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Choice and Support: An Individualized Approach to Student Empowerment and Involvement in Combating Procrastination in the Internet Learning Environment

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CHOICE AND SUPPORT: AN INDIVIDUALIZED APPROACH TO STUDENT EMPOWERMENT AND INVOLVEMENT IN COMBATING PROCRASTINATION IN THE INTERNET LEARNING ENVIRONMENT

by

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ABSTRACT

CHOICE AND SUPPORT: AN INDIVIDUALIZED APPROACH TO STUDENT EMPOWERMENT AND INVOLVEMENT IN COMBATING PROCRASTINATION IN THE INTERNET LEARNING ENVIRONMENT

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This study was designed to explore effective approaches that could help online students overcome online academic procrastination, raise their satisfaction ratings, and improve their academic performance.

The research was conducted at Old Dominion University, Virginia, with a sample of 165 undergraduate and graduate students (mean age = 30.67, SD = 8.98; male = 33, 20%, female = 132, 80%; undergraduate 95, 58%, graduate 70, 42%). The participants were taking an online course, Social and Cultural Foundations of American Education, required for teacher licensure. The treatments included the Choice Package (choice of assignment due dates, choice of rewards and punishments, and choice of reminders), and the Support Package (instructor-initiated support for self-regulation skills, technical mentoring, and affective social communication). Procrastination frequency, procrastination magnitude, students' satisfaction with the course, and academic performance were the four dependent variables. Both quantitative and qualitative data were collected during the fall semester of 2003.

A factor analysis indicated that self-regulation ability, perfectionism, technical skills, and outside obligations (such as a job, child care, and household chores) were the

four major factors affecting online procrastination. Three multiple regression analyses revealed respectively that older learners (more than 25 years old) tended to procrastinate less frequently, females had lower procrastination magnitude, and older learners and those with higher computer/Internet competency predicted better academic performance at a significant level. Results from a MANOVA analysis suggested that the Choice Package was effective in reducing online procrastination frequency and improving academic performance, while the Support Package had a significant impact on student satisfaction with the course. A significant interaction effect of choice by support was found on participants' academic performance and procrastination. Students who made a choice, either one, two, or three, from the items in the Choice Package, and received support, procrastinated the least and academically outperformed their counterparts. The qualitative data strongly corroborated the quantitative findings and provided insight into the dynamics of online learning. The statistical findings of this study and the participants' perceptions of the Choice Package and the Support Package provided new directions for further research and suggested new approaches for policy makers on instruction and curriculum reform within the online learning environment.

Members of Dissertation Committee: Dr. Maurice R. Berube

Dr. Yuping Liu

To my beloved professor and faithful friend Dr. Dwight Allen,

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CHAPTER I

INTRODUCTION

As the world has entered the information age, the Internet has become almost omni-present in human daily lives at every corner of the globe. The Internet use has evolved to become an essential method of communication, permeating academic, vocational, and domestic domains (Lavoie, & Pychyl, 2001). Global Internet use is pervasive and is currently estimated at 605.60 million subscribers, of which the United States and Canada account for 182.67 million (Nua Internet Surveys, 2002). With its exponential adoption rate, the Internet is drastically transforming distance learning in higher education (Leh & Jobin, 2002), and online courses are becoming increasingly common (Elvers, Polzella, & Graetz, 2003). More than 1,100 institutions of higher education in the United States offer online courses (Newman & Scurry 2001).

Today's students are active consumers who look for flexible and cost-effective educational programs. Those students feel comfortable with educational technology and expect online sources as part of their learning experience (Green, 1997). "In just three years-from 1995 to 1998 – the use of Internet-based courses grew from 22% of institutions to 60%. More than 1.6 million students were enrolled in distance education courses in 1997-98" (American Federation of Teachers [AFT], 2001, Introduction section, para. 2). It was estimated that in 2002 about 85% of the two- and four-year colleges would offer distance education programs, and by the year 2006, enrollment in distance education programs would increase by 1.5 million students (Lane, 2001).

Another estimation predicts that by the year 2007, almost 70% of the learners in post secondary education will take courses through a distance education mode (Kascus, 1997). Information technology stirred up a cognitive revolution, and the overwhelming number of online learners clearly reveals an educational paradigm shift (Leh & Jobin, 2002), which will be a challenge to both instructors and learners now and in the future.

Problem Importance

Although online courses offer advantages for accommodating learners with different preferences such as the so-called "anytime, anywhere" learning (Reid, 1997), some problems have arisen from the intrinsic weaknesses of the Internet learning environment. Online student academic procrastination is a salient chronic problem that has frustrated both teachers and students regarding this powerful tool for learning. Estimated noncompletion in distance education ranges from 30% to 70% (Wilkinson & Sherman, 1989). Lavoie and Pychyl (2001) discovered that 47% of the time spent online amounts to work avoidance. A university administrator's finding in New York indicates that 43% of freshman attrition was related to greater Internet access and inability to curtail personal computer over-use (Wallace, 1999). Online student procrastination may also lead to a higher incompletion rate and dropout problems (Rekkedal, 1982), student frustration (Bartley, 1998), and poor faculty evaluation (Woods, 2002).

Theoretically, Willis (1993) stated that "distance education and traditionally delivered instruction can be equally effective if the distance educator puts adequate preparation into understanding the needs of the student and adapting the instruction

accordingly" (p. 22). But Lavoie and Pychyl (2001) questioned if this new Internet technology has fulfilled the promises of technological efficiencies and purposes, or if it is subverted by some of our more mundane motivational or volitional problems such as procrastination. The answer is that the Internet is not a panacea for the teaching and learning problems that educators have been trying to solve. When people tend to hail the easy accessibility of abundant information and the flexibility of time and space of online courses, those advantages, unfortunately, appear to provide fertile ground for putting off responsibilities (Bliss, 1983).

Factors contributing to online student procrastination include psychological, behavioral, environmental, and instructional problems. They include personality, perfectionism, fear of failure, task avoidance, poor time management skills, unpleasant working environment, Internet distractions, heavy workload, family chores, busy working and learning schedules, low computer competency, and poor teacher instructional strategies. There are many complaints on the problems related to Internet learning, especially online procrastination. Approaches that have been developed to address online student procrastination are few and scattered compared to those addressing conventional classroom-setting student procrastination.

As early as 1989, Wilkinson and Sherman argued that the main issues with procrastination of distance education appear to be a failure to thoroughly understand the complex nature of procrastination within the context of distance education itself, as well as a lack of effective strategies to combat procrastination. Leh and Jobin (2002) attribute students' lower accomplishments and satisfaction to inadequate technology preparation.

They further suggest that such inadequate preparation would affect institutional reputation.

Some researchers believe the major reason leading to online student procrastination are the distractions from the Internet itself. Lavoie and Pychyl (2001) found that online procrastinators yielding to distractions do not need to leave their present location. Minimum commitment is experienced due to the fact that these distractions require only a click of a mouse button to resume the original work.

Online student procrastination is a very complex phenomenon as opposed to the abnormal behavior of an isolated individual. Comprehensive approaches need to be taken to address the cohort of problems that are closely related to online procrastination. It is best to use multiple strategies to address the complex phenomenon (Kachgal, Hansen, Nutter, 2001). Solomon and Rothblum (1984) concluded that using a multifaceted intervention approach is beneficial, given that academic procrastination is not solely a deficit in study habits or time management, but involves a complex interaction of behavioral, cognitive, and affective components.

Urban Implications of the Study

A study on empowering and involving students to take initiatives to combat online academic procrastination is of great importance to urban education research. The majority of universities are situated in urban areas, and many of them provide online courses as an effective means to save infrastructure investment (a practical solution to the problem of limited campus square footage), increase student population, and accommodate busy urban students' needs, providing time flexibility and geographical

convenience. Many urban students now take courses both in the classroom and online to fit their busy schedules. Some of these students have part- or full-time jobs, while others prefer online courses. Conducting research on empowering students to take initiatives to improve their online learning, encouraging students to take charge of their own learning process, and to consciously fight online academic procrastination, will benefit the population of urban students and contribute to current research which is still in its early stages.

Research Questions

College student academic procrastination has always been a ubiquitous problem across university campuses all over the world. As the Internet has become a mainstay in the distance education arena, online student academic procrastination has emerged with unique characteristics and has spread rampantly among college students. The increasing drop-out rate, grade decline, loss of interest in learning, mental and physical health problems of online procrastinators, poor teacher evaluations, and even the controversial reputation of online courses, all have a strong correlation with student academic procrastination. It has become an imperative task facing online course instructors, administrators, and researchers to find solutions to prevent online student academic procrastination. With the full recognition of the value and the problems of online learning, this study will further explore the nature of procrastination in the Internet learning environment and address the following research questions:

1. What are the major factors that contribute to online student procrastination?

2. Do age, gender, job, and computer/Internet competency have an effect on online procrastination and student academic performance?
3. What are the effective interventions that may prevent students from online academic procrastination?

Based on the analysis of those questions, this study will focus on how to offer individualized choice and support to empower and involve students themselves in their online learning, and will examine the effectiveness of the individualized choice and support to help online students in combating academic procrastination, improving academic performance, and raising satisfaction rating for online courses.

CHAPTER II

LITERATURE REVIEW

General Procrastination

What is procrastination? Ellis and Knaus (1977) defined procrastination as putting off something until a future time; postponing or deferring action on something one has decided to do. Bliss (1983) explained procrastination as needlessly postponing a task for illegitimate reasons.

The psychological consequences after committing procrastination, such as feelings of regret, guilt, and self-hate, have also been used in defining procrastination. Solomon and Ruthblum (1984) defined procrastination as "the act of needlessly delaying tasks to the point of experiencing subjective discomfort" (p.503). Senécal, Koestner, and Vallerand (1995) also found that procrastination involves knowing that one is supposed to perform an activity, and perhaps even wanting to do so, yet failing to motivate oneself to perform the activity within the desired or expected timeframe. If the person does not engage in that behavior, he or she will experience feelings of guilt (Ryan, 1982). Procrastination generally involves delaying the start of a task until one experience distress about not having performed the activity earlier.

Procrastination is a common human trait resulting from aversion to a task which is required to be completed within a specific period of time. It is unlikely that there are individuals who never procrastinate, because it is such a universal human foible (Senécal, Koestner, &Vallerand, 1995).

Academic Procrastination

Procrastination is common and widespread within the academic field, especially among college students. Ellis and Knaus (1997) estimated that 95% of American college students procrastinate. In Solomon and Ruthblum's survey in 1984, 50% of students reported that they procrastinate on academic tasks at least half of the time, and an additional 38% reported procrastinating occasionally. Faculty estimates of student procrastination were even higher. Academic procrastination is regarded as a dispositional trait that can have serious consequences for students, whose academic lives are characterized by frequent deadlines (Tuckman, 2002). Ellis and Knaus (2002) regarded academic procrastination as an "interactive dysfunctional and behavior avoidance process," characterized by making excuses to justify the delay and cramming at the last minute. Through experiments, Ferrari (2001) found that chronic procrastinators are ineffective in regulating their performance speed and accuracy when they work under pressure of high cognitive loads and imposed time limitations. This "absence of self-regulated behavior" (Tuckman, 1998), p. 141) compromises an individual's ability to set and achieve personal, academic, and career-related goals (Kachgal, Hansen, Nutter, 2001). Procrastination was more common for term papers than for studying for exams or doing weekly assignments (Senécal, Koestner, & Vallerand, 1995).

There is extensive research explaining the mechanisms of college student academic procrastination. The typical characteristics of academic procrastination are defined as the "tendency to (a) always or nearly always put off academic tasks, and (b) always or nearly always experience problematic anxiety associated with this procrastination" (Rothblum, Solomon, & Murakami 1986, p.387). Using factor analysis,

Solomon and Rothblum (1984) found that the fear of failure and task aversion are the primary reasons for procrastination. The fear of failure factor includes aspects that are related to evaluation anxiety, overly perfectionistic standards for one's performance, and low self-confidence. In contrast, the task aversion factor comprises items that reflect a dislike of engaging in academic activities and a lack of energy. Solomon and Rothblum (1984) suggested that academic procrastination could be assessed with straightforward self-report questionnaires. In addition, several cognitive variables have been found to correlate with procrastination, including irrational beliefs, external attribution styles, and beliefs regarding time (Haycoack, 1993). Ferrari et al. (1995) described cognitive distortions that contribute to academic procrastination, such as students' overestimation of time required for school tasks and their miscalculation of available time for studying.

Procrastination may have biological and neurotic roots. After spending about forty years as psychotherapists, Ellis and Knaus (1977) believe that some disturbance seems inherent in the human condition. People have pronounced biological and learned tendencies to act neurotically, to stay immature, and to defeat their best interests in procrastination. Meanwhile, they also found that the habit of procrastination stems from a self-defeating philosophy. Those who procrastinate tend to denigrate themselves (Ellis & Knaus, 1977). Both Watson (2001) and Schouwenburg and Lay (1995) found a reliable relation between procrastination and neuroticism.

Lack of time management skills is another major factor leading to student academic procrastination. Tice and Baumeister (1997) found negative correlations between self-reported tendencies to procrastinate and grades on exams and papers.

Procrastination is also a motivational problem that involves more than poor time management skills or trait laziness (Senécal, Koestner, & Vallerand 1995).

Online Procrastination

Apart from general and academic procrastination, another kind of procrastination has become rampantly prevalent on college campuses: online procrastination, which bears its own unique features that affect student learning processes, although it has inherited personal traits and non-personal factors that attribute to academic procrastination. The Internet is quite a new learning environment compared to the traditional classroom setting. It is not a traditional classroom with a few technological add-ons (Schmertzing & Schmertzing, 2002). Merely copying traditional teaching strategies cannot ensure the quality of online classes.

A great deal of research has been done on online procrastination. One theory about the notion of Internet procrastination has been proposed by Silver and Sabini (1981), who suggested that a particular style of procrastination involves the irrational fragmentation of time into short intervals to delay working towards a task. In this situation, the decision to work is not withdrawn. However, in choosing an activity for the next immediate time period (e.g., the next five minutes), the individual justifies engaging in some minor pleasure instead of committing to the intended task. Silver and Sabini further suggested that pleasurable activities on the Internet are very attractive, brief, and can be ceased easily.

Meanwhile, Silver and Sabini (1981) also suggested another aspect of cyber-procrastination (Internet procrastination). It is the notion of dramatizing commitment to a

task. In such a case where the individual has not decided to "break" from working on a task, procrastination occurs through searching for off-task distractions while maintaining an appearance of accomplishing the intended task.

In 1999, Young found that originally the Internet was a neutral device designed to facilitate research among academic and military agencies. Although the merits of the Internet make it an ideal research tool for the educational arena, counter-productive activities are rampant, such as surfing irrelevant sites, engaging in chat room gossip, conversing with Internet penpals, and playing interactive games, to name only a few. Lavoie and Pychyl (2001) further detailed that Internet activities, such as managing emails or surfing the Web, may be particularly alluring because these activities are quick, immediately rewarding, and can be discontinued at will. The rationalization that checking one's email will take only a few minutes may be a popular form of procrastination.

In an investigation from a university as to why normally successful students with 1200 to 1300 SATs had been dismissed, Brady (1997) declared that 43% of these students failed school due to extensive patterns of late night log-ons to the university computer system. Beyond tracking students, college counselors found that the primary problem of students' Internet misuse is the inability to control their Internet use (Young, 1999).

More recent research by Pychyl, Lee, Thibodeau, and Blunt (2000) underscores the role of pleasurable, short-term, specious rewards as an important aspect of procrastination. The easy access to some of the entertaining resources on the Internet is especially attractive to students. Thus, the Internet may be particularly conducive to procrastination due to the provision of entertainment and pleasure through online

activities. The release of anxiety has been a fundamental reason for procrastination. Knaus (1973, 1998, 2000) indicated that people often avoid aversive tasks by resorting to "escapist" activities, such as watching TV or sleeping, to obtain temporary relief from anxiety. In the same manner, procrastination through Internet use is expected to be related to temporarily diminishing stress through entertaining distractions.

Why might the effects of procrastination be a great problem in online classes rather than in traditional lecture settings? Elvers, Polzella, and Graetz (2003) found one possible reason is that although students in traditional lecture classes may procrastinate, going to classes exposes them to the material on a regular basis. Thus, at least part of their study time (e.g., time spent listening to the lectures) is distributed across time. Students in an online class may not access any of the class material until the day before the exam. Thus, online students may mass a larger part of their study time compared to those students in traditional classes. They also found that the number of web pages accessed per day peaked either the day before or the day of each exam.

Another factor of online procrastination is that since online classes lack a strict study schedule, more opportunities for procrastination are available than with their traditional counterparts (Elvers, Polzella, & Graetz, 2003). The efficient facilitation for people's casual communication is another factor. According to Shulgan (2003), once the machines (the computers) allowed people to interact with each other, it became a tantalizing distraction.

As a result of online procrastination, students suffer more severe consequences than general and academic procrastination. Research (Melton, 1970) on massed versus distributed practice indicated that cramming, or massing all of the study time into a single

session, has deleterious effects on the retention of material. Thus, procrastination, which forces learning into a shorter time period, should also have a negative effect on long-term retention of material. Procrastinators do not distribute their learning over a long period; instead, they tend to "cram" or have a long-duration study session just prior to the exam. Due to flexible schedules, piling up course work towards the deadline is very common among online procrastinators. This is why some students prefer classroom instruction to web-based instruction, since classroom instruction decreases potential for procrastination (Leasure, Davis, & Thievon, 2000).

Research also revealed that online student learning outcomes tend to vary with age and gender (Mitra & Hall, 2002). There are reports that females and older adults tend to work quite well in online courses, while males and younger adults tend to require the structure and discipline provided by the traditional classroom setting (Davidson-Shivers, 2001; Ladewski, 1996; Young, 2001; Young, Dewstow, & Mc Aporran, 1999).

When the quality of online education has been questioned time and again by different stakeholders, research on intervention strategies to eliminate online procrastination has become an imperative task for researchers, instructors, and administrators. Wilkinson and Sherman (1990) queried eight educators who taught telecommunication-based distance education classes about student procrastination. The courses were offered in a variety of disciplines, including architecture, business, economics, history, and psychology. The opinion of nearly all of the educators was that the distance education classes needed more structure and those students who began work early and paced themselves were more likely to complete the course than those who did not.

Making the online environment more structured is a main theme of online class management. Wesp (1986) believed requiring course involvement would be an effective approach to prevent procrastination; Lamwers and Jazwinski (1989) advocated that signing a contract and setting deadlines would work well; and Loebenstein (1996) found that setting subgoals could be more intrinsically appealing to online learners. Tuckman (1998) used tests as an incentive to motivate procrastinators to study. He found that when given frequent tests rather than homework assignments, the academic performance of procrastinators improved dramatically, so much so as to move them from the bottom to the top of their class. It still remains to be determined whether such students are able to maintain their more timely regimen of preparation in much less structured environments, particularly the Internet environment. In short, making the situation more structured could lessen the detrimental effects of personality variables, such as procrastination (Ross & Nisbett, 1991).

All those viewpoints have not broken away from the conventional mindset that the teacher-supervised, tightly scheduled classroom setting is the ideal teaching and learning environment. Educational technology is regarded as a useful tool that could enhance the efficiency of teaching and learning, but online learning is a new format that can never be an electronic copy of the classroom setting where conventional classroom management skills totally apply. Gatlin-Watts, Arn, and Kordsmeier (1999) hoped that "[I]nstructional delivery systems using multimedia can be the exponential tool that will transform education in the same manner the tractor transformed agriculture and the airplane transformed transportation" (p.190). Online learning environments are substantially different in structure and classroom culture and therefore require complex,

diverse adaptive strategies for both students and teachers (Schmertzinf & Schmertzing, 2002). Some new approaches addressing online procrastination have to be tried, developed, and tested, with the intention of helping and accommodating learners of the information age.

Strategies in Combating Online Procrastination

It is an obvious fact that instructors cannot supervise their online students at their homes or offices. To ensure the quality of online learning, students need to manage their learning themselves. Reid (1997) outlined several points that should be considered to ensure student success in this new form of learning. Reid suggested that students begin with an elective online course rather than enroll in a full load of online classes. Students must be more responsible for acquiring good time management skills. Competency in navigating the Internet is another crucial prerequisite for success in the online environment. A final consideration is how well students can take responsibility for their own learning.

As institutions move away from the traditional classroom model, it may be necessary to provide additional services to help students make a successful transition to the new self-directed, asynchronous learning setting.

Self-regulation Strategies

Without face-to-face instruction and supervision, online students especially need to self-regulate themselves. Self-regulation refers to the exercise of influence over one's own behavior, and is a systematic effort to direct thoughts, feelings, and actions toward

the attainment of one's goals (Zimmerman, 2000). Self-regulated learners are characterized by their control over learning processes and academic outcomes (Newman, 1998). This includes activities such as appropriate preparation and control of one's own learning process, knowing how to learn, evaluation outcomes, and maintaining motivation and concentration. People self-regulate their learning by monitoring, directing, and controlling their actions in order to acquire information and expertise (Paris & Paris, 2001). Self-regulation is usually split into two major parts, time management and goal setting strategies.

Time Management Skills. Students need to make an overall plan to arrange their time in a practical order in relation to their working schedules. Some highly punctual and self-disciplined individuals might think adults should know how to regulate themselves. But there are also some individuals who are weak in managing things in a time sequence. They need help from instructors. Based on their work and research, Schweizer, Whipp, and Hayslett (2002) provide schedules, calendars, and time completion charts. These tools assist many students in organizing their time and maintaining regular participation in the course.

Apart from the appealing benefits of time-and place-shifted communication for online learners, another benefit is that the start and finish dates can be flexible (Leh & Jobin, 2002). Unfortunately, this benefit has not garnered much attention from researchers and practitioners. A successful professional online course must fit into participants' busy schedules. Participants can get online learning based on their own schedule. Although assignments have weekly due dates, and participants must post to the

discussion area each week, within these guidelines there is freedom to work when it is most convenient (McIntyre & Elbaum, 2000). An AFT survey (2001, Appendix section, item 7B) indicated that self-paced courses and flexible deadlines are mechanisms to promote regular work and interaction. It would be an effective intervention if online students were allowed to arrange their own learning schedules within the overarching framework of the course syllabus. One of the choices students can make in this study is selecting their own assignment due dates.

Goal Setting Skills. As with time management, goal setting is a basic component of self-regulation strategies. Many theories of self-regulation emphasize its inherent link with goals. Goals are involved across the different phases of self-regulation: laying out the overall goal, dividing the general goal into sub-goals, setting priorities, monitoring performance, evaluating progress, and adjusting strategies to ensure success (Zimmerman, 1998). A goal reflects one's purpose and refers to quantity, quality, or rate of performance (Locke & Latham, 1990). By understanding the role of goals, counselors, teachers, and other practitioners will be able to work with students to assist them in learning effective ways to manage their lives. To master these operational techniques and use them through their whole learning process is crucial to online students.

The mechanisms of goals enhancing self-regulation are through their effects on motivation, learning, self-efficacy (perceived capabilities for learning or performing actions at given levels), and self-evaluations of progress (Bandura, 1997a; Schunk, 1995). Initially, people must make a commitment to attain a goal because self-regulation will not affect performance without this commitment (Locke & Latham, 1990). While goal setting

is a common strategy for all professions and for students in conventional learning environments, online students will encounter special challenges in setting and accomplishing their goals, as some of them do not have a fixed schedule and their available time is fragmented. These students must have a more flexible timetable to match these goals. Goals that incorporate specific performance standards are more likely to enhance self-regulation and activate self-evaluations than such general goals as "do my best" or "try hard" (Locke & Latham, 1990). Specific goals raise performance because they specify the amount of effort required for success and boost self-efficacy by providing a clear standard against which to determine progress.

A wealth of evidence supports these goal-setting strategies. Goals need to be realistic. Short-term goals are achieved more quickly, and result in higher motivation and better self-regulation than more temporally distant, long-term goals (Bandura, 1997b; Boekaerts et al., 2000; & Locke & Latham, 1990). It is often not easy to determine progress toward a distant goal (Schunk, 1995). Dividing long-term goals into smaller sub-goals is a practical strategy designed to produce the desired benefits that will strengthen self-efficacy because it allows clear and frequent self-evaluations of progress. Researchers have also found that allowing individuals to set their own goals enhances motivation and self-regulation (Schunk, 1995). Other effective strategies such as setting priorities, self-monitoring progress, and self-evaluation are all effective in helping students improve their learning (Schunk, 2003).

Avoiding Internet Distractions. In the unsupervised learning environment, such as the Internet, there are enormous distractions. Another aspect of support in terms of self-

regulation is to help online students get rid of the distractions from the Internet. Controlling the Internet environment has proven to be an effective solution to prevent online procrastination (Silver & Sabini, 1981). However, according to Muraven and Baumeister (2000), willpower is like a muscle: it gets tired. Willpower weakens as it is exercised. Ultimately, it will lose its power to prevent one from indulging impulses. So, the rudimental solution will be eliminating the distractions, controlling the Internet environment so that it becomes an ideal place where learning can occur as in the quiet classroom or office. One of the elements of technical support in this study is to offer a advice on effective and healthy use of Internet resources.

Technical Support

In 2000, the National Education Association (NEA) and Blackboard Inc. unveiled a research-driven list of 24 measures of quality benchmarks for Internet-based distance learning in higher education. Under the student support benchmarks, this list states:

> Throughout the duration of the course/program, students have access to technical assistance, including detailed instructions regarding the electronic media used, practice sessions prior to the beginning of the course, and convenient access to technical support staff. Questions directed to student service personnel are answered accurately and quickly, with a structured system in place to address student complaints.

With the worldwide growth of teaching and learning on the Internet, student technical support has become an inseparable component of online learning. Offering technical support with accuracy and in a timely fashion to online students is an important task for instructors.

Technology affects online learning quality in four main areas: hardware, software, Internet access, and training. Before online courses begin, students should be required to meet minimum technology requirements and complete training (Leh & Jobin, 2002). Students sometimes submit their assignments after deadlines because of lower grade hardware/software, poor Internet access, or inadequate technological skills, not because of procrastination. Course programs that fail to set realistic minimums for required technologies could make it a difficult experience for learners accessing a course designed with more advanced technology. It is frustrating for a learner to have to figure out the course management software instead of learning the materials at hand (Leh & Jobin, 2002). There is a fundamental need for course designers and instructors to adequately prepare students technologically for the online course they are going to take. Such technical support is especially crucial for home-based users. When the student's accomplishment and satisfaction are affected by inadequate technology preparation, the faculty and institutional reputation are also at risk.

"While education is a great equalizer, technology appears to be a new engine of inequality. Those with limited computer experience will be handicapped in their ability to access knowledge and avail themselves of the ever-increasing variety of learning experience" ("Distance Education," 1999). When teaching an online course, the

instructor has a dual mission: Presenting the course materials effectively and providing technological support.

Social Communication between the Instructor and Students

In the online learning environment, students tend to feel isolated from their peers and the faculty. To reduce the students' sense of isolation and to foster a strong online learning community, faculty teaching online courses must play both intellectual and social, or "nurturing" roles (Mason, 1991). Personal exchanges between the instructor and the students must be of sufficient quality (i.e., depth, tone, length) to communicate a sense of intimacy, openness, and a desire for connectedness or community (Dolence & Norris, 1995). Kearsly (2000, p. 78) believes "a high degree of interactivity and participation" is the "most important role of the instructor in online courses." One study found sufficient interaction to be the single variable predictor of student success (Doherty, 2000). A "sufficient" level of interaction with faculty, however defined, generally creates a "sense of personalization and customization of learning" (Boettcher, 1999, p. 43), and helps students overcome feelings of remoteness—perhaps the greatest obstacle to distance learning (Everhart, 1999).

Based on the effectiveness of social communication between instructors and students, other researchers found concrete approaches to achieving effective results. Sufficient immediacy (Backer, 2001) and frequency (Boettcher, 1999) are two premises for ideal communication. When students report feeling "disconnected", lacking a sense of "belonging", and having to procrastinate on certain assignments, a faculty member's initiative and prompt and frequent social communication becomes more pronounced. As

a rule, Woods (2002) asserts that it is very helpful to send out emails to students at the beginning of each week that include background on course content along with reminders about upcoming assignments, due dates, and the like. He also believes an instructor's emails place strong emphasis on student participation in group discussion as part of the online learning experience and encourage high levels of interaction with faculty and other students through a variety of communication channels. Sending out a welcome letter to students before the class begins and setting up a "Welcome" Web page that becomes the first page students see when they enter the course gives a positive effect on the student's sense of being cared for (Schweizer, Whipp, & Hayslett, 2002).

To enhance the quality of online community, and to reduce barriers for developing relationships, additional communication cues in the form of icons, emoticons (e.g., : -) or ☺) and textual cues are encoded as part of regular textual exchanges to compensate for the lack of verbal and nonverbal cues (Walter, 1996; Walter, Anderson & Park, 1994). Woods and Keeler (2001) also explored the effect of additional communication cues in the form of audio emails as a way of enhancing faculty-student relationships and increasing levels of student participation in online learning.

In an attempt to meet the needs of online students, the faculty and administrators in a southern Virginia university were highly interested in using more instructor-initiated personal interactive emails with students. As a result, faculty received favorable student comments in relation to the amount and depth of instructor-student higher frequency email communication (Woods, 2002). As one of the facilitators of this initiative, Woods (2002) reiterated after his experiment that a higher frequency of instructor-initiated personal interaction with students, apart from required group discussion, would result in

more positive student perceptions of and participation in the online learning experience than a lower level of frequency.

Making Choice and Taking Charge

While most of the support strategies from the instructors are necessary for online students, to empower students from within, online course designers need to take a look at the other side of the coin— how to involve students themselves and empower them to take initiatives. Given the diverse population of online learners, there are opportunities for creativity and enthusiasm while working in a more accommodating learning environment.

People all learn in different ways and have their own preferred methods of doing things (McNeill, 2003). The underpinning task of educators is to engage students in goal-directed, self-regulated, and autonomous behavior (Burgstahler, 2001), and to encourage them to become effective learners by means of trying out new and different ways of learning (McNeill, 2003). McNeill further argued that many students experience failure because they use inappropriate learning strategies. No one learning style is better than another; it is simply that people learn in different ways. The best learning style is one that works for an individual in a particular situation.

Graham et al. (2001a) indicate that the rationale to allow students to work at their own pace throughout the semester without intermediate deadlines was that many students needed flexibility because of full-time jobs. However, regularly distributed deadlines encourage students to spend time on tasks and to help those with busy schedules avoid procrastination.

Another strategy to motivate students is to enforce an effective reward and punishment system. The use of rewards and punishments in learning management has been controversial when motivation strategies are under discussion. Deci and Ryan (1992) used the concepts of intrinsic motivation and internalized extrinsic motivation to examine self-regulation of learning. They defined internalized extrinsic motivation as behavior that has a separable consequence (reward or goal), but is integrated into a person's life so that the person's behavior is wholly volitional. Thus, the goal can be an extrinsic reward. They also found that high quality learning is associated with intrinsic motivation and fully internalized extrinsic motivation. Covington (1999) also explored the coexistence of intrinsic and extrinsic rewards. However, research also states with convincing evidence that extrinsic rewards do not have a positive effect and can actually have a negative long-term effect (Johnson, 1999; McCullers, Fabes, & Moran, 1987). It is possible to control only low-level, physical behaviors (Brophy, 1998; Jensen 1998). Bandura (1977b) found that "different aspects of human behavior are regulated by different combinations and levels of incentives" (p.114). The conclusion is that educators are supposed to develop different reward systems that will match the motivational needs of various learners (Wilson, & Corpus 2001).

Summary

Based on the understanding of the mechanisms of academic procrastination in general and online procrastination in particular, with a brief review of the approaches intended to address procrastination in the online learning environment, and with consideration of online learners independent learning characteristics, this dissertation will

focus on empowering and involving students to take initiatives by making choices on assignment due dates, rewards and punishments, and reminders, which will be called the Choice Package. The intention for the Choice Package is to intrinsically motivate students to take charge of their own learning in the self-regulation approach. Another intervention is called the Support Package, which covers the instructor-initiated support on self-regulation skills (including three items: time management skills, goal setting skills, and how to avoid Internet distractions), technical support, and social communication between instructor and students. This package is trying to meet students' common and special needs with the consideration of the unique features of online learning and the basic requirement of instructional principles. It is hoped that with the implementation of these two parallel packages, online students will become active learners in terms of making better use of the advantages online learning offers, becoming more adaptive to the online learning environment, and, as a result, reducing online procrastination, which should raise their satisfaction level of online courses, and improve their academic performance. Hence, the following hypotheses.

Hypotheses

1. Students who are given flexibility on assignments will have less procrastination on the assignments, higher academic performance, and higher satisfaction rating on the online course than those who are not given flexibility on assignments.
2. Students who are given flexibility on assignments and make choices due to the given flexibility will have less procrastination on assignments, higher academic

performance, and higher satisfaction rating on the online course than those who are given flexibility on assignments but refuse to make any choice.

3. Students who receive enhanced support from the instructor will have less procrastination on assignments, higher academic performance, and higher satisfaction rating on the online course than those who don't receive enhanced support from the instructor.
4. Students who are given flexibility on assignments and receive the enhanced support from the instructor will have less procrastination on assignments, higher academic performance, and higher satisfaction rating on the online course than those who are not given flexibility on assignments and who don't receive enhanced support from the instructor.
5. Students who have the opportunity and make choices related to the flexibility of assignments and receive enhanced support from instructors will have less procrastination on assignments, higher academic performance, and higher satisfaction rating on the online course than any other group.

CHAPTER III

METHODOLOGY

Introduction of Interventions

The interventions in this study include two packages: the Choice Package and the Support Package. The Choice Package is intended to activate student intrinsic and extrinsic motivation, in other words, to encourage them to take charge of their own learning in the non-supervised learning environment; on the other hand, the Support Package will provide multifaceted help tailored for online students to manage their learning process, to get adapted to the computer and Internet technology, and to communicate with the instructor more effectively.

The Choice Package

The Choice Package consists of three items: choice of assignment due dates, choice of rewards and punishments, and choice of reminders. These items are all related to how to encourage, motivate, and help students complete their assignments on time.

Choice of Due Dates. There are 24 due dates for the assignments of the ECI 301 online course. Generally speaking, there are no specific limitations for students to decide their own due dates for each assignment. But in practice, piling up all assignments at the end of the semester is not reasonable as a choice and not acceptable as a practical working procedure. It is suggested that assignments be divided into four or five portions in terms of their average workload. Each group of assignments should be submitted by the end of each month and before the final exam. Students are required to think

reasonably and rationally and make their choices based on their working schedules, workloads, goals, time preferences, etc.

Choice of Rewards and Punishments. Students who make a due date choice may follow or fail to follow the self-made due dates when submitting their assignments. If they turn in their assignments ahead of or just on the self-made due dates, they deserve to be rewarded; if they fail to turn in their assignments on the self-made due dates, they deserve to be punished. For practical purposes, a limit for rewards and punishments is suggested to range from 1-5 points on a 100-point scale. Students can decide the number of points for rewards and punishments if they follow or break the rule (due dates) they set for themselves. They are free to choose both rewards and punishments, or either of them. The purpose for offering the choice is to see how students regulate themselves given these alternatives.

Choice of Reminders. Students have the opportunity to choose which course items they need reminders for, how they wish to be reminded (email, phone call, etc.), how often they need to be reminded, and at what time the reminder should be received.

The Support Package

The Support Package consists of three categories and nine items:

1. Self-regulation support
    - Support for time management skills
    - Support for goal setting skills
    - Support for avoiding distractions on the Internet
2. Technical support

- Step-by-step illustrations with real screen graphics to demonstrate how to complete the procedural works, such as registering online or obtaining an ODU email account
- Step-by-step illustrations with real screen graphics demonstrating how to do assignments, how to complete quizzes, or how to enter into the online discussion room
- Mentoring on computer and Internet basics, such as how to select a file format, use a search engine, or understand a URL

3. Social communication between teacher and students
   - Instructor communication with students over the telephone or through email about subject or course content in a more social way to build close teacher-students relationships
   - Instructor communication with students over the telephone or by email about matters beyond the subject and course content, such as learning experience, information technology, difficulties in learning, etc.
   - Emails for holiday greetings, get-well cards, Quote of the Day, Website of the Week, etc.

Subjects

About a hundred and fifty four-year college students and graduate students taking the undergraduate online course ECI 301 (ECI 301 Online Course Title: The Social and Cultural Foundation of American Education) at Old Dominion University will participate in this study. These students are a diverse group in terms of age, gender, working status,

academic levels, and computer competency levels. Their ages range from 18 to over 50. Some have full-time jobs, some hold part-time jobs, and some are full time students who are not employed. What they have in common is that they will be classroom teachers in their future career.

Research Design

This study will use a 2 x 2 factoral design with a nested factor. The treatments will involve two factors: the Choice Package and the Support Package. Each factor has two levels, Given Choice Group vs. Not Given Choice Group and Given Support Group vs. Not Given Support Group. There is one factor nested in the Given Choice Group with two levels, Choice Group vs. No Choice Group. Table 1 illustrates the design.

Table 1

Factoral Design Matrix

		Given Support Group	Not Given Support Group	Total 150
Given Choice Group	Choice Group			100
	No Choice Group			
Not Given Choice Group		25	25	50

Group Assignment and Control

The Given Choice Group and Not Given Choice Group will be assigned randomly during the first week of the semester by using the systematic sampling method based on the roster sorted by last name. Since the nested factor in the Given Choice Group has two levels, Choice Group vs. No Choice Group, to balance the cell sizes, the Not Given Choice Group will have 50 subjects and the Given Choice Group will have 100 subjects. At this moment, the experimenter does not know how many of the 100 subjects randomly assigned into the Given Choice Group will fall into the Choice Group and how many of them will be left in the No Choice Group. This will depend on how many of them will choose the Choice Package. Thus, the assignment of the Choice Group and No Choice Group will not be controlled by the experimenter, but naturally decided by the subjects' inclination of making a choice or not making a choice.

The Given Support Group and Not Given Support Group will be assigned randomly using the same systematic sampling method. Half of each the Choice Group, No Choice Group, and the Not Given Choice Group will fall into the Given Support Group, while the other halves of those groups will fall into the Not Given Support Group. This experimental study will last for one full fall semester.

The subjects are scattered at Old Dominion University's main campus and 37 ODU sub-campuses. They meet only twice at the respective campuses during the entire semester, once at the two hour-orientation meeting at the beginning of the semester, and the other at the support session four weeks later after school begins (many of the subjects will not attend the second meeting if they have no questions about the course). The subjects' only formal interactive activity is their asynchronous online group work. There

is very little possibility of diffusion. They will have the same course content, will be instructed by the same teacher, and will be required to complete the same assignments.

Procedures

The Choice Package will be made available to the Given Choice Group at the beginning of the semester. Subjects in this group will have the opportunity to make a choice or not make a choice. Those who choose the Choice Package will email their choice with detailed descriptions to the instructor by the end of the second week of the semester. They are free to choose the whole package or some of the items in the package. Thus, they fall into the Choice Group. The instructor will manage the course according to the individualized choices. Those who feel comfortable with syllabus-mandated requirements will not want to make a choice. Therefore, they fall into the No Choice Group. Subjects in the Not Given Choice Group will not be exposed to the Choice Package. They will follow the syllabus' requirements to do their course work as usual.

The Support Package will be made known and the support documents will be delivered through emails to all the subjects in the Given Support Group once the grouping has been done in the second week of the semester. From then on the instructor will re-enforce the Support Package to the Given Support Group by emails and telephone calls, checking and directing the application of the Support Package. The instructor will also offer special support tailored to those with special difficulty with their coursework. Student reaction to the Support Package will be promptly responded to, recorded, and analyzed. Assignment turning-in-time will be closely supervised during the experiment and they will serve as an indicator of the presence of learning problems.

The documents of the Support Package will be delivered following a *Support Package Delivery Timetable* (Appendix I), which illustrates the time sequence of the delivery of the support and social communication documents.

By the end of the semester, through emails, students will take six surveys, four of which will be delivered to all subjects and two to be delivered to their respective groups. The Demographics of the Online Student Information Survey (Appendix A), the Survey on Factors Impeding On-Time Assignment Completion (Appendix B), the Computer/Internet Competency Survey (Appendix C), and the Online Student Satisfaction Survey (Appendix D), will be delivered to all subjects. The Survey of Student Reaction to the Choice Package (Appendix E) will be administered in the Given Choice Group, and the Survey of Student Reaction to the Support Package (Appendix F) will be administered in the Given Support Group. The Demographics of the Online Student Information Survey (Appendix A) will be delivered two weeks after the semester begins. The other five surveys will be sent to relevant subjects a week before the final examination, and they are required to submit the survey no later than two days after the final exam.

Measures and Data Collection Methods

There are four dependent variables involved in this study: procrastination frequency on assignments, procrastination magnitude on assignments, academic performance, and student satisfaction rating with the course. The quantitative data will be gathered from the Demographics of the Online Student Information Survey (Appendix A), the Survey on Factors Impeding On-Time Assignment Completion (Appendix B),

Computer/Internet Competency Survey (Appendix C), the Online Student Satisfaction Survey (Appendix D), Task Completion Logs (Appendix G and H), and the scores of unit quizzes and the final exam. Qualitative data will be collected from the Survey of Student Reaction to the Choice Package (Appendix E), and the Survey of Student Reaction to the Support Package (Appendix F).

Demographics of Online Student Information Survey (Appendix A). This survey consists of four items which cover very common demographic information: gender, age, grade, and job status. The data collected with this instrument will be used in descriptive and multiple regression analysis.

Survey on Factors Impeding On-Time Assignment Completion (Appendix B). This is a 7-point Likert scale (from not at all strongly to very strongly) questionnaire measuring how strongly some of the factors affect online procrastination. A test of split-half reliability produced a Pearson correlation coefficient of .88, $p<.001$. The survey will be administered near the end of the semester by email to all participants. The data collected will be used in factor analysis for the first research question: What are the major factors that contribute to online procrastination?

Computer/Internet Competency Survey (Appendix C). This is a 7-point Likert scale (from very uncomfortable to very comfortable) questionnaire measuring subjects' computer/Internet competency. The scale's test-retest reliability was determined in a pilot study conducted in the summer semester in 2003 by the researcher, where a Pearson correlation coefficient of .78, $p<.001$, was obtained. The survey will be administered near the end of the semester by email to all participants. The data collected will be used in the

multiple regression analysis for the second research question: Do age, gender, job-status, and computer/Internet competency have an effect on online procrastination?

Online Student Satisfaction Survey (Appendix D). This is a survey questionnaire with 30 questions, using a 7-point Likert scale (from very dissatisfied to very satisfied) to measure student satisfaction with the course. This measure was developed in reference to the Priority Survey for Online Learners (Noel-Levitz, Inc., 2003). The Cronbach's alpha in the reliability test yields .807, $p<.001$, in the pilot study conducted by the researcher in the summer semester of 2003. This survey will be conducted at the end of the semester to all the subjects in the study.

Survey of Student Reaction to the Choice Package and Survey of Student Reaction to the Support Package (Appendix E and F). These are two qualitative data collection instruments administered near the end of the semester.

Task Completion Log for Choice Group Members and Task Completion Log for Other Group Members (Appendix G and H). These are two objective measures which record on a daily basis the data each subject submitted assignments and the number of days the assignment was delayed if an assignment was late. As a result, by the end of the semester, both the procrastination frequency and the procrastination magnitude on assignments for each student can be calculated. There are a total of 24 assignments for this course. The formulae for calculating procrastination frequency and magnitude are as follows.

Procrastination Frequency = Total times delayed / 24 (Total assignments)

Procrastination Magnitude = Total days delayed (for all the assignments) / total times delayed

Final Exam and Unit Quiz Scores. Academic performance will be measured for all subjects by the average score of the final examination (which accounts for 50% of the final total score) and the six unit quizzes (which account for 50% of the final total score). There is no midterm exam for this course.

Threats

As a between-subject design, certain threats might exist. Diffusion will not be a serious problem in this study, since the subjects do not have much chance to get together, and the online learning environment per se is an ideal venue for control.

The nested factor (two levels: the Choice Group and the No Choice Group) in the Given Choice Group might cause statistical problems, since the subjects' inclination to make a choice or to refuse to make a choice is not controlled. If the number of subjects in the Choice Group and the No Choice Group are far out of balance, then a statistical issue is inevitable.

Data Analysis

This research will mainly utilize the quantitative method to analyze the raw data with qualitative data analytic techniques as a subordinate approach. In response to the first research question ("What are some of the main factors that contribute to online student procrastination?"), a factor analysis will be conducted to determine some of the main factors leading to online procrastination based on the data collected from the Survey on Factors Impeding On-Time Assignment Completion (Appendix B). The factors on the survey list will include personal traits, such as perfectionism, task aversion, and lower

confidence; overworking factors, such as child rearing, household chores, a full–time job, and overloaded course work; Internet addiction factors, such as chatting on the Web, playing online games, and surfing favorite sites; technical factors such as computer/Internet skills, and other factors mentioned by the students. To answer the second research question ("Do age, gender, job, and computer/Internet competency have an effect on online procrastination and academic performance?"), three multiple regression analyses will be conducted with online procrastination frequency, online procrastination magnitude, and academic performance as the criterion variables, and age, gender, job, and computer/Internet competency as predictors. The result of the multiple regression analyses will indicate how much of the variance in online procrastination frequency, online procrastination magnitude, and academic performance is explained by the four predictor variables (if they happen to be all entered variables), and the relative influence of each of the entered variables. Then, the researcher can conclude based on this study whether age, gender, job, and computer/Internet competency can predict online procrastination and academic performance.

The overall effectiveness of the Choice Package and the Support Package will be examined on the frequency and magnitude of procrastination on assignments, the academic achievement scores, and student satisfaction levels with the course. In response to the five hypotheses, a MANOVA with a nested factor will be conducted with the Choice package as one independent variable (two levels: Given Choice Group vs. Not Given Choice Group), the Support Package as another independent variable (two levels: Given Support Group vs. the Not Given Support Group), and with a nested factor (two levels: Choice Group vs. No Choice Group). An alpha level of .05 was determined a

priori as the level of significance. The researcher will try to discover if there is a main effect of the Choice Package and the Support Package, and an interaction effect of the Choice Package by the Support Package. The experiment will be ideally successful if the last hypothesis proves that the group that makes a choice and receives support will outperform any other group on the four dependent variables.

If the findings support the five hypotheses, then it is reasonable to conclude that empowering students to exercise self-regulation strategies, encouraging students to take charge of their own learning using choices offered by the instructor, helping students through multifaceted approaches, and building a successful learning community with immediate, frequent, and intimate social communications, are effective strategies to facilitate online student learning. Choice and support are the two stimuli that can arouse students' intrinsic and extrinsic motivation for learning, and can enable them to take full advantage of online learning opportunities and their own preferred initiatives. Choice and support, so designed as the Choice Package and the Support Package, and used in such a way as this experiment illustrates, are "the effective interventions that can help prevent students from online academic procrastination" (the third research question is answered).

Combining methods in a single study is triangulation (Rossman & Wilson, 1985). To gain an overall and comprehensive understanding of the holistic picture needs both "numbers" and "words". It is the ultimate goal for any inquiry approach to seek a profound, overall, and comprehensive understanding of the research question. It is reasonable and rational to employ multiple inquiry methodological approaches to adapt to the needs of knowing the complicated unknown world. The purpose and function of "numbers" and "words" are different, yet complimentary. Qualitative data will be used to

corroborate the quantitative findings in this study. While quantitative methods use standardized instruments to measure predetermined response categories to give a broader generalizability of findings, qualitative data provide depth and detail through direct quotation and careful description of program situations, events, people, interaction, and observed behaviors, specifically to single out some extreme characteristics that might either comply with or contradict the common characteristics. There are always exceptions to the general findings in a social study. But selecting extreme cases for in-depth probing with "words" has proven to be a very effective approach for corroborating and elaborating main findings. "Numbers" and "words" can proceed in parallel fashion without the violation of paradigmatic assumptions when they unleash their respective strength that ultimately provides a better and clearer understanding of the complexity of the holistic picture.

The advantage of triangulation lies in combining "numbers" and "words" at the data analysis stage of a study where "words" can initiate other clues to new discoveries based on detailed probing, which will lead to a deeper and wider investigation, and, in a chain reaction, will finally result in another new productive exploring circle of inquiry that will later be verified or falsified by quantitative inquiry methods. This is a stage where deductive and inductive reasoning and quantitative and qualitative analysis are combined into an organic whole rather than separate kingdoms; the holistically organic new structure of methods is surely more powerful and advantageous than solely using quantitative methods.

The online learning environment is quite a new phenomenon in the educational arena where comprehensive and synthesized inquiry approaches will surely enhance the exploration for a new educational paradigm and new pedagogical strategies.

CHAPTER IV

FINDINGS AND DISCUSSIONS

Introduction

Both quantitative and qualitative data collected were analyzed with appropriate statistic techniques in this chapter. The analyses are organized in six sections: 1) a factor analysis on student reported factors affecting online procrastination, 2) three multiple regressions on four factors (age, gender, job, computer/Internet competency) obtained from the literature review that many researchers believed were correlated with procrastination and academic performance, 3) a MANOVA on the effects of the Choice Package and the Support Package, 4) a Pearson correlation analysis on the four dependent variables, 5) qualitative analysis on the Choice Package, and 6) qualitative analysis on the Support Package. Interpretations and discussions will immediately follow after findings are displayed in each of the first four sections.

Sample Demographics

Demographic data were obtained from each participant (see Appendix A). Among the 165 participants, 33 were males (20%) and 132 were females (80%), and 95 were undergraduate students (58%) and 70 were graduate students (42%). The average age was 30.67 with a standard deviation of 8.98. It was a female and graduate student dominated adult learning group. Detailed demographic distributions are displayed in Table 2, Figure1, and Figure 2.

Table 2

Sample Demographics (N = 165)

Gender	Male	33	20%
	Female	132	80%
Age	Mean	30.67	
	Standard Deviation	8.98	
	Range	19-56	
Grade	Undergraduate	95	58%
	Freshman	11	6.4%
	Sophomore	16	9%
	Junior	47	28%
	Senior	21	14%
	Graduate	70	42%
	Other*	1	.06%
Job	Full-time job	110	67%
	Part-time or no job	55	33%

* This student was taking the course for teacher certification, not for a degree.

Figure 1. Participants' age distribution

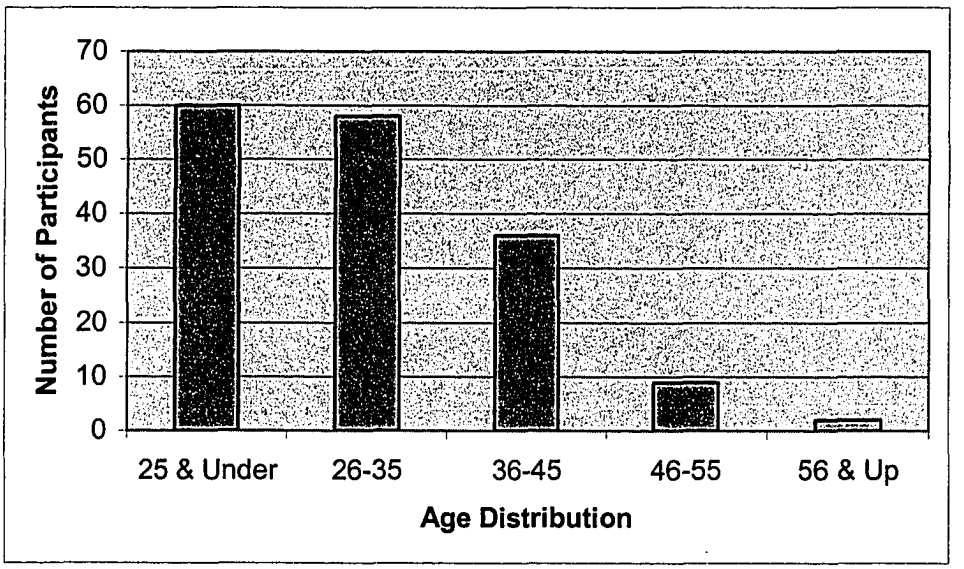
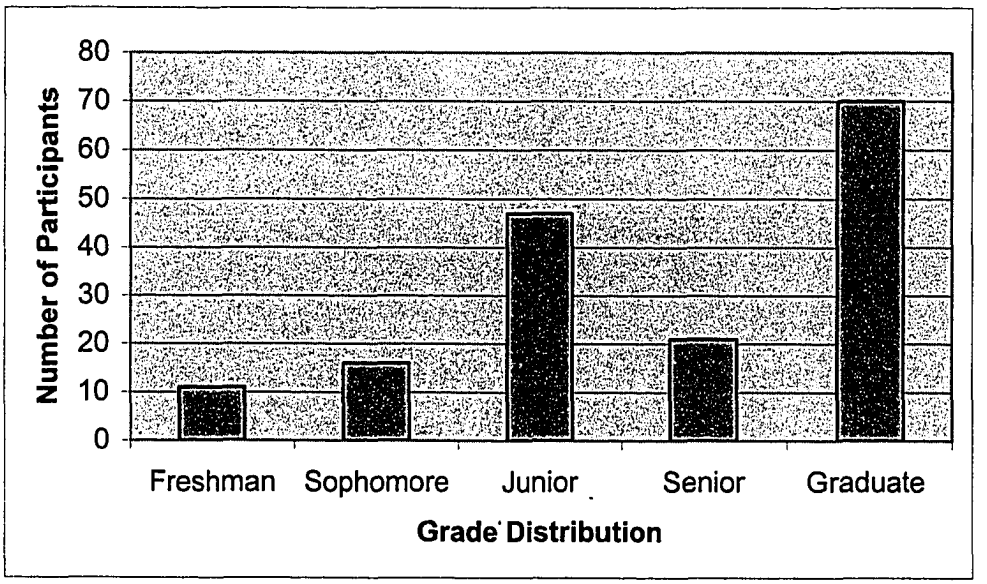


Figure 2. Participants' grade distribution



Subjects Final Loadings in Designated Groups

While the design of this study was in a true experimental model, there were quasi-experimental assignment features involved. The subjects in the nested factor (two levels: Choice Group vs. No Choice Group) within the Given Choice Group were assigned by student choice rather than the experimenter's random manipulation. Table 3 demonstrates the number of subjects in each group after randomized assignment by the experimenter on groups of Given Choice Group, Not Given Choice Group, Given Support Group, and Not Given Support Group, and the subjects' choice nested in the Given Choice Group (those who made a choice or choices fell into the Choice Group, and those who did not make a choice fell into the No Choice Group). The results of the group assignment were close to ideal. Forty-one out of the 109 subjects randomly assigned to Given Choice Group made a choice (or choices), which made group comparison analysis statistically acceptable.

Table 3

Subjects Loading after Randomized Assignment

		Given Support Group	Not Given Support Group	Sub-Total of Nested Factor	Total 165
Given Choice Group	Choice Group	20	21	41	109
	No Choice Group	33	35	68	
Not Given Choice Group		30	26		56
Total		83	82		165

Factors Affecting Online Academic Procrastination

To answer the first research question ("What are some of the main factors that contribute to online student procrastination?"), a 12-item questionnaire (Appendix B) soliciting factors affecting online procrastination was collected by the end of the semester with a response rate of 79.4 % (131 participants responded). A factor analysis was conducted to determine the reasonable number of factors that best represent the underlying dimensionality of the 12 items relevant to online procrastination and to eliminate those items that were irrelevant to the factors obtained.

In the statistic legitimacy test, the Kaiser-Meyer-Olkin Measure of Sampling Adequacy is .674, greater than .6, which was an acceptable level for factor analysis. The significance value of the Nartlett's Test of Sphericity was <.001, which indicated that the data were acceptable for factor analysis.

This factor analysis was conducted in two stages: factor extraction and factor rotation. After running the extraction with the Principle Component solution and the rotation with Varimax rotation procedure, four components were retained based on the eigenvalues (greater than 1). The Scree Plot (Figure 3) indicated that the obtained factors were those with eigenvalues within the sharp descent part of the plot before the eigenvalues started to level off. The rotate solution, as shown in Table 4, yielded four interpretable factors, accounting for a total of 63.13% (Table 4) of the item variance with factor one accounting for 20.99%, factor two16.89%, factor three 12.76%, and factor four 12.48%. One of the original items, "my health problem", was eliminated due to low loadings on all the four factors obtained.

By examining the characteristics of the variables among the four factors, the researcher coded factor one as "self-regulation", factor two as "perfectionism", factor three as "technical skills", and factor four as "outside obligations". (Table 5)

Figure 3. Factor Analysis Scree Plot

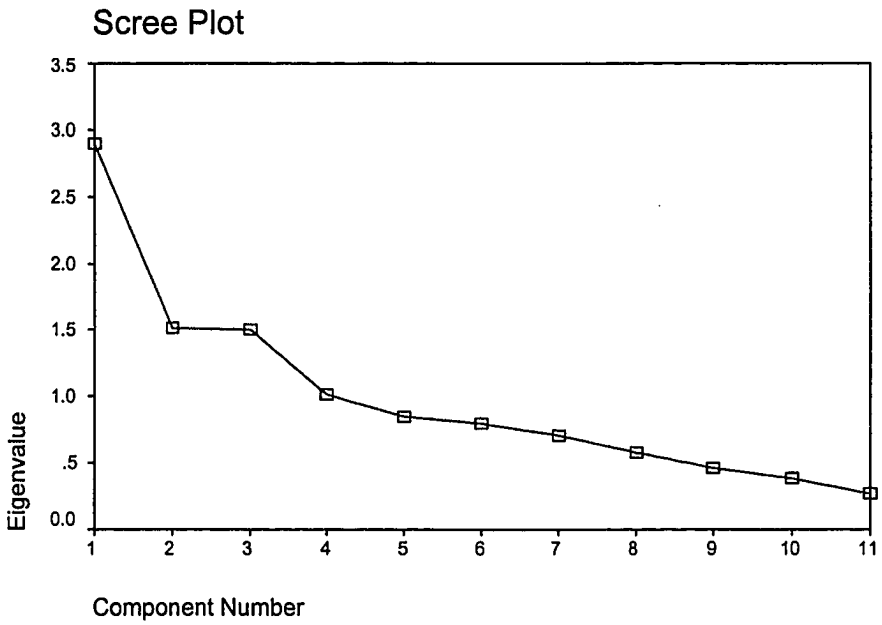


Table 4

Explanation of Total Variance of Obtained Factors

	Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.899	26.351	26.351	2.309	20.995	20.995
2	1.521	13.830	40.180	1.859	16.897	37.892
3	1.505	13.685	53.865	1.404	12.762	50.654
4	1.019	9.267	63.133	1.373	12.479	63.133

Extraction Method: Principle Component Analysis.

Table 5

Factors Affecting Online Student Academic Procrastination

Items	Factors			
	Self-Regulation	Perfectionism	Technical Skills	Outside Obligations
Difficulty getting help	**.839**	.062	.134	.132
Addiction to surfing the web	**.798**	-.022	.110	-.059
Unable to manage work well	**.772**	.339	.053	.047
Anxiety when online	.143	**.859**	.030	.020
Desire to improve work	-.147	**.666**	.326	.229
Perform better at last minute	.275	**.664**	-.170	-.177
Personal work habits	.121	.268	**.680**	.022
Technical skills	.473	.015	**.625**	-.215
Course work load	.025	-.190	**.594**	.270
My job	.118	.082	-.053	**.793**
House chores	.053	-.0439	.160	**.719**

N = 131, $p<.001$.

Discussion on Factor Analysis

Factor "self-regulation" defines the managerial ability to plan and organize one's own online course work such as setting a priority and seeking help through various

channels. Another aspect of "self-regulation" is the willpower to control oneself from engaging in online chores such as email, or in online entertaining activities unrelated to course work. It covers the dimensions of "unable to manage work well", "difficulty getting help", and "addiction to surfing the web".

Some online learners, especially beginners, usually feel anxious when they work online. They often worry about whether what they are doing both in content and format exactly meets the instructor's expectations, and if their submission will reach the instructor as required. Some students continually revise their work as the deadline approaches, and they struggle until the last minute in an attempt to get straight As. The chronic procrastinators often put their course work off until the last minute with the pretext of "I work best at the last minute," or "I work best under pressure." All the above issues that affect online procrastination are addressed by the second factor, "perfectionism".

The third factor, "technical skills", deals with online learners' technical skills. Some students need to learn the necessary technology skills from the beginning in addition to the course content. They perceive that the course work is doubled or tripled, and they tend to feel frustrated or even overwhelmed when they work online due to inferior technological competency.

For adult online learners, job and household chores are typical impediments for on-time assignment completion. But students who have a job and a family are obligated to do their jobs and to fulfill their family commitments. So, the fourth factor, "outside obligations" is an objective factor affecting online academic procrastination that most adult learners have to face. How to address this factor in online teaching and learning

research and practice in terms of course design and assignment requirement is a challenging and rewarding topic for online education researchers and practitioners.

These results were surely not exhaustive. Other factors that students mentioned in the questionnaire beyond the 12 given choices included unstable websites (server was down, link was broken, etc.), poor accessibility during the rush hour of a quiz being due or when general review for the final began, power outage in the local neighborhood, virus attacks, and other individual hardware and software problems. Although these problems are relatively few and sporadic, they still cause student anxiety and frustration, especially when immediate help is not available. These factors are related to a larger social and technical environment beyond the instructor's control, but the instructor can play his or her roles as an effective supporter by making recommendations such as choosing Internet Service Providers carefully, making incremental data backups, avoiding online rush hours, and so on.

Among the 12 items, "difficulty getting help" has the highest loading, which indicates that in the online learning environment, students still expect immediate responses from the instructor by raising a hand or expecting a satisfactory answer the next day in class, as in the traditional classroom environment. Some students did call or email the instructor or TA, but making a call is not easy, and email responses are not always as prompt as expected, and the responses may not be right to the point. Effective and efficient online support demands efforts from both the instructor and the students.

Multiple Regression Analyses

In response to the second research question, whether age, gender, job, and computer/Internet competency have an effect on online academic procrastination and academic performance, three multiple regression analyses were performed with procrastination frequency, procrastination magnitude, and academic performance as criterion variables, and age, gender, job, and computer/Internet competency as predictor variables. To identify clearly the comparative correlations between the criterion variable and each of the predictor variables, the backward method was used for the multiple regression analyses.

The regression coefficients for procrastination frequency are listed in Table 6. The results indicate that there was a significant negative relationship between online procrastination frequency and age, t (148) = -2.528, $p < .05$. In another words, the older the students, the less frequently they procrastinated.

Table 7 shows a significant relationship between online procrastination magnitude and gender, t (148) = -1.973, $p < .05$. Since male was coded as 0 and female as 1 in the database, this result indicated that the females' procrastination magnitude tends to be smaller than the males'.

Table 8 indicated that age and Computer/Internet competency strongly predicted academic performance, t (148) = 3.879, $p<.001$, and t (148) = 4.068, $p<.001$ respectively. The multiple regression results suggest that those who are older (in the 26-56 year old group rather than in the 18-25 year old group) and those who are more competent in computer/Internet skills perform better academically than their counterparts.

Table 6

Summary of Multiple Regression Analysis for Gender, Age, Job, and Computer/Internet Competency Predicting Online Procrastination Frequency (N = 148)

Model	Variables	B	SE	Beta	*t*	Sig.
1	(Constant)	.400	.101		3.945	.000
	Gender	.011	.085	.015	.180	.857
	Job	.054	.051	.089	1.051	.294
	Age	-.131	.050	-.223	-2.635	.009
	Internet Competency	-1.113	.015	-.061	-.748	.456
2	(Constant)	.408	.092		4.451	.000
	Job	.053	.051	.088	1.045	.298
	Age	-.130	.049	-.223	-2.638	.009
	Internet Competency	-.011	.05	-.060	-.742	.459
3	(Constant)	.349	.046		7.662	.000
	Job	.051	.051	.085	1.009	.315
	Age	-.133	.049	-.228	-2.709	.008
4						
	(Constant)	.375	.038		9.997	.000
	Age	-.119	.047	-.204	**-2.528**	**.013***

*p<.05.

Table 7

Summary of Multiple Regression Analysis for Gender, Age, Job, and Computer/Internet Competency Predicting Online Procrastination Magnitude (N = 148)

Model	Variables	B	SE	Beta	*t*	Sig.
1	(Constant)	16.179	.5.566		2.907	.000
	Gender	-5.909	3.188	-.152	-1.854	.066
	Job	3.840	2.808	.117	1.368	.174
	Age	-1.266	2.722	-.040	-.465	.643
	Internet Competency	-.178	.817	-.018	-.218	.828
2	(Constant)	15.353	3.588		4.251	.000
	Gender	-5.956	3.173	-.153	-1.874	.063
	Job	3.806	2.794	.116	1.362	.175
	Age	-1.311	2.705	-.014	-.484	.629
3	(Constant)	14.759	3.341		4.302	.000
	Gender	-6.040	3.158	-.156	-1.912	.058
	Job	3.428	2.676	.104	1.281	.202
4						
	(Constant)	17.241	2.837		6.077	.000
	Gender	-6.237	3.162	-.161	**-1.973**	**.050***

* p = .05.

Table 8

Summary of Multiple Regression Analysis for Gender, Age, Job, and Computer/Internet Competency Predicting Academic Performance (N = 148)

Model	Variables	B	SE	Beta	*t*	Sig.
1	(Constant)	62.342	3.057		20.384	.000
	Age	5.128	1.495	.267	3.430	.001
	Internet Competency	1.794	.449	.300	3.998	.000
	Job	1.677	1.542	.085	1.087	.279
	Gender	-.300	1.751	-.013	-.172	.864
2	(Constant)	62.102	2.761		22.489	.000
	Age	5.113	1.488	.266	3.437	.001
	Internet Competency	1.790	.447	.300	4.008	.000
	Job	1.694	1.534	.086	1.105	.271
3	(Constant)	62.825	2.685		23.400	.000
	Age	5.558	1.433	.290	**3.879**	**.000***
	Internet Competency	1.815	.446	.304	**4.068**	**.000***

* $p < .001$.

Discussion on Multiple Regression Analyses

Online student self-regulation ability and learning outcomes vary with age and gender. Previous reports in the literature concluded that females and older adults tend to work quite well in online courses, but males and younger adults tend to require the structure and discipline provided by the traditional classroom setting (Davidson-Shivers, 2001; Ladewski, 1996; Young, 2001a; Young, Dewstow, & Mc Aporran, 1999). The three multiple regressions analyses conducted in this study partially echoed the above conclusions, that older adults (26 and older) had lower procrastination frequency (t = -2.528, p<.013) and performed better academically than younger adults (25 and younger). (t = 3.879, p<.001). Females exhibited smaller procrastination magnitude than males (t = -1.973, p<.05).

It is unanimously agreed in the literature that computer/Internet competency has a great influence on academic performance. The findings in this study strongly corroborate this conclusion, t = 4.068, p<.001. Although computer/Internet competency did not significantly predict online procrastination, the analysis revealed the negative correlation between them that the higher the computer/Internet competency, the lower the procrastination frequency, (t = -.742, p<.459), and magnitude (t = -.218, p<.828).

Job was the only predictor that was excluded in all three multiple regression analyses. It did not significantly predict online procrastination or academic performance in the analyses.

Impacts of the Choice Package and the Support Package

In order to test the five hypotheses, a Multiple Analysis of Variance (MANOVA) with Nested Factor was conducted with the Choice Package and the Support Package as the independent variables, and procrastination frequency, procrastination magnitude, student satisfaction rating with the course, and academic performance as the dependent variables. A factor (two levels: Choice Group and No Choice Group) was nested in the Given Choice Group.

As MANOVA is designed to test for interactions and main effects, and as a rule of thumb, when multiple dependent variables are involved, it is statistically a better choice to use MANOVA instead of using ANOVA on each one of the dependent variables. Since there was a nested factor involved in the design, this MANOVA was performed with SPSS Syntax commands rather than common menu commands.

Table 9 shows the statistically significant effects the Choice and Support treatments had on the dependent variables. The Given Choice treatment had significant effects on procrastination frequency, $F(1, 163) = 7.822, p = .006$, and procrastination magnitude, $F(1, 163) = 6.504, p = .012$, and academic performance, $F(1, 163) = 5.683$, $p = .018$. The Given Support treatment had a significant effect on student satisfaction rating with the course $F(1, 163) = 7.926, p = .005$, and academic performance, $F(1,163) = 5.811, p = .017$. The Given Support by Choice treatment interacted significantly on academic performance $F(1, 163) = 7.544, p<.007$, and the interaction between Given Support and Given Choice treatment was marginally significant on academic performance, $F(1, 163) = 3.325, p = .070$.

Table 9

Summary of MANOVA Tests

Independent Variables	Dependent Variables	*df*	Mean Square	*F*	Sig.
Choice[a]	Satisfaction with Course	1	.685	.558	.456
	Procrastination Frequency	1	.471	6.425	.012*
	Procrastination Magnitude	1	490.560	2.031	.156
	Academic Performance	1	132.503	1.677	.197
Given Support[b]	Satisfaction with Course	1	9.738	7.926	.005*
	Procrastination Frequency	1	.091	1.242	.267
	Procrastination Magnitude	1	282.863	1.171	.281
	Academic Performance	1	459.163	5.811	.017*
Given Choice[c]	Satisfaction with Course	1	.398	.324	.570
	Procrastination Frequency	1	.574	7.822	.006*
	Procrastination Magnitude	1	1571.195	6.504	.012*
	Academic Performance	1	449.019	5.683	.018*
Given Support by Choice	Satisfaction with Course	1	.089	.072	.788
	Procrastination Frequency	1	.007	.096	.756
	Procrastination Magnitude	1	1.965	.008	.928
	Academic Performance	1	596.098	7.544	.007*

(Continued)

Table 9

Summary of MANOVA Tests (Continued)

Independent Variables	Dependent Variables	*df*	Mean Square	*F*	Sig.
Given Support by	Satisfaction with Course	1	.225	.183	.669
Given Choice	Procrastination Frequency	1	.002	.022	.881
	Procrastination Magnitude	1	5.561	.023	.880
	Academic Performance	1	262.734	3.325	.070

* $p<.05$, two tails.

[a] Nested factor: Choice vs. No Choice, nested in the Given Choice Group, N = 109.

[b] Factor: Given Support vs. Not Given Support, N = 165.

[c] Factor: Given Choice Group vs. Not Given Choice Group, N = 165.

While Table 9 gives a general picture on the significant effects of the two treatments, Tables 10 through 14 provide more detailed displays of the effect magnitude by mean comparison between groups.

Table 10

Mean Difference between Choice Group and No Choice Group

Dependent Variable	Choice (N = 41)	No Choice (N = 68)	Mean Difference
Satisfaction with Course	5.715	5.879	-.164
Procrastination Frequency	.186	.321	-.135*
Procrastination Magnitude	8.078	12.459	-4.381
Academic Performance	79.345	77.046	2.299

P < .001.

Table 11

Mean Difference between Given Choice Group and Not Given Choice Group

Dependent Variable	Given Choice (N = 109)	Not Given Choice (N = 56)	Mean Difference
Satisfaction with Course	5.807	5.692	0.115
Procrastination Frequency	.271	.380	-0.109*
Procrastination Magnitude	10.851	16.869	-6.018*
Academic Performance	77.927	74.678	3.249*

* p<.05.

Table 12

Mean Difference between Given Support Group and Not Given Support Group

Dependent Variable	Given Support (N = 83)	Not Given Support (N= 82)	Mean Difference
Satisfaction with Course	6.108	5.417	0.691*
Procrastination Frequency	.269	.323	-0.054
Procrastination Magnitude	10.855	14.082	-3.224
Academic Performance	77.942	76.119	1.823*

* p<.05.

Table 13

Mean Difference between Choice by Support Group and No Choice by Not Given Support Group

Dependent Variable	Choice& Given Support (N = 20)	No Choice & Not Given Support (N = 35)	Mean Difference
Satisfaction with Course	6.050	5.486	0.564
Procrastination Frequency	.150	.341	-0.191
Procrastination Magnitude	6.422	13.837	-7.415
Academic Performance	82.500	78.743	3.757*

* p<.05

Table 14

Mean Difference between Given Choice by Given Support Group and Not Given Choice by Not Given Support Group

Dependent Variable	Given Choice & Given Support (N = 53)	Not Given Choice & Not Given Support (N = 26)	Mean Difference
Satisfaction with Course	6.189	5.385	0.804
Procrastination Frequency	.245	.406	-0.161
Procrastination Magnitude	9.322	18.674	-9.352
Academic Performance	78.075	73.423	4.652*

* p<.05

Figure 4, Figure 5, Figure 6, and Figure 7 describe the mean differences of each group.

Figure 4. Mean Comparison of Procrastination Frequency

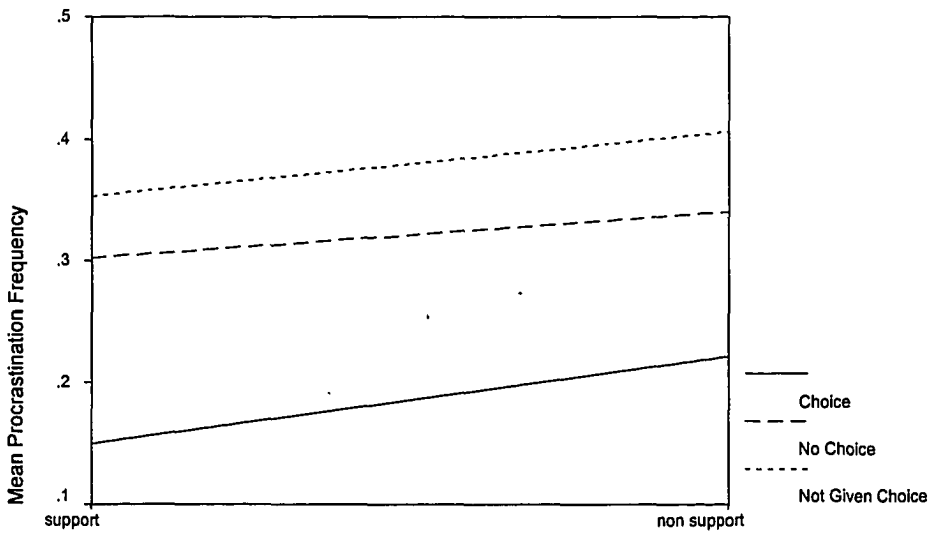


Figure 5. Mean Comparison of Procrastination Magnitude

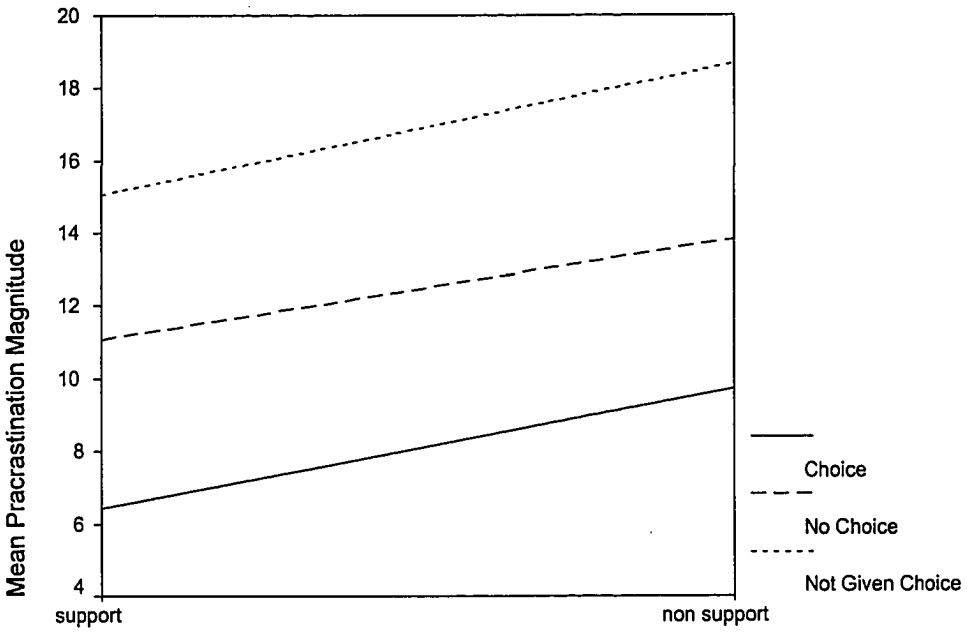


Figure 6. Mean Comparison of Satisfaction with the Course

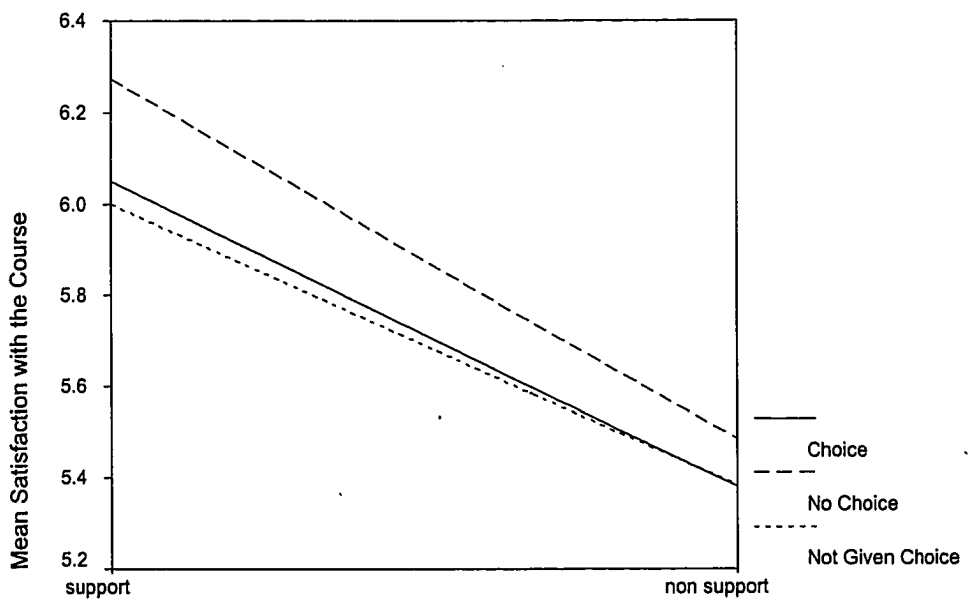
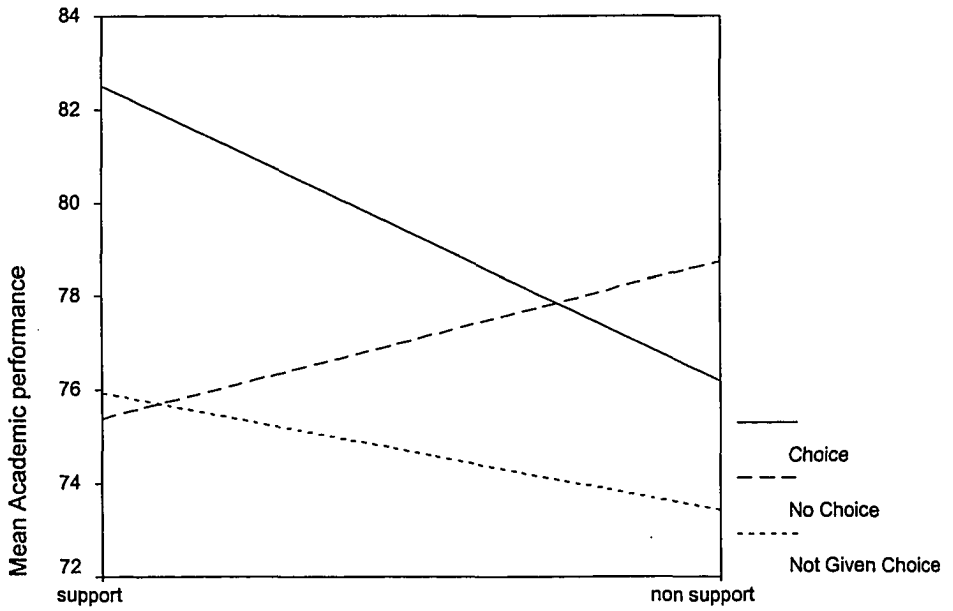


Figure 7 Mean Comparison of Academic Performance



Discussion on MANOVA Analysis

The following discussion is organized by hypotheses. It will focus on the significant effects of the individual Choice Package and the individual Support Package and their combined impact on the dependent variables, which provide answers to the third research question: "What are the effective interventions that can prevent students from online academic procrastination?"

Hypothesis one: Students who are given flexibility on assignments will have less procrastination on assignments, higher academic performance, and higher satisfaction rating on the online course than those who are not given the flexibility on assignments.

The given choice treatment was effective in reducing procrastination frequency $F = 7.822$, $p = .006$, and procrastination magnitude, $F = 6.504$, $p = .012$, and in improving academic performance, $F = 5.683$, $p = .018$.

Hypothesis two: Students who are given flexibility on assignments and make choices out of the given flexibility will have less procrastination on assignments, higher academic performance, and higher satisfaction rating on the online course than those who are given the flexibility on assignments but refuse to make any choice.

Students who were given the Choice Package and chose to use the Choice Package had lower procrastination frequency, $F = 6.425$, $p = .012$. There were no significant effects on satisfaction rating and other dependent variables.

Hypothesis three: Students who receive enhanced support from the instructor will have less procrastination on assignments, higher academic performance, and higher satisfaction rating on the online course than those who do not receive enhanced support from the instructor.

Enhanced support from instructors had a significant effect on academic performance, $F = 5.811$, $p = .017$, and was the most effective in raising the satisfaction rating for the course, $F = 7.926$, $p = .005$.

Hypothesis four: Students who are given flexibility on assignments and receive enhanced support from the instructor will have less procrastination on assignments, higher academic performance, and higher satisfaction rating on the online course than those

who are not given flexibility on assignments and who do not receive enhanced support from the instructor.

The given choice by given support interaction was marginally significant on academic performance, $F = 3.325$, $p = .070$. This also explained that the choice by support treatment had an effect on academic performance, which was consistent across other related groups.

Hypothesis Five: Students who are given and make choices out of flexibility on assignments and receive enhanced support from instructors will have less procrastination on assignments, higher academic performance, and higher satisfaction rating on the online course than any other group.

The choice by support interaction had a significant effect on academic performance, $F = 7.544$, $p = .007$. Except on satisfaction rating, this group (the group that was given choices and made a choice or choices, and received enhanced support from instructors) performed the best among all groups in reducing procrastination frequency (mean = .150, sample average mean is .31) and magnitude (mean = 6.422, sample average mean = 12.85), and improving academic performance (mean = 82.50, sample average mean = 76.90).

Thus far, a conclusion can be drawn from the above discussion that the Choice Package was effective in reducing online academic procrastination and improving academic performance, while the Support Package greatly raised student satisfaction rating with the course. The implementation of both packages in combination was

effective in achieving the intended goals: helping online students overcome academic procrastination, raising student satisfaction rating, and achieving better academic performance.

Correlation Analysis on Dependent Variables

The correlations among the four dependent variables were examined in a Pearson correlation analysis (Table 15). This correlation matrix shows a negative direction in correlation between both procrastination frequency and magnitude, and course satisfaction rating ($r = -.084$, and $r = -.109$). The correlation matrix demonstrates both procrastination frequency and magnitude were negatively related to academic performance ($r = -.300$, $p<.001$, and $-.173$, $p<.05$), which indicates that higher course satisfaction rating and better academic performance predict less procrastination frequency and smaller procrastination magnitude. Not surprisingly, procrastination frequency and magnitude were strongly correlated with each other ($r = .514$, $p<.001$). Course satisfaction rating and academic performance were positively correlated ($r = .204$, $p<.001$), predicting that those who were more satisfied with the course also performed better academically.

Table 15

Correlations among Dependent Variables (N = 165)

	Satisfaction with Course	Procrastination Frequency	Procrastination Magnitude	Academic Performance
Satisfaction with Course	1	-.084	-.109	.204**
Procrastination Frequency	-.084	1	.514**	-.300**
Procrastination Magnitude	-.109	.514**	1	-.173*
Academic Performance	.204**	-.300**	-.173*	1

**. p<.001 (2-tailed)

*. p<.05 (2-tailed)

Discussion on Correlation Analysis

An interesting aspect worth mentioning is that the procrastination frequency and the procrastination magnitude were not correlated as closely as the researcher predicted (.514, p<.001). Based on daily observation and student email responses, some of the

reasons for this finding might be that those who had very high procrastination magnitude were not necessarily those who procrastinated frequently. The high magnitude procrastinators were oftentimes those who had special or unexpected personal, family, or job related issues, such as a family death, or personal or family member health problems. These high magnitude procrastinators usually would email the TAs explaining the reasons why they could not turn in the assignments in a timely manner. Female adult learners faced more difficulties in managing their online course work when they were rearing babies. Nicole (pseudonym), a female graduate student of 30, grumbled in her email to the TA:

> I really wanted to finish the assignment on time, that was the way I did things before my daughter was born. But now everything is a mess! I need to take her to the doctor every two days recently. Maybe it is a wrong decision for me to take the course at this moment.

Child rearing and house chores consumed much of the female students' time, and unexpected problems often occurred, which made it more difficult for them to make up the lost days in a short period of time.

Qualitative Data Analysis on the Choice Package

An online survey was administered to the Given Choice Group (N = 109) at the end of the semester to solicit participants' comments on the Choice Package. Ninety-

eight participants responded to the survey, resulting in an 89.9% response rate. Among the 109 participants (66% of the 165 total participants in this study) who were given the opportunity to make a choice, 41 (25% of the 165 total participants) made a choice (choices) out of the Choice Package. Some of them made a choice on all three items: assignment due dates, rewards/punishments, and reminders, while others only chose one or two of them. Table 16 shows the distribution of choice on due dates, rewards, punishments, and reminders.

Table 16

Distribution of Choice on Due Dates, Rewards, Punishments, and Reminders

Items	Choice Makers	Percentage*
Due Dates	27	65%
Reward	31	76%
Punishment	28	68%
Reminder	26	63%

* The percentage was based on the 41 total choice makers

Twenty-seven participants made a choice on due dates. Table 17 shows their choice distribution on assignment categories. A few more participants tended to make choices on papers, but there was no marked difference among assignment categories.

Table 17

Summary on Choice of Due Dates on Assignment Categories

Assignment Category	# of Due Date Choosers	Percentage*
Quiz [a]	23	56 %
Online Discussion [b]	24	58 %
Papers [c]	27	65 %
Application Questions [d]	23	56 %
Peer Feedback [e]	25	60 %

Note: * The percentages were based on 41 choice makers.

[a] There were 6 quizzes evenly distributed over the semester.

[b] There were 7 discussions evenly distributed over the semester.

[c] There were 2 papers required at the beginning and the end of the semester

[d] There were 28 application questions requiring short paragraph answers evenly distributed over the semester.

[e] There were 3 peer feedbacks evenly distributed over the semester.

Rewards and punishments were calculated in grade points. Table 18 shows that the students chose higher reward points than punishment points.

Table 18

Summary of Choice on Rewards and Punishments

	Reward	Punishment
Average Reward / Punishment Points*	16.45	12.10
Maximum Points Chosen	30	20
Minimum Points Chosen	5	4

* The grading scale for this course is 1,000 points. So, 30 points in their choice equals 3 points corresponding to a 100-point grading scale.

The time when a reminder should be sent before the assignment due date was counted in days. Most of those who made a choice on reminders chose one week as the appropriate time range. Table 19 displays the details.

Table 19

Summary of Choice on Reminders for Assignment Due Dates

Average Days*	7.11
Maximum Days	14 (two weeks)
Minimum Days	2

* The days before the assignment due date when a reminder was sent.

There were two categories of questions in the survey on the Choice Package. In the first category, the first question was "Please give reasons if you did not make any choice or do not like the Choice Package at all." The second category included four questions with the presumption that they did make a choice on the Choice Package: 1) Do you think allowing students to choose their own assignment due dates is an effective way to accommodate their needs and improve their learning? 2) Do you think self-determined rewards and punishments will motivate you to abide by the assignment due dates more strictly? 3) Are there any other alternatives for rewards and punishments except grades? 4) Is the reminder necessary and what do you think is the best way for the instructor or the TA to remind you of the assignment due dates?

The responses of the participants were coded into three groups (Table 20), the "Yes" group that supported the choice, the "No" group that opposed the choice, and the "I don't know" group that simply responded "I don't know" or expressed an ambiguous attitude. Table 20 shows the distribution of the students' attitudes.

Table 20

Students' Attitudes towards the Choice Package (N = 98)

Questions	Yes		No		I don't Know	
1. Do you think allowing students to choose their own assignment due dates is an effective way to accommodate their special needs and improve their learning?	59	60%	36	37%	3	3%
2. Do you think self-determined rewards and punishments will motivate you to abide by the assignment due dates more strictly?	46	47%	48	49%	4	4%
3. Is a reminder necessary for assignment due dates?	39	40%	54	55%	5	5%

Comments Supporting the Choice Package

As table 20 indicates, 60% of those who were given the opportunity to make a choice supported the choice of due dates, while 37 % opposed it. Those who expressed positive comments did not necessarily made a choice. Supporters believed that the choice of due dates was very helpful and effective for online learners. Many students were juggling multiple responsibilities such as work and children, and they chose to take an

online course because of its more flexible nature. The choice of due dates made the flexibility of online learning even better. Here is a list of the supportive comments.

> I absolutely think the flexibility in choice is a helpful and necessary option in offering an online course. We all lead different lives and lifestyles, work different hours, and have different commitments, and the flexibility is much welcomed. (Female, 25, Graduate)

> The choice empowers students by letting them establish their own schedule. I appreciate your willingness to enable me to be a part of the class and its administrative policies. (Male, 31, Sophomore)

> I do believe that allowing students to choose their own due dates was very effective. In a distance learning class, most student have a million other things going on in their lives, such as work, school, children, etc. Being able to choose my assignment due dates really helped with being able to keep up with everything I had to do and get it all done in a timely manner. (Female 44, Graduate)

> Being an adult learner. I knew there were a few times that I couldn't meet the deadlines that were set forth in the syllabus. Being able to choose my own deadlines was a tremendous help. I was able to coordinate those dates so that I did not have too many conflicts with my other classes or with family schedules. (Female 30 Graduate)

> It allowed for me to schedule this class' assignments around other classes' assignments without having everything fall on the same date. The course fit my needs rather than me fitting the course's needs. (Male, 22, Senior)

Some students expressed their sincere support even though they did not need to make a choice of dates. They believed the choice of due date was a good idea. The following comment is from a 40 years old male graduate student.

> I didn't make any changes to the due dates for this class, but it was not because I did not like the idea of choice. I kept the dates the same for a couple of reasons; I reviewed the due dates and they seemed evenly distributed throughout the semester, and I thought I could easily meet all the deadlines that were set for us.

Comments Opposing the Choice Package

The opponents were usually those who favored traditional learning styles. They believed a mandated syllabus was reasonable and good enough to keep them on track. They thought deviating from the syllabus might imply that they were not well-disciplined and intrinsically motivated learners. One student argued, "Only failures could not follow the syllabus and complete their assignments on time." The following were typical remarks the opponents made:

> I didn't make any choices because I prefer to stick to preset dates. Sticking to the syllabus that was already set helped me to be orderly and to do my assignments on time. (Female, 45, Graduate)

I chose the syllabus outlined because from glancing over it, I felt it was reasonable. Also, I did not want to worry about wasting time modifying another one. I felt that the one provided was used and proven to be effective, and it was. (Female, 29, Graduate)

I did not take a choice because I don't like to put deadlines off. I feel better when I can stay at least one week ahead of all assignments this semester. I work full time and have two children in middle school, so I want to keep on top of my course work. I do appreciate the ability to choose. But with my personality, I would have stayed in a panic if I felt like I was behind turning in my assignments even though the deadlines were approved. (Female, 44, Senior)

I preferred to stick with the guidelines set in the course syllabus so that I would not try to put things off. I thought it would be easier to just go by the set due dates and try to plan to do assignments early if some of those dates did not fit well with my schedule. I was also concerned that I might accidentally leave something out if I tried to set my own due dates. (Female, 25, Junior)

A few students said even if they had made a choice they would still miss some of the due dates because they were too busy: They thought choosing due dates was just another version of the syllabus schedule that still could be hard to follow. So it was better not to bother.

I did not choose to take the advantage of the Choice Package because I liked the flexibility of working at my own pace. If I picked the due dates for myself, they probably would have been unrealistic for my schedule. I substitute teach during the day, work at a pharmacy at night, and take two classes at ODU in graduate study, so I am very busy. So I knew if I was tired I could miss a date and be all right. (Female, 30, Graduate)

For some students, the assignment deadline was not a problem. Figuring out a personalized schedule would be a boring assignment.

The reason why I did not choose the Choice Package is because it did not matter to me when the assignments were due. I just thought that it was easier to follow the syllabus requirements instead of trying to figure out a new schedule. That is another assignment for me. (Male, 22, Junior)

Comments Supporting the Choice of Reward/Punishment

Forty-seven percent of the students in the Given the Choice Package Group supported the choice of reward and punishment, and 49% opposed it. Those who supported the choice of reward and punishment considered it a self-motivator that helped them discipline themselves.

I think the rewards and punishments motivated me to an extent. More so the punishments than the rewards. (Male, 24, Senior)

I do think that self-determined rewards and punishments work well because when the time comes for punishments or penalty you have no one to blame but yourself and usually people are pretty strict about not letting themselves down. (Female, 43, Senior)

I think that self-determined rewards and punishments will motivate me to abide by the due dates more strictly. (Female, 22, Junior)

Because I did not want to lose points for turning in things late and it gave me the motivation to complete my assignments ahead of time rather than on time in order to earn the bonus points. (Male, 23, Junior)

Comments Opposing the Choice of Reward and Punishment

The genuine purpose for choosing reward and punishment was to get the reward. However, there were consequences if they chose punishment and failed to meet the self-made requirement. That was why some participants only chose the reward. If it was impossible to get the reward, it was better to give up this choice.

I was not comfortable setting my own rewards and punishments...I thought about it and it seemed like a good idea, but I was afraid I would make this class harder on myself. I had five classes this semester: three on campus at ODU and one on campus at TCC. I work as well. This semester I desperately needed that

> flexibility. I was worried that I would be worse off if I did make a choice of reward and punishment. (Female 26, Senior)

Older adult students did like this choice. They contended that it was a personal obligation and it was in the best interests of oneself to do what one was supposed to accomplish.

> I think that in my case as a much older than "normal" undergraduate student, personal responsibility plays a larger role in meeting due dates. In the military world, in which I lived for so many years, you grow accustomed to doing what you are supposed to do when you are supposed to do it. (Male, 48, for licensure)

> We are all adults; a smack on the hand isn't going to cut it. We are either going to make it or not going to make it. (Female, 45, Graduate)

As to the question, "What are the other alternatives for rewards and punishment except grades?" most of the responses were "grades are the best and most predictable alternates in this case," "If you take the class in person, verbal accolades can be a reward, but online, the best way is grade." Another quite frequently mentioned alternative was exemption of certain assignments, such as a paper or the final exam as a reward.

Comments Supporting the Choice of Reminders

Although more than half (55%) of the participants from the Given the Choice Group did not think the reminder was necessary, there were still quite a few (40%) participants who believed reminders were necessary in helping them deal with procrastination.

> Yes!!! This is the only item I chose from the Choice Package. I have so much going on and I am forgetful anyway so this really helped me out tons. (Male, 24, Senior)

> Reminders are necessary because we all need to be reminded in our busy schedules. (Female, 39, Senior)

Many supporters expressed the common thought that the reminder was not necessary for college students, but it was a good gesture from the instructor and the TAs.

Comments Opposing the Choice of Reminder

The opponents of reminders almost unanimously felt that reminders were not necessary for adult learners, such as college students. If it was not a waste of time, at least it consumed precious time from the instructor or the TAs that could have been spent on more important course work.

At this age of schooling, reminders are certainly not necessary. There are many tools you can use to keep up with due dates... I just use a calendar. (Female, 25. Graduate)

A reminder is not necessary for me. I'm 41. (Male, 41, Graduate)

Reminders are nice, but I always checked the syllabus to make sure I was on track. (Female, 38, Junior)

I do not think a reminder is necessary or even appropriate for college students. The TA has enough work to do without babysitting someone's progress. (Female, 33, Graduate)

In my case I set reminders in my "MS Outlook" calendar and had made myself a annotated paper calendar with due dates on it. (Male, 27, Graduate)

In answering the question "What are the best ways to remind you of a due assignment?" the responses included: "The best way is to do the reminders on the class homepage, not email," "Issuing an announcement on the homepage every Monday for the due dates of the week," "Using a ListServ announcement."

Summary

The Choice Package was useful for some of the students, and many students expressed support for such an initiative. The choice of due dates helped the choice makers.

Those who did mot make a choice could be classified into the following four categories: 1) Those who were self-motivated and self-disciplined students. They were proud of their ability to cope with various difficulties in order to follow the deadlines strictly. They believed only failures could not turn in assignments as required; 2) Those who thought the syllabus' schedule was suitable for them; 3) Those who considered making a choice of due dates as extra work and would rather stick to the preset schedule; 4) Those who were too busy to know exactly how well they could follow their self-made schedules if they chose to make one. So it was better not to bother. They were tolerant of missing an assignment and lower grades were acceptable to them. They were not the I-Definitely-Want-Straight-A's fellows.

The reward and punishment choice was an extrinsic motivational approach in nature. Thus, it was not so appropriate for most of the adult learners. A reminder was the choice item that more than half (55%) of the participants opposed. For adult learners, reminder of assignment due dates may not be an appropriate choice. But, for some assignments such as a paper, it may be better to send a reminder, while other regular weekly assignments like quizzes do not need a reminder.

Some of the participants' responses were really thought-provoking and challenging for further research. They also demonstrated the success of the research design. Below are some examples.

One student wrote: "If you take the class in person, verbal accolades can be a reward, but online, the best way is grade." This implies that the online class did not offer effective ways to praise good learning behaviors. There is much that needs to be done for instructors to provide positive feedback for online learners.

Another student made comments on the Choice Package: "The course fit my needs rather than me fitting the course's need." This comment provided proof for the intended goals that the course managerial elements such as assignment due dates should meet students' special needs.

One respondent summarized: "The choice empowers students by letting them establish their own schedule. I appreciate your willingness to enable me to be a part of the class and its administrative policies." Such a positive remark well resonated to the researcher's original theory (to empower and involve online learners to manage their own learning) on which the Choice Package was developed.

Qualitative Analysis on the Support Package

An online survey was administered to the Given Support Group (N = 83) at the end of the semester to gather participants' comments on the Support Package. Seventy-six participants responded to the survey, which was a 91.5% response rate. There were eight questions in the questionnaire covering the support items from time management skills to multimedia reminders. The survey responses were coded as "Yes", "No", and "I don't know" categories in terms of positive, negative, and ambiguous attitudes respectively toward each of the support items. The responses are displayed in Table 21.

Table 21.

Students' Attitudes towards the Support Package (N = 76)

Survey Questions	Yes	No	I don't Know
1. Are the support documents on time management and goal setting helpful in organizing your online learning?	71%	10%	19%
2. Did the instruction from "How to Repel Internet Distraction" really help you focus on course work when you were online?	37%	55%	8%
3. Do you like the step-by-step, real screen graphic illustrations for doing online assignments?	92%	0	8%
4. What do you think of the Email Netiquette and the Emoticons and Abbreviations sent by the TA?	67%	14%	19%
5. Do you like the "A Quote A Day"?	88%	4%	8%
6. Do you think the course related web links sent to you are useful supplementary online handouts?	77%	4%	19%
7. Do you like the Holiday Greetings sent by the TA?	95%	0	5%
8. Do you like the reminders with pictures, poems, and music?	91%	2%	7%

Individual responses to each survey question showed strong appreciation for the support received (the respondents' gender, age and academic level were included in the brackets after each comment).

1. *Are the support documents on time management and goal setting helpful in organizing your online learning?*

Positive comments:

— Yes, it is very helpful. I have had a couple of years of experience in taking online classes, but I would say that someone who is new to on-line learning would really appreciate having the help that we have been given this semester. (Female, 27, Senior)

— They are very timely materials. It seemed like when I had a concern, the documents related to it were sent. (Female, 24, Senior)

— Yes, it is good to read the articles that support time management to encourage us to stay on track. With an online class, we have to be very self-motivated. (Female, 39, Graduate)

— I always think that I know how to do things the best way, and to get feedback from another source allows me to expand my thinking when it comes to working efficiently. (Female, 25, Graduate)

— They were informative and helped to keep me on track. You should definitely continue to send these documents next semester. (Female, 22, Junior)

Negative comments:

— No. The implications of taking an online course are evident. (Male, 33, Graduate)

— Since I am only taking one class, time management and goal setting were not as important to me as to a full-time student. Plus, I am 45 years old. (Male, 45, Graduate)

— I am fairly organized myself anyway. (F, 44, Senior)

2. *Did the instruction from "How to Repel Internet Distraction" really help you focus on course work when you were online?*

Positive comments:

— I know that I have a problem with the whole Internet distraction thing and I can honestly say this helped me a great deal. It always seems that I find a site to surf or something of that nature when I sit in front of the computer to do my work. (Female, 23, Junior)

— As we move into an age where online courses are more prevalent, the need to reduce distractions is incredibly important. (Male, 37, Graduate)

— It gave good tips to keep you focused on your study and to refrain from letting your mind wander off in the Internet world. (Female, 19, Sophomore)

Negative comments:

(Some respondents said "No," because they did not have such a problem. It does not necessarily mean that the support document did not work)

— No, It has never been a real issue for me. (Female, 26, Graduate)

— I don't enjoy playing on the Internet, so that really did not affect me. (Female, 21, Junior)

— I never had a chance to look at how to repel Internet distractions. I do not have a problem with them. (Female, 45, Graduate)

— No. I'm not an Internet junky. (Female, 41, Senior)

3. *Do you like the step-by-step, real screen graphic illustrations for doing online assignments?*

Positive comments:

— The step-by-step information with real screen graphics was very helpful because I am a visual person and the graphics proved useful. (Female, 24, Senior)

— Step by step information was wonderful. I am a student who needs all of the visual stimulus I can get. I learn better that way. Seeing it on the screen assures me that I am where I am supposed to be on the web page. (Female, 27, Senior)

— Yes, it was a lifesaver. I am a visual person and words do not make the same impression. Definitely better than just plain written instruction. Thank you. (Female, 22, Junior)

— I think the step-by-step, real screen graphic illustrations are very beneficial. They made me much more comfortable and at ease in the beginning when everything was new to me. Thank you! (Female, 39, Graduate)

— They are quite helpful. It's much easier to view these instead of constantly having to bother someone via email or phone if you get lost. These graphics explain everything in detail so they were quite easy to follow and took care of most of the questions I had. (Female, 24, Graduate)

There were no negative responses to this question.

4. *What do you think of the Email Netiquette and the Emoticons and Abbreviations sent by the TA?*

Positive comments:

— I thought they were cool and fun. They informed me, as a student, of current events occurring on campus. (Male, 21, Sophomore)

— They were cute! I have taken to use some of them, since the majority of my social correspondence is done over email. (Female, 41, Senior)

— The Email Netiquette was a great idea to use for writing emails to people and kept me current. Most of the time I had to figure out things for myself or ask—or even worse, invent them on my own and have others not understand the message. (Female, 25, Senior)

— I think there are a lot of good pointers in the Email Netiquette and the Emoticons for completing work not only for this course, but also others. (Female, 45, Junior)

— It was a fun email; I especially like how you addressed using capital typing because that is the worst, very difficult to read, especially when we had group discussion on the web. (Female, 23, Graduate)

Negative comments:

— As students, we should use formal language instead of Internet garbage. (Female, 45, Graduate)

5. *How do you like the "A Quote A Day"?*

Positive comments:

— I like it, because they were inspirational, gave good advice. (Male, 21, Sophomore)

— It was a breath of fresh air. I think it is definitely something you should continue doing in this class. (Female, 22, Junior)

— Yes. "A Quote a Day" keeps the student aware that they are registered in an online course. The constant contact is a strong reminder. (Male, 37, Graduate)

— Very helpful, I send them to my principal each day. (Female, 33, Graduate)

— I like the "A Quote A Day". They are "tidbits of wisdom". (Female, 39, Graduate)

— I really enjoy reading the quotes. It was like a pick-me-up. (Female, 49, Junior)

— Cons:

— I guess that I have enough very important emails coming to me all day long that I didn't find any use in it. (Male, 21, Sophomore)

— I was so busy, I never opened them. (Male, 21,Sophomore)

There were no negative responses to this question.

6. *Do you think the course-related web links sent to you are useful supplementary online handouts?*

Positive comments:

— The web links that were shared helped me to tie in my newly acquired information to the real world. (Female, 30, Graduate)

— The web links were also helpful because I had the opportunity to look at them, and as always, it increased my learning and such. (Female, 22, Junior)

— The course related links were extremely helpful, an eye opener. (Female, 22, Senior)

— These are interesting little pieces to read and very educational. (Female, 22, Junior)

Negative comment:

— Time is limited; do I have extra time for that? (Male, 21, Junior)

7. *How to you like the Holiday Greetings sent by the TA?*

Positive comments:

— Yes. It adds a personal touch to Internet based learning. (Female, 28, Junior)

— It was a nice thought and I appreciated it. No offence to other professors or courses, but I haven't had many teachers or TAs who took the time to do this. (Female, 25, Graduate)

— I enjoyed them very much and shared them with my co-workers. (Female, age 44)

— The holiday greetings were personal and down-to-earth, which was great. It is something one would not expect from a class online or from any teacher for that matter. It showed that the teacher/TAs were thinking of the students. (Female, 24, Senior)

— I found them very cute ☺ (Male 19, Freshman)

— I thought the holiday greetings sent by the TA were awesome and very sweet. It was a very nice gesture. (Female, 23, Graduate)

There were no negative responses to this question.

8. How do you like the reminders with pictures, poems, and music?

Positive comments:

— Reminders are very helpful, especially for a class like this that does not meet in a classroom. (Female, 19, Freshman)

— The reminder definitely helped me a lot. If not for those, I might have possibly forgotten about the assignment when they were due. I don't mean to sound cheesy or anything but it was a nice gesture and something to kind of brighten the day and ease the load. (Female, 22, Senior)

— The multimedia things added a special touch to the reminders. (Female, 27, Graduate)

Negative comments:

— We are not children. A syllabus is good enough to keep things going. (Female, 48, Senior)

— Good to enjoy it. But is that a kinda distraction? (Male 29, Graduate)

Three consistent themes emerged from the analysis of the participants' responses. The first of them is that online students long for direction, encouragement, attention, and caring from the instructors. Thus, most students liked the holiday greetings (documents with greeting words and decorating graphics) and the reminders with multimedia information embedded. They sensed that those were affective channels through which the instructor could build a rapport with them. They had a feeling of being cared for and that the instructor was responsive and sensitive to their needs. Using the fall-break greeting document as an example (it was a one page Microsoft Word document with beautiful fall New England scenery and a famous poem depicting its beauty), students could enjoy the fall scenery while reading the poem. One of the reminders was embedded with picture, poem, and music, focusing on the theme of exploring a new knowledge area. One student described her feeling upon receiving this reminder: "It is like a gentle, mild breeze blowing over my tired body and an inspirational spark striking my stagnated mind. It gave me confidence and courage." Such findings indicate that multimedia information is appealing to online learners, especially when it is used to touch the emotional world of the students.

The second theme is that the step-by-step, real screen graphic illustration for doing online course work is the "best-seller" of the Support Package. Web pages of online courses are diverse in structure, format, and style. Sixty eight percent of the participants in this study took an online course for the first time. There were many new things for them to get acquainted with in a short period of time (one or two weeks). It is quite understandable that they felt frustrated or even overwhelmed at the beginning. For those who were not as competent with the computer and the Internet, step-by-step real

screen graphic illustration was an effective and efficient approach to help them adapt to an online course environment. For a number of participants who mentioned in their comments that they were visual learners, graphics were much better than plain written instructions. A student (Male, 55, Graduate) wrote:

> It (graphics direction) gives me hope that I might be developing skills with my computer a little more than just how to turn it on and what is the mouse! Thank you so much for giving me visual instructions. I learn more easily with visuals than just words. I am truly sorry for being on edge, I strive to do my best, but this year has been a real trial of patience and endurance. The good news is that I survived and I am still here.

Another strength of the step-by-step real screen graphics illustration is that it can provide acknowledgement feedback (Dehler, 2004) and assure students that the steps they are taking for their course work are correct and they are going in the right direction, thus relieving them of worry.

Thirdly, the function of A Quote A Day is particularly worth mentioning. It is a "tidbit" of wisdom, and a rapport builder, and at the same time, it serves as a strong reminder for course participation on a daily basis, which is beyond the intention of the researcher.

A majority of participants believed that course-related web links, support documents on time management and goal setting, email netiquette, emoticons and abbreviations were very useful and should be continued.

Internet distraction (or Internet addiction) was not a big issue for participants. Probably age (average age was 30.67) was a factor contributing to this phenomenon, since 42% of the participants were graduate students who tended to be more capable of self-regulation.

As the statistics indicate in quantitative analysis, the Support Package was very effective in winning higher students' satisfaction rating. The reason for this was quite obvious. With the instructor and TAs' help and support, students who received the enhanced support felt that they were cared for, less isolated, and more emotionally connected, and that it was easier to seek and get help. Therefore they were more satisfied with the course even though their academic performance might not be as high as those who gave lower satisfaction rating for the course but performed better academically.

CHAPTER V

SUMMARY, RECOMMENDATIONS, AND CONCLUSION

Summary

The Internet environment is a new arena for teaching and learning where higher education institutions have great interest and have taken a leading role both in practice and in research. A pedagogical paradigm shift is necessary and inevitable along with advances in telecommunications and computer-based education systems that have expanded the opportunities in distance education and online learning. The conventional mindset embedded in the traditional classroom environment constrains both teachers and learners from realizing the full potential of the new technology to facilitate teaching and learning. Because "old" pedagogical approaches have no, or very limited bearing on online learning contexts, there is no comparable face-to-face pedagogy which online teachers can mimic with ease (Dehler, 2004). Teachers in the online environment need to be good online learners. Faculty themselves must have the knowledge of and experience with the technology used to facilitate and engage student learning. Graham et al. (2001b) contended that there are some skills required of effective online teachers that must be newly learned. The roles and capabilities of effective online teachers are clearly associated with the acquisition of very particular skills and knowledge (Schoenfeld-Tacher, & Persichitte, 2000). Dehler (2004) concluded, "What the field of educational technology has contended for well over 30 years, is that in order to harness the potential of technology for gains in student learning, teachers must have direct knowledge of, and

experience with, the technology being used." Faculty must shift their teaching perspectives and practices to be effective in an online environment. They need not abandon their teaching philosophies, but rather, must find new ways to manifest them in an online environment.

So first and foremost, online instructors need to master the skills and gain the experience necessary for effective online instruction. Secondly, they need to initiate new approaches and offer individualized support that best fit into the online learning environment in terms of the facilities available, the specific subjects taught, and the needs of individual learners.

The challenge in helping online students is to empower them to take responsibility for their own learning in this free and loose learning setting, and to master the technology skills necessary for taking the course in the shortest period of time possible. A well-prepared orientation at the beginning of an online course is crucial to familiarize online learners with the new leaning environment. Since there is no standard format for online courses yet, to ensure the online learners' technological mastery in a particular course requirement, instructors must mentor the students in relevant technologies whenever it is necessary all the way through the course process. Teachers' expectations of students' technology skills should be reasonable and practical. Some online learners are quite savvy experts in using computers and learning online, while some are only beginners, who may still need to learn word processing software or may be struggling with how to send an email. This is especially true for some adults who lack basic training in information technology, and skills introduced to K-12 students nowadays. The findings in this study strongly suggest that instructor-initiated support based on online learning

theories is very useful in helping students adapt to the online learning environment. Help on technical operations needs to be concrete with step-by-step graphic illustrations.

The Choice Package in this study was targeted at reducing online academic procrastination, and at the same time, as a result of implementing the choice treatment, it was aimed at raising student satisfaction and improving academic performance. The three items — choice of due dates, choice of rewards/punishments, and choice of reminders — were all closely focused on involving students in managing their own learning in the flexible online learning environment. Empirical data in this study suggests that choice of assignment due dates was very effective in reducing online procrastination and improving learning performance.

Constrained by conventional experience, online instructors usually design support in response to students' questions from emails or phone calls. But that is far from meeting students' actual needs. The support necessary from a learner's perspective requires new thinking about pedagogy (Gold, 2001). It is imperative for instructors to initiate and develop support based on the most current online teaching and learning practices and theories. If the instructor provides help only at a student's request, those students who need help the most are the least likely to receive it in time. Most often, students themselves are locked into the traditional learning format. They do not know what help they can really get beyond the teacher's responses to their traditional subject area and course content bound questions.

The initial intention of the Support Package was to help instructors shift their direction in thinking and developing support approaches for online students away from the conventional classroom mind-set. Individualized learning is a unique feature of online

education. Online students often have a feeling of isolation in the learning process. Timely support and affective communication are crucial for these students. Delayed support causes frustration and anger; rigid, dull, and plain written instructions fail to motivate students to learn actively. The feeling of not being cared for, or even being abandoned arouses resentment and creates a destructive learning environment. When needed help comes late, the learning dynamic has been ruined. Instructors should take initiatives to provide timely help and enhance students' learning potential with affective communications with students within and beyond the subject matter and course content by using multimedia technology. Teacher-initiated support and close online communication between the instructor and the students help build strong relationships and fosters productive learning.

Where there is a need, there should be support. This should be the maxim for educators developing instruction methodologies for online students. Such instructor-initiated support should be delivered through the means of multimedia information technology, which is readily available, inexpensive, and convenient to use. Additionally, it can embed affective, emotional, touching, and expressive information into instruction and communication with students.

Limitations

The analysis of factors affecting online procrastination does not, in reality, exhaust all possible factors. It suggests further exploration into other factors that might have an impact on online student academic procrastination. The Choice Package is limited to the assignment completion time dimension. There might be many other choices, such as alternatives of assignments. The social communication intervention

could not be delivered to each subject in the same manner, in the same amount, and in the same content area.

The majority of the subjects in this study were female (80%) and adult (mean age: 30.67) students, taking a teacher training course as an education major. Such features need to be taken into consideration in terms of the external validity of the findings.

Recommendations

An online course and its instructional strategies transform learning, curriculum, and pedagogy. The power of an online course lies within the teacher's ability to create a student-centered learning environment where each student is empowered to take full advantage of the technology and engage in various creative learning activities. To achieve such a goal, certain traditional rules need to be modified. The major finding from this study is that allowing students to make choices and encouraging teachers to initiate supports can effectively help online learning. Choice and support cover enormous aspects of teaching and learning, not limited to choice of due dates or support on self-regulation skills.

Apart from choice of due dates, choice of assignments might be another attractive and practical approach to meeting students' special needs. Dehler (2004) argued that allowing students to choose project topics incorporates diverse views into online courses. There have been sets of traditional assignments that were compatible with the course contents, subject areas, instructional methods, and teaching and learning facilities of the time. But some of these are obsolete, and some need to be modified according to the changed social context. Timed online quizzes and proctored final (the final exam in this

experiment was administered in a proctored environment) are all old-fashioned assessments that can not measure what the learners can acquire and what level they can achieve when they learn online with the know-how to take advantage of new technology. A newly coined term — searchology — has become more and more popular in the educational technology research arena. Students' ability to identify, search, navigate, filter, organize, and evaluate information plays a crucial role in the learning process and learning quality today. What a revolutionary approach it could be if an assignment was designed to develop students' information processing skills and help foster multidimensional thinking models. Choice of assignments is strongly recommended by the current researcher.

Quite a number of researchers strongly believe that, like other learning model that has its drawbacks, however positive and powerful online learning might sound, it has some troublesome aspects. Online distraction is a frequently cited example to illustrate one of its drawbacks. For adult learners, interest in other information available on the web is an appreciative phenomenon. Trying to convert the "distraction" into curiosity and motivation for further intrinsic inquiry should be the responsibility of both the teacher and students in the online learning environment today. What support is needed and how to give such support to help online learners convert "Internet distractions" into positive learning opportunities will be a challenging question and a promising topic for deeper inquiry.

Conclusion

Concomitant with the rapid growth of information technology and online education, people's needs have become more diverse. Their way of thinking about teaching and learning is in the process of dramatic change. Educational theory must respond to ever-changing social needs. Powerful yet simple education technology is readily available yet underused to help satisfy each individual learner's special needs and help create a successful learning environment. New options with online pedagogy require researchers and practitioners to break conventional mindsets, to take full advantage of the ubiquitous information technology to assist online learners who are also confined by the conventional learning tenets and who have not yet sensed how they can effectively communicate in an online learning environment with online learning sensitive instructors. Student-made choices and teacher-initiated support have proven to be effective approaches to accommodate online learners' real needs.

It is evident that the pace of educational innovation outstrips the pace of educational research. Research on online teaching and learning is still in its early stage. Online learning technology opens up a series of pedagogical opportunities that go far beyond the options provided by the traditional classroom model or the traditional analog technologies such as teaching students geographically distant from the teacher. Comprehensive and synthesized new approaches will surely promote and accelerate the exploration of a new educational paradigm with new pedagogical strategies. Alternative ways to offer student choice and to develop online support will provide incentives for further qualitative and quantitative studies of online pedagogy.

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Appendix A

Demographics of the Online Student Information Survey

Demographics of the Online Student Information Survey

1. I am a

    A. freshman.

    B. sophomore.

    C. junior.

    D. senior.

    E. graduate.

2. I am a

    A. male.

    B. female.

3. My age is _____.

4. Do you have a full-time job?

    A. Yes.

    B. No.

Appendix B

Survey on Factors Impeding On-Time Assignment Completion

Survey on Factors Impeding On-Time Assignment Completion

How strongly do you think each of the following factors impedes your on-time assignment completion?

Very Strongly 7
Strongly 6
Somewhat Strongly 5
Neutral 4
Somewhat Unstrongly 3
Not Very Strongly 2
Not Strongly at all 1

		1	2	3	4	5	6	7
1	I am always not satisfied with what I have done and am trying hard to improve it.							
2	I feel very anxious and try to put off the work time and again.							
3	I think I perform best at the last minute (under deadline pressure).							
4	My work habits							
5	My Job							
6	My course workload							
7	Household chores (including child rearing)							
8	My technological skills on computer and the Internet							
9	My addiction to surfing my favorite web sites							
10	My difficulty getting timely help							
11	I don't know how to arrange my work efficiently.							
12	My health problem							
13	Other (if you have any, please specify):							
14	Other (if you have any, please specify):							
15	Other (if you have any, please specify):							

Appendix C

Computer/Internet Competency Survey

Computer/Internet Competency Survey

You may feel very comfortable or very frustrated in using the computer and the Internet for the online course. Please rate your comfort level in using the computer and Internet when you study online.

Very Comfortable 7
Comfortable 6
Somewhat Comfortable 5
Average 4
Somewhat Uncomfortable 3
Uncomfortable 2
Very Uncomfortable 1

	1	2	3	4	5	6	7
When I use the computer for the online course, I feel							
When I use the Internet for the online course, I feel							

Appendix D

Online Student Satisfaction Survey

Online Student Satisfaction Survey

Please rate your satisfaction level for ECI 301 Online.

Very Satisfied 7
Satisfied 6
Somewhat Satisfied 5
Average 4
Somewhat Dissatisfied 3
Dissatisfied 2
Very Dissatisfied 1

		1	2	3	4	5	6	7
1	Please rate your overall satisfaction with this online course.							
2	This online course has well met my educational goal.							
3	This online course has a very good reputation.							
4	The registration for this course is very easy.							
5	The flexible assignment due dates really meet my special needs.							
6	The requirements in the syllabus are clearly written.							
7	The assessment criteria for assignments are reasonable.							
8	The textbooks are well chosen and readily available.							
9	Course materials are delivered in a timely manner over the web.							
10	The instructor's lecture materials on the web are very easy to follow, it is in a classroom lecture style.							
11	Course materials on the web and the content of the textbooks are consistent and complementary to each other.							

12	The instructor and TA are accessible by telephone and email.							
13	I am aware of whom to contact for questions about programs and services.							
14	The quality of academic advising is excellent.							
15	The instructor and the TA are working enthusiastically.							
16	The instructor's feedback is prompt.							
17	The instructor's feedback is useful.							
18	The frequency of student-instructor interaction is adequate.							
19	I also have social communication with the instructor frequently.							
20	I receive lots of personal attention from the instructor.							
21	I have good Internet accessibility with this course.							
22.	The workload of this course is reasonable.							
23	The instructional technologies used over the web are very effective.							
24	The student-to-student communication and collaboration in the group work are very helpful to my academic growth.							
25	Appropriate technological assistance is readily available.							
26	Students can freely express their complaints and receive timely responses.							
27	The online library service is really convenient.							
28	The web site is very well maintained and updated in a timely fashion.							
29	The announcement board on the home page is very helpful for students to keep track of any changes in the course.							
30	The Teletechnet orientation meeting and the mid-term support session are very helpful.							

Appendix E

Survey of Student Reaction to the Choice Package

Survey of Student Reaction to the Choice Package

1. Please give reasons if you did not make any choice and do not like the Choice Package at all.
2. If you made a choice:
    A. Do you think allowing students to choose their own assignment due dates is an effective way to accommodate their needs and improve their learning?
    B. Do you think self-determined rewards and punishments will motivate you to abide by the assignment due dates more strictly?
    C. Are there any other alternatives for reward and punishment besides grades?
    D. Is the reminder necessary? What do you think is the best way to remind you of the assignments by the instructor or TAs?

Appendix F

Survey of Student Reaction to the Support Package

Survey of Student Reaction to the Support Package

1. Are the support documents on time management and goal setting helpful in organizing your online learning?
2. Did the instruction from "How to Repel Internet Distraction" really help you focus on course work when you were online?
3. Do you like the step-by-step, real screen graphic illustrations for doing online assignments?
4. What do you think of the Email Netiquette and the Emoticons sent by the TA?
5. Do you think the "A Quote A Day" and course related web links sent to you are useful supplementary online handouts?
6. Do you like the content of the "A Quote A Day"?
7. How do you like the Holiday Greetings sent by the TA?
8. How do you like the reminders with pictures, poems, and sound (only some of you who had chosen reminders are require to respond to this question)?

Appendix G

Task Completion Log for Members of the Choice Group

Task Completion Log for Members of the Choice Group

Subject name _____

#	Assignments	Due Dates	Early	On Time	Days Delayed	Reward	Punishment	Reminder	Final Grade		Check
1	Philosophy										
2	2+2										
3	Quiz 1										
4	Quiz 2										
5	Quiz 3										
6	Quiz 4										
7	Quiz 5										
8	Quiz 6										
9	Ferret 1										
10	Ferret 2										
11	Ferret 3										
12	Ferret 4										
13	Ferret 5										
14	Ferret 6										
15	Ferret 7										
16	Group D 1										
17	Group D 2										
18	Group D 3										
19	Group D 4										
20	Group D 5										
21	Group D 6										
22	Group D 7										
23	Retrospect										
24	Final Exam										
Total times											
Total days											

Procrastination Frequency = Total times delayed / 24 (Total assignments)
Procrastination Magnitude = Total days delayed (for all the assignments) / total times delayed

Assignment delayed most frequently_____
Assignment delayed in the greatest magnitude_____

Appendix H

Task Completion Log for Members of the Other Groups

Task Completion Log for Members of the Other Groups

Subject Name _____

#	Assignments	Early	On Time	Days Delayed	Check
1	Philosophy Paper				
2	2+2 Peer Feedback				
3	Quiz 1				
4	Quiz 2				
5	Quiz 3				
6	Quiz 4				
7	Quiz 5				
8	Quiz 6				
9	Ferret Question 1				
10	Ferret Question 2				
11	Ferret Question 3				
12	Ferret Question 4				
13	Ferret Question 5				
14	Ferret Question 6				
15	Ferret Question 7				
16	Group Discussion 1				
17	Group Discussion 2				
18	Group Discussion 3				
19	Group Discussion 4				
20	Group Discussion 5				
21	Group Discussion 6				
22	Group Discussion 7				
23	Retrospect Paper				
24	Final Exam				
Total times delayed					
Total days delayed					

Procrastination Frequency = Total times delayed / 24 (total assignments)
Procrastination Magnitude = Total days delayed (for all the assignments) / total times delayed

Assignment delayed most frequently_____
Assignment delayed in the greatest magnitude_____

Appendix I

Support Package Delivery Timetable

Support Package Delivery Timetable

Week	Support Package Items
Week 1	(Step-by-step with real graphic illustration documents)
	How to register for your course online
	How to obtain a university email account
	How to register in an online quiz database
	How to select document type in your word processor
Week 2	How to manage your time
	How to set your study goals
	How to Take a Practice Quiz
	How to do Online Quizzes
	How to do Group Discussion
	How to do Ferret Questions
	What is a discussion thread?
	What is the email netiquette?
	What are emoticons and abbreviations used in email communication?
Week 3	How to check grades
	How to do observation assignment
	How to do prevent Internet distraction
Week 4	Strategies to Combat Academic Procrastination
Week 7	Fall Break greetings
Week 11	Halloween greetings
Week 12	How to review quizzes

Week 13	How to prepare the final Thanksgiving greetings
Week 14	How to reduce test anxiety

Note:

"A Quote A Day" is delivered every day.

Course related Web links are emailed on a regular basis.

Holiday greetings are delivered in a timely manner.

Social communication occurs on a daily basis.

A Get-well card is sent to the sick.

VITA

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