journal, 41*(4), 1021-1035.

Keup, J. R. (2004). The cooperative institutional research program freshman survey and your first college year: Using longitudinal data to assess the first year of college. *Assessment Update, 16*(2), 8-11.

Kramarski, B., & Mizrachi, N. (2006). Online discussion and self-regulated learning: Effects of instruction methods on mathematical literacy. *Journal of Educational Research, 99*(4), 218-230.

Kuh, G. D. (2003). *The National Survey of Student Engagement: Conceptual framework and overview of psychometric properties.* Bloomington, IN: Indiana University Center for Postsecondary Research and Planning. Retrieved from http://nsse.iub.edu/pdf/conceptual_framework_2003.pdf

Kuh, G. D. (2007). What student engagement data tell us about college readiness. *Peer Review, 9*(1), 4-8.

Kuh, G. D., Cruce, T. M., Shoup, R., Kinzie, J., & Gonyea, R. (2008). Unmasking the effects of student engagement on first-year college grades and persistence. *Journal of Higher Education, 79*(5), 540-563.

Larose, S., & Boivin, M. (1998). Attachment to parents, social support expectations, and socio-emotional adjustment during the high school-college transition. *Journal of Research on Adolescence, 8*(1), 1-27.

Lattibeaudiere, V. H. (2000). *An exploratory study of the transition and adjustment of former home schooled students to college life* (Doctoral dissertation). Retrieved from Dissertations & Theses: Full Text. (Publication No. AAT 9973466).

Maddox, M. (2006). On the wave of the future. *T.H.E. Journal, 33*(12), 16-17.

Maeroff, G. (2003*). A classroom of one: How online learning is changing our schools and colleges.* New York: Palgrave Macmillan.

McLester, S. (2002). Virtual learning takes a front row seat. *Technology & Learning, 22*(8), 24-31.

Medlin, R. (2000). Home schooling and the question of socialization. *Peabody Journal of Education, 75*(1&2), 107–123.

Merriam, S. B., & Associates. (2002). *Qualitative research in practice: Examples for discussion and analysis.* San Francisco: Jossey-Bass.

Minnesota Virtual High School (n.d.). *Frequently asked questions: Qualifying as a student.* Retrieved from http://www.minnesotavirtualhighschool.com/index.html

Moore, M. (1993). Theory of transactional distance. In D. Keegan, (Ed.). *Theoretical Principles of Distance Education* (pp. 22-38). New York: Routledge.

Murphy, E., & Manzanares, M. A. (2008). Contradictions between the virtual and physical high school classroom: A third-generation Activity Theory perspective. *British Journal of Educational Technology, 39*(6), 1061-1072. doi:l0.11 /j.146 7-8 5 3 5.2007.00776.x

National Survey of Student Engagement. (n.d.). *About the National Survey of Student Engagement*. Retrieved from http://nsse.iub.edu/html/about.cfm

National Survey of Student Engagement. (2008). *Promoting engagement for all students: The imperative to look within 2008 results.* Bloomington, IN: Indiana Center for Postsecondary Research.

Nelsen, M. B. (1998). Beyond the stereotypes: Home schooling as a legitimate educational alternative. *High School Magazine, 6*(2), 32–37.

Nichol, D. J., Minty, I., & Sinclair, C. (2003). The social dimensions of online leaning. *Innovation in Education and Teaching International, 40(*3), 270-280. doi:10.1080/1470329032000103807

North American Council for Online Learning & Partnership for 21st Century Skills. (2006). *Virtual Schools and 21st Century Skills.* Vienna, VA: Author.

Oblinger, D. (2004). The Next Generation of Educational Engagement. *Journal of Interactive Media in Education*, *2004*(8). Retrieved from http://www-jime.open.ac.uk/2004/8/oblinger-2004-8-disc-paper.html

Oblinger, D. (2008). Growing up with Google: What it means to education. *Emerging Technologies for Learning, 3,* 11-29.

Ohio Virtual Academy. (2009). *How it works*. Retrieved from http://www.k12.com/ohva/how_it_works/

Pennsylvania Cyber Charter School. (2008). *Course catalog 2007-2008.* Midland, PA: Author.

Pennsylvania Cyber Charter School. (2009). *College choices.* Midland, PA: Author.

Pennsylvania Department of Education. (2009a). *Charter School Enrollment.* Retrieved from http://www.portal.state.pa.us/portal/server.pt/community/annual_reports/7357/charter_school_enrollement/704813

Pennsylvania Department of Education. (2009b). *2008-09 operating charter schools.* Retrieved from Annual Reports >> 2008 Charter School Annual Reports

Pennsylvania State System of Higher Education. (October 22, 2008). *PASSHE universities report record enrollment for seventh straight year.* Retrieved from Pennsylvania State System of Higher Education website: http://www.passhe.edu/executive/systemrelations/Communications/media/Lists/News Releases/DispForm.aspx?ID=393

Pennsylvania State System of Higher Education. (2009). *Fact Book, 2008-09, p. 39. Retrieved from http://www.passhe.edu/executive/it/research/use/Documents/ CompleteRevised.pdf*

Pennsylvania State System of Higher Education. (n.d.). *University map*. Retrieved from Pennsylvania State System of Higher Education website: http://www.passhe.edu/universities/Pages/about.aspx

Perry, R. P., Hladkyj, S., Pekrun, R., & Pelletier, S. (2001). Academic control and action control in the achievement of college students: A longitudinal field study of self-regulation. *Journal of Educational Psychology, 93*(4), 776–789. doi:10.1037//OO22-0663.93.4.776

Peters, O. (2003). Learning with new media in distance education. In M. G. Moore & W. G. Anderson (Eds.), *Handbook of distance education* (pp. 87-112). London: Lawrence Erlbaum Associates.

Powell, A., & Patrick, S. (2006). *An international perspective of k-12 online learning: A summary of the 2006 NACOL international e-learning survey*. Vienna, VA: North American Council for Online Learning.

Ray, B. D. (2003). *Homeschooling grows up.* Retrieved from http://www.hslda.org/research/ray2003/default.asp

Rice, K. L. (2006). A comprehensive look at distance education in the k-12 context. *Journal of Research on Technology in Education, 38*(4), 425-448.

Riedel, C. (2008). Minnesota Virtual High School graduates first online class. *T.H.E. Journal.* Retrieved from http://thejournal.com/articles/2008/06/17/minnesota-virtual-high-school-graduates-first-online-class.aspx?sc_lang=en

Robbins, S. B., Allen, J., Casillas, A., Peterson, C. H., & Le, H. (2006). Unraveling the differential effects of motivational and skills, social and self-management measures from traditional predictors of college outcomes. *Journal of Educational Psychology, 98*(3), 596-616. doi:10.1037/0022-0663.98.3.598

Roblyer, M. D. (2006). Online high-school programs that work. *The Education Digest, 72*(3), 55-63.

Roblyer, M. D., & Marshall, J. C. (2003). Predicting success of virtual high school students: Preliminary results from and educational success prediction instrument. *Journal of Research on Technology in Education, 35*(2), 241-255.

Rose, L. C., & Gallup, A. M. (2001). The 33rd annual Phi Delta Kappa/Gallup poll of the public's attitudes toward the public schools. *Phi Delta Kappan, 83*(1), 41-58.

Ruban, L., & Nora, A. (2002, April). *Factors impacting the academic status of undergraduate students at four-year institutions.* Paper presented at the Annual Meeting of the American Educational Research Association, New Orleans, LA.

Ruthig, J. C., Perry, R. P., Hladkyj, S., Hall, N. C., Pekurn, R., & Chipperfield, J. G. (2008). Perceived control and emotions: Interactive effects on performance in achievement settings. *Social Psychology of Education, 11*(2), 161-180. doi:10.1007/s11218-007-9040-0

Scolforo, M. (2009). Pa. cyber school unionizes; union says it's a 1st. *Associated Press.* Retrieved from http://www.phillyacts.org/index.php?option=com_content&task=view&id=90&Itemid=56

Simpson, O. (2004). The impact on retention of interventions to support distance learning students. *Open Learning, 19*(1), 79-95. doi:10.1080/0268051042000177863

Sivin-Kachala, J., & Bialo, E. (2009, May). *IESD comprehensive technical report: Evaluation of the social skills of full-time, online public school students*. New York: Interactive Educational Systems Design, Inc.

Smedley, T. C. (1992). Socialization of homeschool children. *Home School Researcher, 8*(3), 9-16.

Smith, W. L., & Zhang, P. (2009). The academic ethic and the transition to college. *College Student Journal, 43*(1), 86-93.

Social Science Research Council Project. (2007). *Questions that matter: Setting the research agenda on access and success in postsecondary education*. Retrieved from http://www.uwsa.edu/edi/equity/pdf/Questionsthatmatter.pdf

Strong American Schools. (2008). *Diploma to nowhere*. Retrieved from http://www.deltacostproject.org/resources/pdf/DiplomaToNowhere.pdf

Sun, K., Lin, Y., & Yu, C. (2008). A study on learning effect among different learning styles in a Web-based lab of science for elementary school students. *Computers & Education, 50*(4), 1411–1422. doi:10.1016/j.compedu.2007.01.003

Sutton, J. P., & Galloway, R. S. (2000). College success of students from three high school settings. *Journal of Research and Development in Education, 33,* 137-146.

Taylor, M. (2006). *Generation NeXt comes to college: 2006 updates and emerging issues.* Retrieved from http://www.taylorprograms.org/images/Gen_NeXt_article_HLC_06.pdf

Tinto, V. (1988). Stages of student departure: Reflections on the longitudinal character of student leaving. *The Journal of Higher Education*, *59*(4), 438-455.

Tinto, V. (1997). Classrooms as communities: Exploring the educational character of student persistence. *The Journal of Higher Education*, *68*(6), 599-623.

Tierney, W. G., Corwin, Z. B., & Colyar, J. E.(Eds.). (2005). *Preparing for college: Nine elements of effective outreach.* Albany, NY: State University of New York Press.

Tucker, B. (2007). *Laboratories of reform: Virtual high schools and innovation in public education.* Washington, D.C.: Education Sector. Retrieved from http://www.education sector.org/research/research_show.htm?doc_id=502307

Tunison, S., & Noonan, B. (2001). On-line learning: Secondary students' first experience. *Canadian Journal of Education, 26*(4), 495-514.

U.S. Department of Education, National Center for Educational Statistics. (2010.). *The Condition of Education 2010.* Retrieved from http://nces.ed.gov/fastfacts/display.asp?id=51

U.S. Department of Education, Office of Innovation and Improvement. (2008). *Evaluating online learning: Challenges and strategies for success.* Washington, D.C.: Author.

U.S. Department of Education, Office of Planning, Evaluation, and Policy Development. (2009). *Evaluation of evidence-based practices in online learning: A meta-analysis and review of online learning studies.* Washington, D.C.: Author.

Viadero, D. (2009). Research shows evolving picture of e-education. *Education Week Technology Counts, 28*(26), 9-11.

Virtual High School. (2010). *About us.* Retrieved from http://www.govhs.org/Pages/AboutUs-Home .

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychologist processes*. Cambridge, MA: Harvard University Press.

Wang, Q., & Huay, L. W. (2007). Comparing asynchronous online discussions and face-to-face discussions in a classroom setting. *British Journal of Educational Technology, 38*(2), 272-286. doi:10.1111/j.1467-8535.2006.00621.x

Watson, J., & Gemin, B. (2008). *Promising practices in online learning: Socialization in online programs.* iNACOL. Retrieved from http://74.125.93.132/search?q=cache:Vhu_huOq-xsJ:www.inacol.org/research/promisingpractices/NACOL_PP_Socialization.pdf+Socialization+in+online+programs&cd=1&hl=en&ct=clnk&gl=us

Watson, J., Gemin, B., & Ryan, J. (2008). Keeping pace with K–12 online learning: A review of state-level policy and practice. *Evergreen Consulting Associates.* Retrieved from http://www.kpk12.com/downloads/KeepingPace_2008.pdf

Watson, J., Gemin, B., Ryan, J., & Wicks, M. (2009). Keeping pace with k–12 online learning: A review of state-level policy and practice. *Evergreen Education Group.* Retrieved from http://www.kpk12.com/download.html

Watson, J. F., Winograd, K., & Kalmon, S. (2004). *Keeping pace with K-12 online learning: A snapshot of state-level policy and practice.* Napierville, IL: Learning Point Associates.

Weiner, C. (2003). Key ingredients to online learning: Adolescent students study in cyberspace-the nature of the study. *International Journal on E-Learning, 2*(3), 44-55.

Williams, J. D. (2008*). Factors influencing and academic preparedness of traditional and non-traditional enrollment into a cyber charter school in Pennsylvania (*Unpublished doctoral dissertation). University of Phoenix, PA.

Zimmer, R., Buddin, R., Chau, D., Daley, G. A., Gill, B., Guarino, C., Hamilton, L., Krop, C., McCaffrey, D., Sandler, M., & Brewer, D. (2003). *Charter school operations and performance: Evidence from California*, Santa Monica, CA: Rand Corporation. Retrieved from http://www.rand.org/pubs/monograph_reports/MR1700/

Zimmer, R., Gill, B. Booker, K., Lavertu, S. Sass, T., & Witte, J. (2009). *Charter schools in eight states: Effects on achievements, attainment, integration, and competition.* Santa Monica, CA: Rand Corporation.

Zucker, A. (2005). A study of student interaction and collaboration in the virtual high school. In Smith, Clark, & Blomeyer (Eds.), *A synthesis of new research on K-12 online learning* (pp. 49-52). Naperville, IL: Learning Point Associates.

Zucker, A., & Kozma, R. (2003). *The virtual high school: Teaching generation v.* New York: Teachers College Press.

Zychowski, L. A. (2007). Academic and social predictors of college adjustment among first-year students: Do high school friendships make a difference? *Dissertation Abstracts International, 68*(01), (UMI No. 3248210).

Appendix A
Survey Instrument

Thank you for agreeing to be a part of this study. Please respond to each of the following questions:

1. Indicate your current age ☐ less than 18 yrs. ☐ 18 yrs. ☐ 19 yrs. ☐ 20 yrs. ☐ 21 yrs. ☐ 22 yrs. and older

2. Name of cyber high school _____

3. Dates attended? From _____ to _____
   month/year month/year

4. Month and year you began your college classes _____

5. What class rank are you? ☐ Freshman ☐ Sophomore ☐ Junior ☐ Senior

6. Were you engaged in any school sponsored clubs while you were in cyber high school? ☐ Yes ☐ No

7.* Mark the box that best represents the quality of your relationships with other students at your university

Unfriendly, Unsupportive, Sense of alienation						Friendly, Supportive, Sense of belonging
⇩						⇩
☐	☐	☐	☐	☐	☐	☐
1	2	3	4	5	6	7

8.* About how many hours do you spend in a typical 7-day week participating in co-curricular activities (organizations, campus publications, student government, fraternity or sorority, intercollegiate or intramural sports, etc.)

☐ 0 ☐ 1-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ 21-25 ☐ 26-30 ☐ More than 30

9.* Are you a member of a social fraternity or sorority? ☐ Yes ☐ No

10.* Are you a student-athlete on a team sponsored by your institution's athletics department? ☐ Yes ☐ No

Rank each of the following based on this scale:	Very True ⇩ 1	2	3	4	5	6	Very Untrue ⇩ 7
11. ** I know how to schedule my time to accomplish my tasks.	_____						
12. ** I know how to take notes.	_____						
13.** I know how to study to perform well on tests.	_____						
14.** I am good at research and writing papers.	_____						
15.** I am a very good student.	_____						
16.** I usually do very well in school and at academic tests.	_____						
17.** I find my university academic work interesting and absorbing.	_____						
18.** I am very capable of succeeding at the university.	_____						

* Items 7, 8, 9, and 10 used with permission from The College Student Report, National Survey of Student Engagement, Copyright 2001-09, The Trustees of Indiana University. The items correspond to original instrument items 8a, 9d, 23 and 24 respectively.

**Items 11 through 18 comprise the Academic Self-Efficacy scale (Chemers, Hu, & Garcia, 2001), used with permission of the authors.

Appendix B

E-mail to Study Population

Dear Student:

I know your time is limited and I really appreciate you answering this short survey about your cyber school. Your identity and responses will be kept entirely private - only I will know who responded in the survey and the discussion.

Click on this link to take the survey: http://iup.qualtrics.com/SE?xxxxxxxx

You received this e-mail because your university identified you as a graduate of a cyber high school. I am a doctoral candidate at Indiana University of Pennsylvania conducting my dissertation research concerning the transition of cyber high school students to traditional universities.

You can participate in one or both parts of the study. The first part is a survey that will take less than 5 minutes to complete.

If you decide to attend a short meeting on your campus after taking this survey, you will receive a $10 gift certificate. The meeting will be a short discussion about your cyber school experience, which will contribute to the growing research on cyber education.

Further information on the study and a link to a Consent form is below.
You will receive an email within a week to set the date and time of the follow up focus group meeting.

Thank you! I look forward to hearing about your cyber high school experiences.

Ms. Dorothy Gracey
Doctoral Candidate
Indiana University of Pennsylvania
Professional Studies in Education

Appendix C

Voluntary Consent Form: Survey

You are invited to participate in this research study. The following information is provided in order to help you to make an informed decision whether or not to participate. If you have any questions please do not hesitate to ask. You are eligible to participate because you are a graduate of a cyber high school now attending a university in the Pennsylvania State System of Higher Education.

The purpose of this research is to study some of the factors related to the success of cyber high school graduates in a traditional university. Participation in the initial survey of this study will require approximately 15 minutes of your time. Participation or non-participation is entirely voluntary. You will complete an 18 item questionnaire online via a link e-mailed to you related to your cyber high school and your adjustment to college. There are no known risks or discomforts associated with this research.

Once your initial survey is received, you may be asked to participate in a focus group of other cyber high school graduates currently attending your university. The focus group will take approximately one hour. You will be sent an e-mail requesting your participation in the focus group with directions regarding the meeting time and place, and a second Consent Form for you to fill out indicating your willingness to participate in the focus group. You will be given a copy of the form when you attend the focus group meeting for you to sign. Again, your identity will be confidential. Only the researcher will know the name of study participants. As a token of appreciation for your participation in the focus group, a snack will be provided at the meeting and a $10 gift certificate to a store/restaurant near your campus will be offered to all focus group participants. You will receive the certificate at the end of the focus group meeting.

Your participation in this study is voluntary. You are free to decide not to participate in this study or to withdraw at any time. If you choose to participate, you may withdraw at any time by notifying the Project Director or informing the principal investigator. Upon your request to withdraw, all information pertaining to you will be destroyed. If you choose to participate, all information will be held in strict confidence and will have no bearing on your academic standing or services you receive from the University. Your responses will be considered only in combination with those from other participants. The information obtained in the study will be published in the researcher's dissertation and may be published in educational journals or presented at educational meetings, but your identity will be kept strictly confidential.
If you are willing to participate in this study, please type your name on the signature line, complete the survey, save the completed document to your computer and return it as an attachment via e-mail to d.m.gracey@iup.edu. If you have any questions or concerns about your participation in this research, please feel free to contact my advisor or me.

Appendix C (continued)

This project has been approved by the Indiana University of Pennsylvania Institutional Review Board for the Protection of Human Subjects (Phone: 724/357-7730).

Ms. Dorothy Gracey
Doctoral Candidate
Indiana University of Pennsylvania
Professional Studies in Education
Davis Hall
201 Nadona Avenue
Johnstown, PA 15904
814/262-9945
d.m.gracey@iup.edu

Dr. Frank Corbett
Professor
Indiana University of Pennsylvania
Professional Studies in Education
132 Stouffer Hall
Indiana, PA 15705
724/357-7560
fcorbett@iup.edu

Appendix C (continued)

Voluntary Consent Form: Survey

I have read and understand the information on the form and I consent to volunteer to be a subject in this study. I understand that my responses are completely confidential and that I have the right to withdraw at any time. I have received an unsigned copy of this informed Consent Form to keep in my possession.

Name Date

Phone number where you can be reached

Alternate e-mail where you can be reached

Best days and times to reach you

I certify that I have explained to the above individual the nature and purpose, the potential benefits and possible risks associated with participating in this research study, have answered any questions that have been raised, and have received this completed form from the student's e-mail address to which it was sent.

_____ _____

Date Principal Investigator's Signature

This project has been approved by the Indiana University of Pennsylvania Institutional Review Board for the Protection of Human Subjects (phone: 724/357-7730).

Appendix D
Permission to Use NSSE Items

National Survey of Student Engagement

The College Student Report
Item Usage Agreement

The National Survey of Student Engagement's (NSSE) survey instrument, *The College Student Report*, is copyrighted and the copyright is owned by The Trustees of Indiana University. Any use of survey items contained within *The College Student Report* is prohibited without prior written permission from Indiana University. When fully executed, this Agreement constitutes written permission from the University, on behalf of NSSE, for the party named below to use an item or items from *The College Student Report* in accordance with the terms of this Agreement.

In consideration of the mutual promises below, the parties hereby agree as follows:

1) The University hereby grants **Dorothy Gracey** ("Licensee") a nonexclusive, worldwide, irrevocable license to use, reproduce, distribute, publicly display and perform, and create derivatives from, in all media now known or hereafter developed, the item(s) listed in the proposal attached as Exhibit A, solely for the purpose of including such item(s) in the survey activity described in Exhibit A, which is incorporated by reference into this Agreement. This license does not include any right to sublicense others. This license only covers the survey instrument, time frame, population, and other terms described in Exhibit A. Any different or repeated use of the item(s) shall require an additional license.

2) In exchange for the license granted in section 1, Licensee agrees:

   a) there will be no licensing fee to use NSSE items for the purposes described in Exhibit A;

   b) to provide to NSSE frequency distributions and means on the licensed item(s);

   c) on the survey form itself, and in all publications or presentations of data obtained through the licensed item(s), to include the following citation: "Items *xx* and *xx* used with permission from *The College Student Report,* National Survey of Student Engagement, Copyright 2001-09 The Trustees of Indiana University";

   d) to provide to NSSE a copy of any derivatives of, or alterations to, the item(s) that Licensee makes for the purpose of Licensee's survey ("modified items"), for NSSE's own nonprofit, educational purposes, which shall include the use of the modified items in *The College Student Report* or any other survey instruments, reports, or other educational or professional materials that NSSE may develop or use in the future. Licensee hereby grants the University a nonexclusive, worldwide, irrevocable, royalty-free license to use, reproduce, distribute, create derivatives from, and publicly display and perform the modified items, in any media now known or hereafter developed; and

   e) to provide to NSSE, for its own nonprofit, educational purposes, a copy of all reports, presentations, analyses, or other materials in which the item(s) licensed under this

Indiana University Center for Postsecondary Research
1900 East Tenth Street • Eigenmann Hall, Suite 419 • Bloomington, IN 47406
Phone: (812) 856-5824 • Fax: (812) 856-5150 • E-mail: nsse@indiana.edu • Web Address: www.nsse.iub.edu

National Survey
of Student Engagement

Agreement, or modified items, and any responses to licensed or modified items, are presented, discussed, or analyzed. NSSE shall not make public any data it obtains under this subsection in a manner that identifies specific institutions or individuals, except with the consent of the Licensee.

3) This Agreement expires on January 15, 2010.

The undersigned hereby consent to the terms of this Agreement and confirm that they have all necessary authority to enter into this Agreement.

For The Trustees of Indiana University:

Alexander C. McCormick
Director
National Survey of Student Engagement

1/16/2009
Date

For Licensee:

Dorothy Gracey
Doctoral Student
Indiana University of Pennsylvania

1/28/09
Date

Indiana University Center for Postsecondary Research
1900 East Tenth Street • Eigenmann Hall, Suite 419 • Bloomington, IN 47406
Phone: (812) 856-5824 • Fax: (812) 856-5150 • E-mail: nsse@indiana.edu • Web Address: www.nsse.iub.edu

Appendix E

Permission to Use Academic Self-Efficacy Scale

From: mchemers@ucsc.edu
Subject: Re:
Date: Wed, 31 Dec 2008 01:28:52 +0000
To: "Dorothy M Gracey" <dgracey@iup.edu>

Yes. You may use the scale. That's what it's for. I am having some computer problems, so I won't be able to send you the scale until next week.

MMC
------Original Message------
From: Dorothy M Gracey
To: Martin Chemers
To: mchemers@zzyx.ucsc.edu
Sent: Dec 30, 2008 3:43 PM
Subject:

Dear Dr.Chemers:

I am a doctoral candidate in Curriculum and Instruction (and temporary faculty) at Indiana University of Pennsylvania(IUP). I am working on my dissertation pertaining to the transition of cyber schooled students to Pennsylvania State System of Higher Education universities.

In my research, I found that you and your co-authors of the article "Academic Self-Efficacy and First-Year College Student Performance and Adjustment" created an eight-item measure of student's academic self-efficacy. I also found that this measure was used as a part of research by another IUP doctoral candidate in pursuit of her doctorate in Psychology (Lori Anne Zychowski, 2007).

As a segment of my study, I intend to assess student's academic self-efficacy, and I would like to have permission to use your Academic Self-Efficacy Scale. I intend to submit my proposal to our Institutional Review Board within the next week or two and hope that I will be able to reference your instrument as a part of my methodology.

If you have any questions, and hopefully a positive answer for me as well, I can be reached at d.m.gracey@iup.edu. Thank you, and I hope to hear from you soon.

Wishing you a Happy New Year -

Sincerely,

Dot Gracey

Appendix F

Voluntary Consent From: Focus Group

You are invited to participate in a focus group as the next step of this research study. The following information is provided in order to help you to make an informed decision whether or not to participate. If you have any questions please do not hesitate to ask. You are eligible to participate because you are a graduate of a cyber high school now attending a university in the Pennsylvania State System of Higher Education.

The purpose of this portion of the research is to gain a further understanding of the factors related to the success of cyber high school graduates in a traditional university through focus group discussion. Participation in the focus group will require approximately one hour of your time. Participation or non-participation is entirely voluntary. You will be asked to participate in conversation related to your attendance at a cyber high school and your subsequent adjustment to college. There are no known risks or discomforts associated with this research.

Your participation in this study is voluntary. You are free to decide not to participate in this study or to withdraw at any time. If you choose to participate, you may withdraw at any time by notifying the Project Director or informing the principal investigator. Upon your request to withdraw, all information pertaining to you will be destroyed. If you choose to participate, all information will be held in strict confidence and will have no bearing on your academic standing or services you receive from the University. Your responses will be considered only in combination with those from other participants. The information obtained in the study will be published in the researcher's dissertation and may be published in educational journals or presented at educational meetings but your identity will be kept strictly confidential.

If you are willing to participate in this study, please save the attached Consent Form to your desktop or other suitable place in your computer, complete the interactive form, re-save it, and send the completed form via e-mail back to me at d.m.gracey@iup.edu.

You will be given a copy of the form when you attend the focus group meeting for you to physically sign. Again, your identity will be confidential. Only the researcher will know the names of study participants.

This project has been approved by the Indiana University of Pennsylvania Institutional Review Board for the Protection of Human Subjects (Phone: 724/357-7730).

Appendix F (continued)

Ms. Dorothy Gracey
Doctoral Candidate
Indiana University of Pennsylvania
Professional Studies in Education
Davis Hall
201 Nadona Avenue
Johnstown, PA 15904
814/262-9945
d.m.gracey@iup.edu

Dr. Frank Corbett
Professor
Indiana University of Pennsylvania
Professional Studies in Education
132 Stouffer Hall
Indiana, PA 15705
724/357-7560
fcorbett@iup.edu

VOLUNTARY CONSENT FORM: Focus Group

I have read and understand the information on the form and I consent to volunteer to be a subject in this study. I understand that my responses are completely confidential and that I have the right to withdraw at any time. I have received an unsigned copy of this informed Consent Form to keep in my possession.

Name Date

Signature _____

Phone number where you can be reached

Alternate e-mail where you can be reached

Best days and times to reach you

I certify that I have explained to the above individual the nature and purpose, the potential benefits and possible risks associated with participating in this research study, have answered any questions that have been raised, and have received this completed form from the student's e-mail address to which it was sent.

_____ _____

Date Principal Investigator's Signature

Appendix G

Calculation of Mean Difference for ENVSTU

Count	Study Site	Class Rank	NSSE Survey Group*	Cyber Graduate Answer ENVSTU	NSSE 2008 Mean for Site and NSSE Survey Group	Difference (used for one-sample t-test)
1	BU	Freshman	FY	5	5.39	-0.39
2	BU	Freshman	FY	6	5.39	0.61
3	BU	Freshman	FY	6	5.39	0.61
4	BU	Junior	S	No answer	5.87	N/A
5	IUP	Freshman	FY	3	5.31	-2.31
6	IUP	Freshman	FY	3	5.31	-2.31
7	IUP	Freshman	FY	5	5.31	-0.31
8	IUP	Freshman	FY	6	5.31	0.69
9	IUP	Freshman	FY	6	5.31	0.69
10	IUP	Freshman	FY	7	5.31	1.69
11	IUP	Freshman	FY	7	5.31	1.69
12	IUP	Sophomore	FY	5	5.31	-0.31
13	IUP	Sophomore	FY	5	5.31	-0.31
14	IUP	Junior	S	5	5.57	-0.57
15	IUP	Junior	S	6	5.57	0.43
16	IUP	Senior	S	2	5.57	-3.57
17	IUP	Senior	S	4	5.57	-1.57
18	SRU	Freshman	FY	No answer	5.59	N/A
19	SRU	Freshman	FY	4	5.59	-1.59
20	SRU	Freshman	FY	7	5.59	1.41
21	SRU	Junior	S	6	5.66	0.34
22	SRU	Junior	S	7	5.66	1.34
23	SRU	Senior	S	6	5.66	0.34
24	WCU	Freshman	FY	2	5.59	-3.59
25	WCU	Freshman	FY	4	5.59	-1.59
26	WCU	Freshman	FY	5	5.59	-0.59
27	WCU	Freshman	FY	5	5.59	-0.59
28	WCU	Freshman	FY	6	5.59	0.41
29	WCU	Sophomore	FY	7	5.59	1.41
30	WCU*	Junior	FY	3	5.59	-2.59
31	WCU*	Junior	FY	5	5.59	-0.59
32	WCU*	Senior	FY	7	5.59	1.41

* Responses by study participants in freshman and sophomore years were compared to NSSE First Year (FY) results; responses from participants in junior and senior year were compared to NSSE Senior (S) results when available. WCU NSSE Senior results not available, FY used instead.

Appendix H

Calculation of Mean Difference for COCURR01

Count	Study Site	Class Rank	NSSE Survey Group *	Cyber Graduate Answer ENVSTU	NSSE 2008 Mean for Site and NSSE Survey Group	Difference (used for one-sample t-test)
1	BU	Freshman	FY	3	2.24	0.76
2	BU	Freshman	FY	3	2.24	0.76
3	BU	Freshman	FY	3	2.24	0.76
4	BU	Junior	S	No answer	2.47	N/A
5	IUP	Freshman	FY	2	2.25	-0.25
6	IUP	Freshman	FY	1	2.25	-1.25
7	IUP	Freshman	FY	2	2.25	-0.25
8	IUP	Freshman	FY	2	2.25	-0.25
9	IUP	Freshman	FY	2	2.25	-0.25
10	IUP	Freshman	FY	1	2.25	-1.25
11	IUP	Freshman	FY	2	2.25	-0.25
12	IUP	Sophomore	FY	1	2.25	-1.25
13	IUP	Sophomore	FY	3	2.25	0.75
14	IUP	Junior	S	2	2.34	-0.34
15	IUP	Junior	S	5	2.34	2.66
16	IUP	Senior	S	2	2.34	-0.34
17	IUP	Senior	S	2	2.34	-0.34
18	SRU	Freshman	FY	No answer	2.69	N/A
19	SRU	Freshman	FY	2	2.69	-0.69
20	SRU	Freshman	FY	1	2.69	-1.69
21	SRU	Junior	S	2	2.38	-0.38
22	SRU	Junior	S	2	2.38	-0.38
23	SRU	Senior	S	4	2.38	1.62
24	WCU	Freshman	FY	1	2.52	-1.52
25	WCU	Freshman	FY	2	2.52	-0.52
26	WCU	Freshman	FY	1	2.52	-1.52
27	WCU	Freshman	FY	1	2.52	-1.52
28	WCU	Freshman	FY	4	2.52	1.48
29	WCU	Sophomore	FY	3	2.52	0.48
30	WCU*	Junior	FY	1	2.52	-1.52
31	WCU*	Junior	FY	4	2.52	1.48
32	WCU*	Senior	FY	3	2.52	0.48

* Responses by study participants in freshman and sophomore years were compared to NSSE First Year (FY) results; responses from participants in junior and senior year were compared to NSSE Senior (S) results when available. WCU NSSE Senior results not available, FY used instead.