

Using Computer Generated Reminders as Time Management Support to Influence Assignment

Completion Rates and Course Completion in an Online Masters Program

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Abstract

This study investigated the influence of computer-generated reminders on the rate in which distance learners submitted assignments and completed courses. The computer-generated reminders, sent via email, served as a time management support strategy. Participants were randomly divided into two groups: control and treatment. Both groups received a list of target due dates for course assignments. The control group did not receive reminders. The treatment group received reminders when they failed to submit an assignment by a target due date. The results indicated no significant difference between the control and treatment groups in terms of assignment submission rates and course completion rates. However, results of this study did reveal that the number of assignments in a distance course influences the timeliness of assignment completion and the likelihood of course completion.

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Chapter One

Introduction

Distance education is a formal process where a learner is separated from the resources that are useful in learning the instructional goals, specifically the instructor (Berge, 2002). Distance education has enabled people to gain access to higher levels of education despite personal, domestic, occupational, geographic or other factors that may otherwise make such education unattainable (Kirkwood, 1989). Text-based correspondence courses were the first forms of distance learning. Presently, distance instruction is delivered many ways.

Today, online courses offered via the world-wide-web (WWW) are the fastest growing sector of distance education. In 1997 it was estimated that 2,000 online courses were offered via the Internet; that number soared to 15,000 in 1999 (Olgen, 2000). Web-based instruction (WBI) has risen in popularity partly due to its many features that make it a “meaningful learning environment where learning is fostered and supported” (Khan, 1997, p. 6). WBI is learner controlled, convenient, self-contained, cost effective, a source of unlimited resources, and promotes cross-cultural interaction (Khan, 1997). WBI allows learners to interact with one another, with instructors, and with endless online resources.

Enrollment is typically voluntary in distance education offered through higher educational institutions, so a percentage of students who begin a program do not complete it (Moore & Kearsley, 1996). Attrition, which is defined as not completing a distance course or failure to register for a second distance course, is common in distance environments. Some academic institutions report attrition rates as high as 44% (Chyung, 2000).

Presentation of Problem

Student procrastination and attrition are common problems cited by distance instructors (Wilkinson & Sherman, 1989: 1990). As students procrastinate on completing course work, they are more likely to drop out of a program as they fall further behind. Additionally, inability to manage time is often cited by students in distance learning as a reason for not completing coursework (Bernt & Bugbee, 1993; Brown, 1996; Morgan & Tam, 1999; Saba, 2000).

Most unsuccessful distance learners are not trained in the skills necessary for studying at a distance as they have typically only participated in traditional learning environments throughout their academic careers (Morgan & Tam, 1996). Traditional, face-to-face instruction seems to naturally incorporate time management strategies, which lessen the likelihood of procrastination. Generally, face-to face instruction has fixed semesters in which work must be completed, there are regular class meetings each week for a set time period, and there are also weekly assignments to complete and submit (Bernt & Bugbee, 1993). Distance courses may not have such strategies built in to their design, particularly asynchronous, self-paced learning environments.

Studies have been conducted in which various types of pacing contingencies were implemented within self-paced courses in order to influence the rate at which a student progresses through a course. Some pacing contingencies have been found to have a positive influence on student assignment completion rates and patterns. Such contingencies include awarding points for assignments submitted early in the week (e.g. Bijou, Morris, and Parsons, 1976), deadlines imposed uniformly throughout the term (e.g. Glick & Semb, 1974), and target deadlines for assignment submittals (e.g. Miller, Weaver, & Semb 1974). Reminders about deadlines have also been used to positively influence student submission patterns (e.g. Belawati, 1998).

Justification of Study

The present study will examine the influence of computer-generated email reminders on the rate in which distance learners submit assignments and course completion rates. Computer-generated reminders will serve not only to motivate learners to move forward in their assignments, but will also encourage students to monitor their own progress. By distributing computer generated reminders to students when they fail to submit an assignment by a target due date, this study will investigate the effects of such reminders as a time management support strategy.

There are two research questions for this study:

1. Do computer generated email reminders influence assignment submissions rates?
2. Do computer generated email reminders influence course completion rates?

This study will attempt to add to the wealth of literature conducted in the 1960's and 1970's on student pacing in self-paced courses. Procrastination and course attrition are not recent obstacles to self-paced course completion. Many of the past studies were conducted as Keller's (1968) Personalized System of Instruction courses (PSI) became increasingly popular. While the self-paced attribute of PSI courses was, and still is, attractive to many learners, such courses experience high rates of student procrastination (Born & Whelan, 1974; Bijou et al., 1976) and attrition. With the increasing popularity of asynchronous, web-based instruction, which is generally self-paced, there is a growing need for new research in the area of student pacing interventions.

This study will draw from research on characteristics of successful distance learners, and how these behaviors can be encouraged. This study will also draw upon literature about effective instructional design for distance learning courses to encourage such behaviors as self-monitoring

and goal setting. Literature on the use of emerging technologies as a tool to encourage self-management behaviors in distance learners will also be reviewed.

Chapter Two

Literature Review

Types of Distance Learning

Distance learning is generally categorized as synchronous or asynchronous depending on the type of interaction that occurs during the instruction (Driscoll, 2002). It is important to know about each form of distance learning to make informed instructional design decisions. Both synchronous and asynchronous forms of learning have advantages and disadvantages. Following is a brief discussion on each form of distance learning.

Synchronous Distance Learning

In a synchronous learning environment, the learners and the instructor are in different places, but are present at the same time. An example of this form of distance instruction is video conferencing (VTC). During VTC, the instructor is broadcasting from one location to one or more locations throughout geographic regions. Students are separated from the instructor and their peers, but are required to gather together at a particular time. Synchronous learning environments allow the learner to be distant from the instructor, however this type of interaction may still be a burden to the learner since he or she is required to meet at a specific time. In synchronous interaction class time is more convenient for the instructor than the learner.

Asynchronous Distance Learning

Unlike synchronous instruction, asynchronous instruction is independent of both place and time. Chute, Thompson, and Hancock (1999) describe this form of learning as time delayed. There are no scheduled class times in which students must attend. Learners are not limited to anyone else's schedule except for their own (Chute, Thompson, & Hancock (1999)). Asynchronous interactions take place at the convenience of both the instructor and the learner

(Driscoll, 2002). Forms of asynchronous delivery include email, listservs, audiocassette courses, videotaped courses, correspondence courses, and WWW-based courses.

Advantages of asynchronous learning.

One of the most significant advantages of asynchronous learning is that of time and place independence. Not only are learners given the flexibility to choose when they complete instruction (White, 2000), but learners are also given the flexibility to select a physically comfortable place to complete course work (Burge, 1994). Time and place independence ties closely to the benefit of educational opportunity. Due to the time and place independence of asynchronous instruction, more students are able to participate in instruction than would be possible in other forms of education (White, 2000), including synchronous instruction.

Convenience is another advantage of asynchronous instruction. In this type of environment there is freedom from travel, making instruction more convenient for learners (Harasim, 1987). Learners are able to work at the computer when they feel most ready (Burge, 1994), twenty-four hours a day (Harasim, 1987). For working adults with busy schedules and multiple responsibilities, the opportunity to determine when instruction will take place is an important one if they are to participate in the instruction. In addition, learners are able to review material any time, on an as need basis (Chute et al., 1999). Learners are also often given the flexibility to submit assignments through email or some other asynchronous method at any time of the day or night (White, 2000).

Many students report that an advantage of asynchronous learning is that it is a democratic environment (Harasim, 1987). Active learning is fostered in this type of environment, as it promotes learner contribution (Eastmond, 1994). Asynchronous environments tend to promote more equitable participation where what classmates say becomes more important than who is

saying it (Harasim, 1987; Eastmond, 1994). For learners who do not respond quickly or do not possess the verbal skills to express themselves during a face-to-face class discussion, asynchronous learning has an advantage in that it allows time for such learners to reflect on material and develop appropriate responses (Harasim, 1987; Black, 1998; Chute et al., 1999). Asynchronous learning can promote self-expression (Harasim, 1987).

Another advantage of asynchronous learning is that it can be more learner-centered, giving learners more control over the learning situation (Harasim, 1987). Learners are able to move more at their own pace. This is compared to face-to-face instruction where the instructor determines the pace at which the learner will progress. Asynchronous learning forces learners to take more responsibility for their own learning since instructors are not physically present. This increased responsibility encourages autonomous and self-directed behaviors on the part of learners (Black, 1998).

Disadvantages of Self-Paced Courses

While a self-paced environment is characterized as more learner centered in that it considers the busy lives of adult learners, self-pacing is not without its criticisms. Learners are generally more likely to procrastinate in completing work in self-paced environments, and thus are more likely to take an incomplete in such courses, or even withdraw (Born & Whelan, 1974; Bijou et al., 1976). If learners are not self-motivated or self-directed, asynchronous interaction may be difficult for learners. Additionally, if information must be processed quickly, this form of interaction may not be the best option.

As stated, there are large numbers of incompletes granted in self-paced courses. If given unlimited time to complete a self-paced course that operates within the confines of semester terms, as many as 30-40% of students enrolled in such courses will take the course into the next

term if permitted to do so (as cited in Hess, 1974). This is particularly true if students are enrolled in other semester-based courses that do not operate on a self-paced schedule. Student will put their efforts where the pressure is greatest, such as courses that are not self-paced (Hess, 1974). The problem of incompletes is compounded due to the fact that students are generally not skilled in handling the freedom that comes with self-paced courses (Hess, 1974; Morgan & Tam, 1996). Students in such courses often underestimate the amount of time required to complete the course. Underestimating the amount of time required to complete coursework again leads to incompletes as students realize they cannot complete coursework in the amount of time they allotted.

Distance Learners

When designing instruction for face-to-face environments or web-based environments, one essential component of that design is the analysis of the learners. A great deal of research has been conducted on characteristics of distance learners. Variables such as demographics, life experiences, motivations, prior education, and learning styles have all been studied. Adult learners have certain characteristics that distinguish them from younger learners. Traditionally, distance learners have been described as adult learners, typically between the ages 25 to 50, geographically distant from the university, who are married, intrinsically motivated, experienced in life, and goal setters, (Ben-Jacob, Ben-Jacob & Levin, 2000; Dille & Mezack, 1991; Driscoll, 1998; Galusha, J., 1998; Moore & Kearsley, 1996; Nasseh, 1999).

For the adult distance learner, the attractive nature of distance education is a mix of the flexible, convenient, schedule, the ability to study at home, and the ability to maintain employment (Peruniak, 1983). Distance learners are typically either time-bound due to work or travel schedules, or are location-bound due to geographic or family responsibilities. The most

recent statistics reveal that distance learners are more often time-bound rather than geographically bound, as many distance learners now live in the same area as the university in which they are enrolled (Olgen, 2000; Wallace, 1996).

Distance learners have typically reported preparing for a future career, or the acquisition of skills or credentials as reasons for participating in distance education (Peruniak, 1983; Olgen, 2000). They have usually been found to enjoy applying new knowledge to their lives and work, and juggle many responsibilities (Ben-Jacob et al., 2000; Dille & Mezack, 1991; Driscoll, 2002; Galusha, 1998; Moore & Kearsley, 1996; Nasseh, 1999; Neely, Niemi, & Ehrhard, 1998).

Distance learners (adult learners) are often cited as being intrinsically motivated and most often volunteer to participate in distance education (Driscoll, 2002; Moore & Kearsley, 1996). Driscoll (1998) also states that adult learners prefer problem centered learning, have varied learning styles, expect learning to be meaningful, and prefer to manage their own learning. According to Moore and Kearsley (1996), adults appear to have a general sense of self-direction and personal responsibility. However, Brookfield (1995) cautions that self-directedness is not a characteristic of all adult learners. He proposes that self-directedness is culturally learned or tied to personality. Therefore, he warns against making such assumptions about adult learners.

Not all learners are successful in distance education. Learners must supplement the skills needed to learn in a traditional, face-to-face learning environment with more self-regulation skills if they are to be successful. The next section discusses characteristics of successful distance learners.

Successful Distance Learners

Many studies have focused on characteristics of successful, or persistent, distance learners. Most researchers hope that by identifying characteristics of successful distance learners,

strategies can be developed and implemented that would assist learners in being successful in a distance-learning environment. There have been fairly consistent findings on the characteristics of successful distance learners.

Self-regulated learners.

Asynchronous learning environments present learners with a great deal of freedom. However, with freedom comes responsibility and some students find that freedom to be a strain (Taylor & Kaye, 1986). It is the self-regulated learner who tends to be successful in a distance-learning environment as they take responsibility for their own learning. These learners display many behaviors often identified as behaviors of good time managers. Such behaviors include goal setting, organizing, and self-evaluation of progress points throughout a task (Litchfield, 1993; Zimmerman, 1990). In addition, self-regulated learners monitor their learning and may use study strategies like rehearsing and memorizing and reviewing material (Zimmerman & Martinez-Pons, 1988). These learners also structure their environment and seek social assistance, two characteristics which are imperative to learner success in an asynchronous distance-learning environment (Zimmerman, 1990).

Previous education, intentions, and motivations.

A learner's previous level of education and time since last college course have consistently been found to be a predictor of student success in a distance environment (Coggins, 1989; Dewar & Whittington, 2000; Guri-Roznblit, 1990; Miller, 1998). It has been reported recent college experience makes one better prepared for additional college work. The more educational experience a person has, the more likely they are to persist in a distance-learning environment.

Significance has also been found between completers and non-completers in terms of intentions to earn a degree (Coggins, 1989). A learner's intentions to earn a degree appear to give added motivation to learners than those not seeking a degree.

Using the Sixteen Personality Factors Questionnaire (16PF), Biner and Dean (1997) identified three basic personality characteristics that were significant predictors of student achievement in interactive telecourses. They found that high performers tend to be resourceful, expedient, and independent, and less compulsive than low performers. It seems resourceful and expedient individuals are able to successfully handle the balance of family, work, and community.

Learning and study strategies.

Miller (1998) took a sample of students completing a telecourse and compared study strategies of students earning A's in the course and students not earning A's in the course. Results of this study revealed that compared to students not earning A's in an agriculture telecourse, students who earned A's were more likely to take notes during the telecourse video, complete assigned readings, contact the instructor more frequently, and use a variety of study methods.

Likewise, Guri-Rozenblit (1990) found that students who studied in organized study groups had higher persistence rates. It is possible that group support contributes to persistence in distance studies. Other studies have revealed that completing unpleasant tasks first, developing study routines, and reading instructions (Dewar & Whittington, 2000) are other learning strategies used by persistent distance learners.

Incongruous Findings on Successful Distance Learners

There are studies that have been contradictory in their findings on characteristics of successful or persistent distance learners. Reports on the effects of such student demographics as age, gender, marital status, and number of children have been ambiguous (Biner & Dean, 1987; Coggins, 1989; Guri-Rozenlit, 1990). Additionally, Coggins (1989) found that there were no significant differences in distance learners in terms of preferred learning modality. In other words, preferences for listening, reading, audiovisuals, hands on learning, etc. have not been proven to be predictors of student success in distance education.

Challenges of Distance Education

Although distance education has eliminated such obstacles as geographical distance so that more people can gain an education, this form of education is not without barriers. Student procrastination and attrition are commonly cited as challenges in distance education influenced by many variables (Bernt & Bugbee, 1993; Brown, 1996; Moore & Kearsley, 1996; Wilkinson & Sherman, 1989; 1990).

The term barriers is used to describe variables that have a negative impact on persistence in distance education. Generally, barriers can be divided into three categories, each of which can affect whether or not a student persists in a distance program or not. These categories of barriers include: situational, institutional, and dispositional (Woodley & Parlett, 1983).

Situational barriers refer to an individual's personal learning environment and time available for learning. Situational barriers are unique to each learner and stem from each student's distinctive life situation (Fjortoft, 1995). Institutional barriers refer to barriers to learning that are within the institution. Institutional barriers could include institutional procedures, course scheduling, and instructional design problems (Fjortoft, 1995). Dispositional

barriers refer to an individual's learning style, motivation, and even social and economic factors (Fjortoft, 1995).

In the next section, each of the three categories of barriers will be discussed in terms of how each relates to attrition. Following that discussion is a section that describes interventions and strategies that can be implemented to lessen attrition in a distance-learning environment.

Attrition

As previously noted, enrollment in distance education is typically voluntary. Because of this, a percentage of students who begin a program do not complete it (Moore & Kearsley, 1996). A high rate of attrition or non-persistence in distance programs affects institutions in many ways. Attrition not only decreases the cost effectiveness of the program, but it can jeopardize the existence of programs and jeopardize the positive image of an institution (Belawati, 1998). Without adequate enrollment, courses, and even entire programs, are in danger of being canceled.

Attrition in distance education is a complex issue affected by numerous variables (Morgan & Tam, 1999). Some of those variables include educational background (Lami & Henri, 1983; Moore & Kearsley, 1996), students having little or no knowledge of learning strategies (Chung, 2001; Coggins, 1989; Ehrman, 1990; Terrell & Dringus, 2000), lack of relevant content in course material (McMichael, Brock, & DeLong, 1976), support inside and outside the institution (Brown, 1996; deFreitas & Lynch, 1986; Morgan & Tam, 1999; Serban, 2000), and student's lack of time or time management skills (Brown, 1996; Morgan & Tam 1999). Not only should one consider individual attributes each learner brings with them, but attributes of the course itself must also be examined when exploring reasons for attrition (Eisenberg & Dowsett, 1990).

Situational barriers affecting attrition.

As previously discussed, situational barriers are unique and personal to each individual and include a learner's personal learning environment and time available for learning (Fjortoft, 1995). While it is difficult for educational institutions to control for such barriers, Morgan and Tam (1999) believe that even a slight tip in favor of the positive side of the experience can affect persistence. Therefore, the first step in the elimination of situational barriers is the identification of such barriers.

Results of a study conducted by Morgan and Tam (1999) revealed that lack of time and other time related issues were barriers to student persistence in distance education. Poor family support and personal study problems were also barriers indicated by non-persisters. According to Moore and Kearsley (1996) educational background is one of the best predictors of success in distance education. The more formal education a student has, the more likely they are to succeed in an online learning environment. Likewise, the more recent the learning experience, the more likely a learner will succeed in distance education.

Since distance learners may lack the support of a tangible university environment, they use family, employment, and their social settings to provide support. Lack of these support systems also impacts their success or failure in learning at a distance. In addition, if the course is too difficult or takes up too much of their time, distance learners are more likely not to persist in a course (Moore & Kearsley, 1996).

Dispositional barriers affecting attrition.

Dispositional barriers are those barriers typically outside the control of the educating institution. These barriers refer to an individual's learning style, motivation, and even social and economic factors (Fjortoft, 1995). Change of employment and low confidence levels while

learning in the online classroom are two such dispositional barriers commonly cited in literature (Brown, 1996; Chyung, 2000).

Another variable affecting student persistence is the use of learning strategies or lack there of (Coggins, 1989; Terrell & Dringus, 2000). Learning strategies are different from learning styles in that learning styles are more a psychological type that is not easily altered after a certain period in the life of a learner (Ehrman, 1990). Learning strategies, however, are more easily modified as they are simply general plans for approaching learning tasks (Woolfolk, 1993). Learning strategies have a significant impact on achievement (Ehrman, 1990). Most unsuccessful distance learners are untrained in the skills necessary for studying at a distance. In addition, most untrained students have a limited number of learning strategies in their collection of skills (Ehrman, 1990).

Institutional barriers affecting attrition.

Institutional barriers refer to barriers to learning that are within the institution, including institutional procedures, course scheduling, and instructional design problems (Fjortoft, 1995). Learners who drop out of distance learning programs commonly perceive the online learning environment as not attractive to them, the instruction was not relevant to them, or they were not satisfied with the instructional process (Chyung, 2000). In addition, studies have found distance learners drop from programs when they have difficulty contacting tutors, insufficient support from tutors, or the course is too time consuming (Brown, 1996).

Distance learning programs offered from academic institutions are generally restricted to the academic policies designed for on-campus education. In self-paced courses, if students have not completed coursework by the end of the term when grades must be reported, grades of

incompletes or failure are generally submitted (Born & Moore, 1978). These traditional academic policies are not necessarily the most conducive to a distance environment.

Interventions and Strategies to Reduce Attrition

Learning strategies.

Because of the probability that learning strategies used by students can be modified, many distance programs have attempted to address learning strategies as a way to reduce attrition. Careful course design has been shown to influence learning strategies used by distance learners (Chyung, 2001). Learning strategies used by students can be either designer imposed or learner generated (Naidu, 1994). Designer imposed learning strategies are embedded in the instruction and are designed to coerce the student into using particular processing resources in order to accomplish the tasks specified (Naidu, 1994). Examples include peer group discussion and writing and/or reading homework assignments.

In designing instruction for the distance learner, another method of influencing learning strategies is describing learning strategies to students. After defining the goal of the instructional unit so that students understand what is expected of them, Saba (1999) suggests explaining the learning strategy used in the instruction. This can be accomplished by giving learners a step-by-step guide as to how they can reach the goal of the course. This includes giving the learner a description of the learning activity, specifying what deliverables the learner is expected to turn in and how those will be submitted, giving deadlines and due dates, explaining the media used in the delivery of the instruction, specifying how the learner should, and establishing personal communication between instructor and learner.

Breaking psychological distance.

Because of the very nature of asynchronous distance learning, the distant learner may feel isolated. Being separated by space and time from the instructor and peers, distant learners have a great risk of not feeling a part of a complete learning experience. Wolcott (1996) suggests ways to make distance education more learner-centered, bridging the distance gap, which is referred to as psychological distance. Psychological distance is basically the psychological effects of physical distance.

Connections with and support from peers in a learning group are essential to bridging the distance gap. When building rapport, relationships are built between people. To decrease isolation and promote interaction activities such as implementing group discussions, using common graphics and visual images, providing information about support services, encouraging study groups, and making it easy for learners to contact the instructor are simple techniques that can be implemented to aid in decreasing isolation or psychological distance (Wolcott, 1996; Moore & Kearsley, 1996; Dewal, 1988).

Fostering self-regulation.

While many distant learners take on all responsibility for their own learning, evaluating their own performance and making adjustments when necessary, there are other distance learners who are deeply dependent upon support from the teacher. With careful planning, distance courses can be designed to encourage and support self-directed learning (Moore & Kearsley, 1996). According to Atman (1987), the success of distance learners depends on the interaction of a carefully designed curriculum and striving skills of the learner. Students must maintain their active involvement with the content of distance courses if they are to succeed.

Striving and self-regulation occur when an individual directs his or her attention toward a goal (Atman, 1987). While the ability to set and achieve goals seems to come naturally to some learners, it is not so natural to others. Self-management is essential to successful distance learning. Allowing learners to set their own goals within the context of the course whenever possible is one way to encourage self-regulation. This can be accomplished through flexible contracting procedures or individualized projects customized to the environment of the learner (Taylor & Kaye, 1986).

Relevant content and increasing student motivation.

As previously noted, if a distance learner does not see the content of a course relevant to their needs, they are more likely to drop from a course. Courses should be learner centered, in that the content is meaningful and relevant to the learner, as well as authentic (Wagner & McCombs, 1995). Collecting student demographics and background information prior to course develop and implementation, or as early as possible, can assist designers in making course content more relevant and meaningful to learners (Chyung, 2001).

Keller's (1987) ARCS model (attention, relevance, confidence, and satisfaction) can be used in the design of online instruction to make content more motivating to learners (e.g. Chyung, 2001). Keller's ARCS model contends that the four factors of attention, relevance, confidence, and satisfaction influence the degree of a learner's motivation. The model reasons that by increasing a students' motivation about a program, they are less likely to drop out.

In a study conducted by Chyung (2001), strategies following Keller's ARCS model were implemented in an online program as attrition reduction strategies. Prior to implementing these attrition reduction strategies, the drop out rate for the program was 44%. Three semesters after

strategies were implemented (end of 1997); the attrition rate had decreased to 22%. Even more encouraging, by the end of the 1999-2000 school year the attrition rate was at 15%.

Naval distance course designers also recognized the impact that relevant course content has on program attrition rates. The Navy redesigned a propulsion-engineering course, making it more relevant to the jobs trainees would assume. With the redesign of this distance-training program, there was a drop in the academic attrition rate from 12 percent to one percent (McMichael et al., 1976).

Changes in academic policies.

Typically, most distance education programs are offered through traditional institutions that operate on either semesters or quarters. Calendars of traditional academic institutions are not necessarily the best for distance learning and can serve as a barrier to student success. However, many distance programs are finding alternatives to such policies so that many of the appealing characteristics of distance learning are not lost. An example is the more generously offered grades of “incomplete”, as compared to on-campus programs. This means that in order to accommodate the notion of self-paced and unlimited time, faculty and staff accept the additional workload required to change grades as students complete the work, as well as the burden of monitoring the incomplete work (Born & Moore, 1978).

Policies such as number of courses learners are allowed to enroll in can also influence student success. As is true with traditional, on-campus courses, the more online courses a student enrolls in during a semester, the more likely that student will withdraw (Serban, 2000). Tutors and other institutional support have also been found to influence student persistence in distance environments. If students have difficulty in contacting support staff, or if the staff is not helpful, students are more likely to drop from a program (Brown, 1996; deFreitas & Lynch, 1986). Saba

(2000) found the maintenance of good communication between the student and instructor to be essential in reducing attrition in distance education.

From the discussion of distance education barriers affecting attrition, there appears to be a great deal that institutions, specifically course designers, can do to reduce attrition. However, aside from the fact that many of the problems identified in distance education literature are within the control of the institution or course designer, there are some issues that are not. Many situational barriers are beyond institutional control. However, course designers can make suggestions to learners on how best to approach issues of time management, how to arrange their study environment, and make realistic appraisals of their commitments. The next section discusses the problem of procrastination in self-paced courses.

Procrastination

As previously stated, procrastination is a commonly cited problem in distance learning. Defined as, “avoiding or delaying a task that needs to be done” (Van Ness, 1988, p. 8), procrastination has many causes and differs from nonsuccess. Van Ness (1988) believes that most procrastination is the result of an unwillingness to make the right decisions, rather than an inability to make the right decisions. Procrastination appears to have its roots in dislike, fear, or doubt. When a person does not enjoy performing a certain task, displaying poor attitudes, they are more likely to procrastinate (Wilkinson & Sherman, 1990). Similarly, psychological barriers such as low self-confidence, anxiety, doubting of ability or fear of failure, can also result in procrastination (Van Ness, 1988; Wilkinson & Sherman, 1990).

Procrastination can also be the result of lack of motivation on the part of the student, not setting goals, not prioritizing, and lack of effective time management (VanNess, 1988; Wilkinson & Sherman, 1990). In addition, students may be more likely to procrastinate if the

response required for an assignment is involved and difficult (Gottula & Edwards, 1977).

Cognitive blocks, resulting from inadequate information and unclear priorities, can also be a cause for student procrastination (Wilkinson & Sherman, 1990).

Whatever the reason for procrastination, it causes the learner undue stress and it impedes achievement by delaying initial action. Furthermore, learning can be hindered if a student elects to procrastinate in a learning environment (Conners, 1995). Procrastination is particularly detrimental when procrastination leads to attrition.

Strategies to reduce procrastination.

There are many suggestions as to what strategies to implement in order to reduce or eliminate procrastination in a distance environment. Some of the suggestions are feasible, while others are not so feasible; some suggestions are learner centered, others are teacher centered; some suggestions strive to keep the positive characteristics of distance education, while others attempt to mimic face-to-face instruction. For example, one suggestion to reduce procrastination is to sever the distance-learning course from traditional academic institutional schedules (i.e. semester or quarter) (Hess, 1974). However, this is not an easy task and is unlikely to occur in most institutions of higher education in the near future.

Some researchers suggest the implementation of required deadlines within self-paced courses (e.g. Lloyd & Knutzen, 1969). However, with the implementation of deadlines, the course is no longer self-paced, but instructor paced. Instructor-paced environments are often viewed as rigid, highly structured, limiting learners to work at only a minimum rate, and even inconvenient for learners. This is because learners are unable to exercise their own discretion about when to complete assignments amidst their busy schedules (Bijou et al., 1976).

While the implementation of required deadlines for assignment completion seems to be an easy fix to the problem of procrastination in self-paced courses, this solution may hinder the academic success of students rather than help them. Students are more likely to withdraw from courses if they see themselves unable to complete the workload within the fixed amount of time available, even though they may be performing satisfactorily (as cited in Hess, 1974).

There are some suggestions to reduce procrastination that allow the distance environment to sustain the attributes that make it an attractive alternative to face-to-face instruction. Research has shown there to be a direct relationship between the time in which a student begins to submit work and his or her final grade (Lloyd & Knutzen, 1969). The earlier a student begins, the higher the final grade and less likely for incompletes. Therefore, one suggestion on battling course incompleteness rates is to attempt to shape early responses of students (Lloyd & Knutzen, 1969; Powers & Edwards, 1974).

An early one-shot time contingency is one way to shape early responses of students. With a one-shot time contingency students are asked to complete a certain number of units by a certain week, with no requirement for withdraw from the course if this contingency is not met (Hess, 1974). This strategy is different from deadlines in that students can work at their own pace for a certain amount of time and then there are no harsh consequences for failure to meet the submission requirements. The benefit in implementing this type of plan is that it is learner centered and gives them a blueprint from which to work from if they are to complete the course within the allotted time frame.

To make the one-time shot contingency strategy even more successful, staff of the distance program could contact students once they fall more than a week behind the rate needed to complete the course within the designated time (Hess, 1974). Not only does this help to

remind students to keep moving at a more acceptable pace, it also acts as a motivator, breaking the psychological distance felt by many distance learners.

There are other strategies that make a significant impact on reducing procrastination, while at the same time sustaining the self-paced appeal of distance education. These include providing students with an orientation to distance education, providing extensive directions to the obligations and expectations of students, contacting students via mail who are not submitting assignments, and increasing the frequency and immediacy of feedback (Moore & Kearsley, 1996; Coggins, 1989; Kirkwood, 1989; Belawati, 1998; Eisenberg & Dowsett, 1990; Wilkinson & Sherman, 1990). The next section discusses time management and its significance in distance learning.

Time Management

Time management is a term not easily defined and the dynamics of time management are more complex than previously thought (Macan, Shahani, Dipboye, & Phillips, 1990). Generally, time management is defined as how a person breaks up their time throughout the day, or week, in order to accommodate their many responsibilities. This definition of time management will be used for the purposes of this study.

There are numerous components of time management including choosing goals, prioritizing, generating tasks and subtasks from goals, scheduling the tasks, actually carrying out the tasks, and even saying no to certain requests and demands (as cited in Britton and Tesser, 1991; Macan et al., 1990). In addition, there are many variables that can affect how a person manages their time including motivation, ability to plan, prioritize, and stay on task, intentions, attitude, locus of control, and even self-concept (Macan et al., 1990)

Why Time Management is Important in Distance Education

Distance learners typically have a host of responsibilities outside of their educational studies. Distance learners take on numerous roles including student, spouse, parent, employee, and community member. Each of these roles carries their own list of responsibilities.

Students who hold full or part time jobs while attending school or taking courses may engage in more time management behaviors (Macan et al., 1990). However, these students who do not engage in more time management behaviors are more likely not to persist in their coursework. There are a large number of tasks required by distance learners, not only with respect to course work, but personal tasks as well. Learners in self-paced distance learning courses often experience overload and are not skilled in how to deal with the overload (Britton & Tesser, 1991). A learner who does not manage their time well tends to experience more ambiguity, more overload, and higher levels of stress and tension (Macan et al., 1990).

Correlations have been found to exist between time management attitudes and skills and grade point average (Britton & Tesser, 1991). The better attitudes and skills with respect to time management, the better learners tend to perform in an educational setting. Closely linked to attitudes are motivations. Many students may not be motivated to complete the course within a specified term, thus prolonging the course. In addition, many students lack the self-management skills needed to effectively pace themselves through a self-paced course (Judd, McCombs, & Dobrovolny, 1979).

Goal setting could assist learners who are not motivated and who lack those self-management skills (Judd et al., 1979). Setting a goal allows learners to see the end goal or target, and then break the goal into smaller, manageable objectives. In addition, goal setting helps to motivate learners as they have an end to work toward. In a distance-learning environment,

prioritizing is essential. Fitting study time into a distance learner's schedule may be difficult. A sick child, cooking dinner, or even mowing the lawn may take priority over study time.

If not a typical self-regulated learner, learners within self-paced environments tend to be resistant to ask questions of the instructor, particularly about their progress. Students in such an environment do not know how they are progressing in a course and reportedly feel they are learning in a social vacuum without the structure of group pacing (Judd et al., 1979). In conclusion, it appears the self-paced learning environment is attractive to many learners, although not all learners possess the skills necessary to be successful in such an environment.

Time Management as an Instructional Strategy

Communicating with the instructor and managing time and study space are areas distance learners have control over, even though learners may not be aware of that fact. Although it sounds simple that students are specifically made aware of areas they are in control of, clarifying these points to distance learners is imperative to enhancing self-monitoring skills of students, as well as reducing student attrition (Saba, 2000). Course developers can assist learners in managing their time by providing an online course calendar that contains a list of due dates. Instructors can also aid in time management by emailing or calling a student who has not met a deadline (Saba, 2000).

Pacing.

Various forms of pacing have been used in self-paced courses as a technique to lessen or eliminate student procrastination, thus increasing course completion rates. Pacing is a time management strategy that has been used to battle low completion rates in self-paced courses. Low completion rates have been a problem throughout the existence of self-paced courses.

Students tend to procrastinate in completing assignments, fall behind, and then are less likely to complete a course (Bijou et al., 1976).

While a self-paced environment is characterized as more learner centered in that it considers the busy lives of adult learners, self-pacing is not without its criticisms. As previously stated, learners are generally more likely to procrastinate in completing work in self-paced environments thus, are more likely to take an incomplete in such courses (Bijou et al., 1976).

Pacing contingencies have been found to lessen the occurrence of student procrastination (Bijou et al., 1976). In one study, college freshmen enrolled in three successive self-paced child psychology courses were exposed to two pacing systems throughout the duration of the course sequence. During one semester, learners were only required to complete the first quiz within the first week of class. After that time, learners were allowed to move through the course at their own pace. In the next two semesters, other contingency management methods were employed in addition to the first quiz completion and end of the semester course completion. A flexible point system was implemented which assigned different point values to different days of the week for quiz completion. The earlier in the week, the more points possible for each weekly quiz.

The two semesters where pacing contingencies were employed resulted in a steady rate of quiz taking throughout the course, as compared to the first semester where the number of quiz completion declined after the first required due date with a purge in quiz completion just after spring break. Other studies support the finding of accelerated quiz completion at the end of the term (e.g. Lazar, Soares, & Terman, 1977; Glick & Semb, 1978).

In one such study, a sample of students enrolled in a self-paced psychology course was divided into two groups, where all learners were required to complete a quiz after each unit to assess their mastery of the material (Lazar et al., 1977). One group was given a standard

recommended pace schedule, while the other group received an accelerated set of target dates. Data analysis revealed that while quiz completion rates for both groups were closely matched in the beginning, the rate of quiz-taking accelerated at the end of the term for students who received the standard pace schedule. In addition, there was a question on each quiz asking students to compare their current level of progress with that of their recommended schedule. Students were continually directed to the calendar in order to assess their own course progression. Optimal self-paced rates would alleviate the end of the term rush for quiz completion, relieving the crunch not only for students, but faculty and staff as well.

Glick and Semb (1978) also studied the effects of instructor set pacing contingencies compared to the absence of such contingencies. They basically wanted to see if students would procrastinate when pacing contingencies were absent. In addition, they wanted to see if such contingencies had an effect on course completion. During one semester, one part of the sample were required to abide by instructor set pacing, while another part was allowed to move at their own pace.

By the end of the semester, 22% more students in the instructor set pacing group had completed the course than the self-paced students (Glick & Semb, 1978). However, overall completion frequency was not found to be statistically significant. Completion rates for the instructor paced group were 89%, while completion rates for the self-paced group were 82%. Overall, Glick and Semb (1978) found that course completion was not adversely affected by granting unlimited time to complete the course. However, in the absence of deadlines, 39% of FP students procrastinated and delayed their work. Of these 39%, half of them carried the course into the next semester to complete. Self-paced students who completed the course had a high end

of the semester response. In other words, FP students crammed most of their work into the last part of the semester in which they completed the course.

Glick and Semb (1978) argue that the implementation of uniform deadlines may create undue pressure for some students due to their many responsibilities outside of school. On the other hand, they also argue that removing deadlines for all students may also not accommodate the needs of every student. Many students may not possess the skills necessary to pace themselves and develop a work schedule. Teaching students how to deal with pacing flexibility may be important in alleviating the dilemma of imposed deadlines (Glick & Semb, 1978).

In another study, target dates for assignment completion were given to help maintain student progress in a personalized university course (Miller, Weaver, & Semb 1974). Lessons could be completed before the due dates, but not after. Students were given two warnings for missing deadlines. On the third missed deadline they were asked to withdraw from the course. The course was divided into 26 lessons. Each student was given a schedule of target dates at the beginning of the semester. Students were required to complete one lesson a day for the first nine days. No lessons were required for the next 13 days, and then target dates for lesson completion were implemented once again the last 17 days of the course.

When the target date contingency was implemented, there was a uniform progression throughout the course as students completed an average of a lesson a day. Without the target date contingency there was a sudden drop in student progress as students completed an average of 0.3 lessons per day. From the results, Miller et al. (1974) concluded that students do, in fact, progress more rapidly through a course when target due dates were assigned for their work.

Miller and his colleagues believe that the target date contingency combines the best features of self- pacing and teacher pacing. This method allows for the student to work

completely as his or her own rate, with the flexibility in their own scheduling of work as long as they do not fall too far behind (Miller et al., 1974). Another method that accommodates individual differences in learning rates is to teach students to set their own deadlines. Such deadlines place more responsibility on the learner and discourage delayed work (Semb et al., 1979).

Distance Learning Course Design

There are many models to guide the development of instruction. Moore and Kearsley (1996) suggest using Instructional System Design (ISD) for the design and development of distance education courses (see Figure 1). ISD is a planned approach to instructional development where all aspects of learning are defined in terms of observable, measurable behaviors. Using this approach, learning is evident in that new skills, knowledge and attitudes can be observed. The needs of the learner are central to the ISD process.

Moore and Kearsley (1996) list five stages to the ISD process: analysis, design, development, implementation, and evaluation. The ISD process is continuous and may require overlap in one or more stages if a need arises. It is, therefore, possible that an evaluation will occur after the design stage if there is a question or problem with the validity of instructional needs based on the analysis.

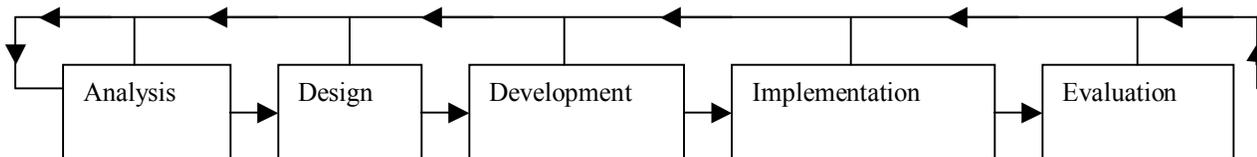


Figure 1. ISD Model

*Adapted from Driscoll (2002). *Web-Based Training*.

In the analysis stage, some form of task or job analysis is performed to determine specific skills needed for the task or job at hand (Moore & Kearsley, 1996). Characteristics of the learners and their environment are also identified during this stage of ISD. The goal is to find out what the learner needs to learn in order to perform the desired task or skill identified.

The next stage of the ISD process is design. Here, goals and objectives of the instructional piece are written (Moore & Kearsley, 1996). Objectives are written in very specific terms where outcomes are in the form of observable behaviors. If criterion referenced testing will be used with the instruction, the test items matching the objectives are created during this stage. Lastly, media selection is made based on the objectives and information collected from the analysis phase.

It is during the development stage that instructional materials such as study guides, videos, and audiotapes are created. Not only are materials produced at this stage, but they are also tested (Moore & Kearsley, 1996). In addition, teachers and staff may also be trained during the development phase. During the implementation stage of ISD, instructional materials are delivered, students register (if necessary), and instructors and/or tutors interact with students. It is during the evaluation stage that the testing and grading of students takes place and the assessment of the instructional effectiveness of the course and materials is conducted (Moore & Kearsley, 1996).

There has been a great deal of research in specific areas of course design. These areas range from the importance and development of a study guide for each distance course, promoting interaction in a distance environment, design techniques for motivating adult learners, and course design to reduce attrition in distance learning. Each of these areas plays a key role in successful

distance instruction. Because of the significant impact each topic has on distance instruction, all warrant a brief discussion.

Providing Feedback to Distance Learners

Feedback has many definitions shaped by the context in which the term is used. Some definitions are more specific, while others are very broad. Johnson and Johnson (1993) define feedback in a more general manner, stating that it is “information made available to individuals that makes possible the comparison of actual performance with some standard of performance” (p. 135). Feedback can also be described as a motivator for increasing the rate or accuracy of performance (Kulhavy & Wager, 1993). More specifically to an educational context, feedback is defined as “any of the numerous procedures used to tell the learner if an instructional response is right or wrong” (as cited in Dempsey, Driscoll, & Swindell, 1993, p. 22).

Feedback can be either quantitative or qualitative. Quantitative feedback informs the learner that a performance is either correct or incorrect, whereas qualitative feedback informs the learner about how much discrepancy exists between the learner’s responses and the correct response (Johnson & Johnson, 1993). Qualitative feedback is generally more descriptive than quantitative, which generally informs a student only if they were right or wrong in their response. An example of qualitative feedback is a worksheet completed by a student, which has been submitted to the teacher, who then marked the questions that are incorrect. With qualitative feedback there is no explanation given as to why responses are incorrect.

For the purposes of this study, a more general definition of feedback will be used. Because computer generated reminders dispersed in this study will not provide instruction or alert a learner a correct or incorrect response, feedback will be defined as information made

available to students so that they can compare their performance to that of some standard; the standard being the target deadlines given in the syllabus.

The Purpose of Feedback

Feedback should be constructive, relevant, focused and timely to help alleviate any dissatisfaction and frustration the learners may be feeling (Moore & Kearsley, 1996). If used incorrectly, feedback can be viewed as a trivial (Smith & Ragan, 1993). If feedback is to be useful it should have a purpose. Literature on feedback has identified many purposes including reinforcement, motivation, and instruction (Dempsey, Driscoll, & Swindell, 1993). Instructional feedback is not trivial and is essential to the learning process as it provides learners information about the quality of their responses. Likewise, motivational feedback or feedback that reinforces certain behaviors is not trivial and can influence persistence to complete a task (Smith & Ragan, 1993).

Using feedback as a motivational tool may be a function that is often overlooked (Hoska, 1993). However, using feedback as motivation is critical in that it affects the way in which learners perceive and react to a learning task. Learners must invest effort if they are to gain knowledge and skill (Hoska, 1993). Providing timely feedback and answers to questions can also assist in enhancing interaction in a distance-learning environment (Wolcott, 1996). New technologies can assist instructors in providing immediate feedback.

Sources of Feedback

Johnson and Johnson (1993) identify three sources of feedback, which include oneself, other people, and technological devices. In an ideal learning situation, all three types of feedback are present (Johnson & Johnson, 1993). However, this is not always the case in a distance-learning environment.

As discussed, self-regulated learners engage in self-generated feedback. This would be an example of what Johnson and Johnson (1993) term as feedback from oneself. An example of such feedback could include self-evaluation. The challenge of this type of feedback is that not all learners possess the skills necessary to give useful feedback to themselves.

In a distance environment, feedback from other people can be limited. The most obvious feedback distance learners may receive from “others” is that from the instructor and additional academic support staff, including tutors, counselors, and librarians. Depending on the design of a distance-learning course, feedback from other classmates may or may not be encouraged (e.g. Atman, 1988; Wolcott, 1996). As discussed in terms of non-institutional support, distance learners receive feedback from other people such as family members, coworkers, and even community members. It is important to remember that feedback from others does not always come in the form of instruction. The sources of feedback listed above could provide distance learners with feedback that serves as reinforcement or motivation. For example, the spouse of a distance learner may encourage them to persist and complete a course.

Third is feedback from technological devices, a very important form of feedback in asynchronous distance education. Some technological devices that deliver feedback include timers and computers. Technological devices can provide feedback in a number of ways including providing raw scores, percentile scores, and items missed, or even objectives mastered (Johnson & Johnson, 1993). Additionally, computers can provide corrective or tutorial information when learners select incorrect responses. The next section discusses feedback from technological devices in more detail.

Feedback from technological devices.

With the attributes of new emerging technologies, the capabilities of delivering feedback to asynchronous learners are increasing. Emerging technologies are “those computer-based systems that provide the technological capacity to present, manipulate, control, or otherwise manage educational activities” (Hannafin, Hannafin, & Dalton, 1993, p. 264). Electronic feedback allows not only instructors to continuously monitor student work, but also allows students to more easily monitor their own work. In addition, it allows instructors a means in which they can provide more prompt feedback to students learning from a distance. With the ability to provide prompt feedback regardless of geographical distance, learners are able to make corrections and improvements to their work quickly while their motivations and interests are high (Johnson & Johnson, 1993).

Emerging technologies have expanded capabilities, allowing more complex feedback to be provided to learners (Johnson & Johnson, 1993). For example, with the use of video teleconferencing, learners can receive feedback in the form of demonstration, rather than text only feedback. This increases the potential for the learner to acquire a deeper understanding of the concept being demonstrated. Multi-dimensional and complex feedback can be quite powerful in the learning process (Johnson & Johnson, 1993; Moore & Kearsley, 1996).

Not only do emerging technologies assist students in receiving various types of feedback, but instructors also benefit. For example, technologies can provide instructors with feedback about instructional effectiveness in the form of summary reports. These summary reports provide information about student progress and can be easily generated (Johnson & Johnson, 1993). In addition, technologies allow instructors a more convenient way to store student work that is electronically.

Summary

Although a great deal of research was conducted in the 1960's and 1970's on the effects of various pacing contingencies on student progression through self-paced courses, there is a current need for this type of research as asynchronous web-based learning is becoming increasingly popular. Course incomplete rates and student attrition rates are high in asynchronous courses due to the number of learners enrolled who do not possess the self-regulation skills necessary to be successful in such an environment.

This study will examine the influence of computer generated email reminders on assignment submission and course completion rates. Computer-generated email reminders will alert learners when they fail to submit an assignment by a target deadline listed in the course syllabus. Once a student fails to meet a suggested deadline, the reminders will encourage learners to self-manage their progress as learners will be reminded that they need to move at an appropriate pace if they are to complete the course within the current term.

There are two research questions for this study:

1. Do computer generated email reminders influence assignment submissions rates?
2. Do computer generated email reminders influence course completion rates?

Chapter Three

Methodology

Purpose of the Study

The primary objective of this study was to observe the influence of computer generated reminders on assignment completion rates and course completion rates. The reminders served as a support strategy to assist learners in maintaining a consistent assignment completion rate throughout the course, with the goal of completing the course within the given semester. The reminders were used to foster self-management behaviors and to serve as motivators. Target dates within the course syllabus also acted as a support strategy, helping learners gauge their progress throughout the course.

Research Questions and Hypotheses

There are two research questions and hypotheses for this study:

1. Do computer generated email reminders influence assignment submissions rates?
2. Do computer generated email reminders influence course completion rates?

H₁: Assignment completion rates of the treatment group will be closer to the targeted due date than assignment completion rates of the control group.

H₂: The course completion rate of treatment group will be greater than the course completion rate of control group.

Significance of the Study

Procrastination and attrition are both widely cited problems in distance education, particularly asynchronous, self-paced courses (Born & Whelan, 1974; Hess, 1974; Miller et al., 1974; Bijou et al., 1976; Gottula & Edwards, 1977; Glick & Semb, 1978; Coggins, 1989; Morgan & Tam, 1989; Eisenberg & Dowsett, 1990; Dille & Mezack, 1991; Fjortoft, 1995;

Brown, 1996; Wallace, 1996; Belawati, 1998; Galusha, 1998; Bernt & Bugbee, 1993; Wilkinson & Sherman, 1989; Wilkinson & Sherman, 1990; Chyung, 2001; Terrell & Dringus, 2000). As a student procrastinates on completing assignments in self-paced courses, they fall further behind. The further behind a student gets in a course, the more likely they are to drop out. While many factors influencing student persistence in a distance environment are not within the control of the academic institution, there are strategies institutions can implement that help lessen student procrastination, and possibly attrition (Morgan & Tam, 1999).

Participants and Setting

Through the Department of Teaching and Learning, Virginia Tech offers an online Master of Arts degree in Instructional Technology. Known as ITMA, this program has been in existence since 1998. Originally, program participants included only K-12 educators throughout the state of Virginia who were seeking a Master's degree. However, since that time, enrollment has evolved to currently include learners from other states and countries and also various professions.

Courses offered through ITMA range from one to three semester hours in credit. There are a total of 30 semester hours offered through this online program. As suggested by Moore and Kearsley (1996), within the syllabus of each ITMA course is a list of assignments and corresponding target deadlines. While there are no consequences for not meeting these target deadlines, the list provides learners with a big picture of how the assignments from each course should be divided and completed in order to finish the course within the current term. Spring and fall terms are fifteen weeks in length.

There are approximately two hundred students in the ITMA program. All courses are delivered via the World Wide Web and are asynchronous in nature, with no face-to-face

interaction. Students are allowed to complete their assignments at their own pace, during times convenient for them. The large majority of those enrolled continue to be educators, mainly K-12, although the number of learners outside of K-12 education (i.e. from corporate training and higher education) is growing.

Participants of this study included learners enrolled in one of twelve courses in the ITMA program Spring 2003. Both novice and experienced ITMA learners comprised the sample. It is uncertain whether or not novice participants had previous distance learning experiences.

Although total enrollment for ITMA is approximately 200, the total number of learners comprising the sample for this study was 82. The sample consisted only of learners officially admitted into the Masters program and who had registered for courses by the first day of Spring 2003 classes. If a student registered for a course after the start of the term, they were not included in the sample. In addition, any ITMA student graduating in May 2003 was not included in the sample.

As is often the case in distance education, ITMA has a relatively high percentage of students who do not complete courses each semester. When students do complete courses, a large majority of them tend to procrastinate in completing and submitting their work until the end of the term. As research has shown, this end of the term rush causes a strain on faculty in terms of grading and submitting final grades (Born & Moore, 1978). Additionally, appropriate feedback cannot be given if learners submit assignments in bulk without pacing themselves. The purpose of this study is to examine the influence of computer generated assignment reminders on assignment submission rates and course completion.

General Course Format

ITMA courses incorporate many strategies suggested in distance learning literature that help distance learners be more successful. For example, a list of suggested due dates for assignments are given to learners as recommended by Moore and Kearsley (1996) and Saba (2000). As Moore and Kearsley (1996) also suggest, contact information is readily available, not only in the syllabus, but in the reminder as well.

The use of target deadlines is a pacing strategy that does not compromise the popular attributes of self-paced learning, yet these types of deadlines have been effective in increasing student assignment completion rates (Bijou, 1976; Glick & Semb, 1978). In addition to serving as a pacing strategy, the computer-generated reminders are a strategy to help influence self-monitoring and time management among distance learners.

Participants of this study are students enrolled in at least one of twelve courses, all offered through the ITMA program. Most courses offered through the ITMA program are project-based. Learners are able to apply concepts within each course to a project relevant to their own needs. The final products of each course are then combined into an online portfolio.

The number of required assignments varies by course, from four to 13. Learners are typically required to complete assignments using a word processing program such as Microsoft Word. Microsoft Excel and PowerPoint are also commonly used. In addition, there are assignments within courses that require the use of specialty software such as Inspiration, Macromedia's Dreamweaver, Macromedia's Director, or Microsoft Front Page.

Learners are given specific instructions on what title to give each assignment when saving their files. They are then required to upload the document to their Virginia Tech filebox. Filebox is an internet-accessible file storage space for documents and web pages. Each student at

Virginia Tech is given a certain amount of storage space for his or her filebox. Documents are transferred from personal computers to the filebox using some type of file transfer protocol such as Fetch. Once assignments have been transferred to filebox, the document has a specific web address, or URL. This URL is then submitted to the ITMA database where a grader can access and grade the assignment.

Variables.

There were two dependent variables for this study; assignment completion rate (the number of days an assignment was submitted past the target due date) and course completion. There were also two independent variables in this study; the use of the email reminder and number of assignments per course. The “number of assignments” variable categorized ITMA courses based on the number of assignments required for submission. The first assignment number group, “low”, included courses consisting of four to six assignments. “Medium” was the second assignment number group and included courses having seven to eight assignments. The third assignment number group was “high” and included courses requiring 13 assignments.

Treatment.

All learners comprising the sample for this study were entered into a database where they were randomly assigned to two groups, A and B. Group A, the control group, did not receive computer-generated reminders when assignment due dates were not met. Group B was given the treatment of a reminder sent via email the day after a student failed to meet a suggested due date for an assignment.

Both groups were given a list of target deadlines within the course syllabus, as is the normal ITMA procedure. Typically, assignments are not due the first week that classes begin, due to students dropping courses and adding courses. However, by the end of the second week,

the first assignment should be completed and submitted into the ITMA database using the student interface. From then on, most courses require one assignment to be submitted each week or every other week.

Final participants for each group were not identical, with group A containing 42 participants and group B containing 40 participants. Discrepancies existed due to registered students deciding not to begin a course. Students must have submitted at least one assignment in a course to be included in this study.

The ITMA database (where assignments are submitted by students) tracked the date assignments were submitted by each student. The database compared the suggested due date of each assignment with the date the assignment was submitted. Group B participants received the treatment of computer-generated reminders if they failed to submit an assignment by a suggested deadline. It was possible for a participant in the treatment group to not receive a reminder each week, or any time during the academic term if they did not miss a suggested due date.

As suggested by Moore and Kearsley (1996), the reminders were written in a personal tone to reflect the personality of graders within the ITMA program. Reminders were a form of feedback to the learners, alerting them to their progress through a course. The content of the reminders was simple and brief. The wording of the email did not change throughout the semester (see Appendix A). The technological infrastructure in place for ITMA courses allowed for emails to be automatically generated and emailed to learners who did not make the suggested assignment deadline. The email was typically sent 24 hours after the suggested due date.

Data Analysis

The number of assignments required for submission varied between course: from four to 13. A second independent variable was produced to address this difference during analysis.

Courses were categorized based on the number of assignments: low (4-6), medium (7-8), and high (13). To determine if the number of assignments had an influence on the dependent variables of assignment completion rate and course completion, four analyses were conducted for this study:

1. Differences in assignment completion rate between control and treatment groups.
2. Differences in assignment completion rate among assignment number groups.
3. Differences in course completion between control and treatment groups.
4. Differences in course completion among assignment number groups.

Assignment completion rate analysis.

To determine assignment completion rate, all assignment submission information from the Spring 2003 semester was copied from the ITMA database and pasted into Microsoft Excel. Information included course title, student name, assignment name and number, and the date each assignment was submitted. Participants of each course were labeled according to their random group assignment, either group A (control), or group B (treatment).

As stated, courses varied in the number of assignments required, therefore time given to complete an assignment varied by course. To account for the discrepancy in time allowed to complete assignments, it was necessary to use a ratio to calculate the assignment completion rate. Dividing the number of days a student took to complete an assignment by the number of days allowed to complete the assignment yielded the assignment completion rate. The ratio allowed for a more accurate analysis of assignment submissions among courses.

For example, the target date for the first assignment in one course was January 20. The semester began on January 13, so students had seven days to complete the first assignment. If the assignment was submitted on January 20, the assignment completion ratio would be $7/7$ or 1.0. If

the assignment was submitted January 18, two days prior to the deadline, the assignment completion ratio would be 5/7 or 0.7. If the assignment was submitted January 25, five days after the deadline, the assignment completion ratio would be 12/7 or 1.7. The smaller the completion ratio, the earlier the assignment was submitted.

Once the assignment completion rate variable was calculated for each assignment submitted Spring 2003, the data was entered into SPSS. One-way Analysis of Variance (ANOVA) was used to determine if there was a difference between group A and B. A one-way ANOVA is used when the dependent variable is continuous and the independent variable is categorical. In the analysis for this study the dependent variable is the assignment completion rate and the independent variable is group membership (control or treatment).

A two-way ANOVA, or two-by-two factorial design, was used to analyze assignment completion rate based on number of assignments. This analysis allows for every level of every factor to be paired with every level of every other factor. Conducting the analysis in this way allowed examination of the influence of the number of assignments on course completion. Table 1 displays this design.

Table 1

Factorial Design for Assignment completion rate and Number of Assignments

Number of Assignments	Control (No Email) =C	Treatment (Email) = T
Low (4-6) (L)	LC	LT
Medium (7-8) (M)	MC	MT
High (13) (H)	HC	HT

Course completion analysis.

Course completion was the second dependent variable examined in this study. Students were registered for one, two, three, or four courses. Completion of all required assignments for a course established course completion. For example, if there were 13 assignments required in a course, the student had to complete all 13 to complete the course. If a single student was registered for three courses, it was possible for them to complete one of three, two of three, three of three, or none of the courses.

A list of students enrolled in each course was generated from the database and pasted into Excel. Each student was assigned an identifier consisting of a number followed by either a “C” for control group or “T” for treatment group. The number of times an identifier was listed in the data was determined by the number of courses in which that particular student was enrolled.

Course completion was assigned a value of “1”, while course incompleteness was assigned a “0.”

Table 2 gives an example of course completion data.

Table 2

Course Completion Data Example

Student	Number of Assignments	Complete?
1C	Low	0
1C	Low	0
4T	High	1
6C	Medium	1
6C	Medium	1
6C	Low	0

As with assignment completion rate analysis, course completion data was entered into SPSS where two difference analyses were conducted. The first analysis conducted was Chi-square, which examined differences in course completion between groups. Chi-square was used in this analysis since the dependent and independent variables were categorical.

A two-by-two factorial design (two-way ANOVA) examined differences in course completion between treatment groups and among assignment number groups. Conducting the analysis in this way examined the influence that the number of assignments in a course could have on course completion.

Qualitative data analysis.

Specific to the treatment group were surveys, which were emailed to each participant in the treatment group. The purpose of the survey was to gather learner reactions to the email reminder. Participants were asked to complete the survey and return it via email. The survey yielded additional quantitative data, as well as qualitative data. There were two sections of the survey (see Appendix B). In section one, participants were asked to complete questions which rated the usefulness of the reminders using a Likert scale. The Likert scale used for these questions consisted of only four possible responses: strongly agree (4) to strongly disagree (1). In addition, there was a section where students could enter any comments they felt necessary.

In section two, participants were asked to provide information on where they typically complete coursework and their employment status. This part of the survey revealed specific information about the learning context. Distance learners each have specific life situations that impact their learning. Research has shown that an individual's personal learning environment and time available for learning are unique to each learner and stem from each student's distinctive life situation (Fjortoft, 1995). The second section of the survey consisted of six Likert

type questions and one comment section. Percentages were calculated for each Likert question and comments were examined for common themes and then summarized.

Chapter Four

Results

Research Questions

The two dependent variables for this study were assignment completion rate and course completion. The two independent variables for this study were the use of an email reminder as a treatment and the number of assignments grouped into three categories, low (4-6), medium (7-8), and high (13).

There were two research questions in this study:

1. Do computer generated email reminders influence assignment completion rates?
2. Do computer generated email reminders influence course completion rates?

Assignment completion rate.

The sample for this study was comprised of 82 students enrolled in from one to four of twelve courses offered through the ITMA program. Participants were assigned to one of two groups: Group A, the control group and Group B, the treatment group. The treatment group received computer generated reminders via email if they failed to meet a target deadline for submitting an assignment.

The number of assignment submissions varied by course, from four to thirteen assignments. Due to this discrepancy in assignment numbers, courses were categorized based on the number of assignments required for submission. This categorical variable was one of the two independent variables for this study. Assignment number group “low” included courses with four to six assignments. Assignment number group “medium” included courses containing seven to eight assignments. Assignment number group “high” included courses containing 13 assignments. A total of four analyses were conducted for this study:

1. Differences in assignment completion rates between control and treatment groups.
2. Differences in assignment completion rates among assignment number groups in control and treatment groups.
3. Differences in course completion between control and treatment groups.
4. Differences in course completion among assignment number groups in control and treatment groups.

To examine the assignment completion rate, a ratio was calculated by dividing the number of days a student took to complete an assignment by the number of days allowed to complete the assignment. The resulting number was used to represent the participants' assignment completion rates.

The first research question examined the influence of email reminders on assignment completion rates. A one-way ANOVA was used to analyze the data. This study hypothesized that the treatment group would submit assignments closer to the targeted due dates than the control group. While this study did result in the treatment group submitting assignments closer to the targeted due date as compared to the control group, the difference was not significant, $F(1)=.047$, $p>.05$ (see Table 3). Table 4 presents the table of means for assignment completion rate and treatment group.

Table 3

Analysis of Variance for Assignment Completion Rate Between Groups

	df	F value	P value
Assignment	1	.047	.828

completion rate

significant $p < .05$

Table 4

Means and Standard Deviation for Assignment Completion Rate Between Groups

Group	N	Mean	SD
Control	450	1.2604	3.26520
Treatment	479	1.2184	2.60899

*significant $p < .05$

However, a two-way ANOVA revealed a significant difference, $F(1,2) = 19.412, p < .05$, in assignment completion rate between assignment number groups (see Table 5). Significance existed among all three assignment groups.

Means for assignment completion rates revealed that the fewer assignments within a course the later assignments were submitted (see Table 6). The more assignments a course contained, the closer assignments were submitted to the suggested deadline. This was true for both the control and treatment groups.

Table 5

ANOVA Table: Treatment and Assignment Number

	df	F value	P value
Treatment	1	.041	.840
Assignment number group	2	19.412	.000*
Treatment x Assignment number group	2	3.031	.0503

* significant $p < .05$

Table 6

Means and Standard Deviation for Assignment Completion Rate and Number of Assignments

Group	Assignment number	Mean	Std. Deviation	N
Control	Low (4-6)	2.4978	3.06027	92
	Medium (7-8)	1.4922	2.13916	192
	High (13)	.3066	4.08883	166
	Total	1.2604	3.26520	450
Treatment	Low (4-6)	2.1590	1.93773	61
	Medium (7-8)	1.2659	3.04936	126
	High (13)	1.0014	2.48573	292
	Total	1.2184	2.60899	479

Course completion.

The second research question examined the influence of email reminders on course completion. Chi-Square was used to analyze course completion by treatment group. Analysis revealed no significant difference between groups ($p = .124$). The email reminder did not have a significant influence on course completion (see Table 7). Crosstabs are presented in Table 8.

Table 7

*Chi-Square Summary for Dependent Variable: Course Completion and Independent Variable:**Treatment*

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.795(b)	1	.180		
Fisher's Exact Test				.195	.124
N of Valid Cases	140				

*significant $p < .05$

Table 8

Crosstab Table for Course Completion in Control and Treatment Groups

Group		Course completion		Total
		Not complete	Completed	
Control	Count	25	50	75
	Expected Count	21.4	53.6	75.0
	Std. Residual	.8	-.5	
Treatment	Count	15	50	65
	Expected Count	18.6	46.4	65.0
	Std. Residual	-.8	.5	
Total	Count	40	100	140
	Expected Count	40.0	100.0	140.0

When the course completion was analyzed by assignment number group, two-way ANOVA revealed a significant difference, $F(1,2) = 3.225$, $p < .05$ (See Table 9). All three of the assignment number groups (low 4-6, medium 7-8, high 13) were significantly different from one another in terms of course completion. In other words, there was significance between the low and medium assignment groups, the low and high assignments groups, and the medium and high assignment groups. While the treatment did not have an impact on course completion, the number of assignments within a course did impact course completion.

Also, examining course completion means among assignment groups revealed medium assignment number (7-8 assignments) courses had a higher course completion rate than did low (4-6 assignments) or high (13 assignments) assignment number courses. This was true for both control and treatment groups. These means are presented in Table 10.

Table 9

Two Way Analysis of Variance for Course Completion and Number of Assignments

Source	df	F	Sig.
Treatment Group	1	1.910	.169
Assignment	2	3.225	.043*
Treatment Group x Assignment	2	1.020	.363

*significant $p < .05$

Table 10

Table of Means and Standard Deviation for Course Completion and Number of Assignments

Group	Assignment Number Group	Std.		N
		Mean	Deviation	
Control	Low (4-6)	.6842	.47757	19
	Medium (7-8)	.7742	.42502	31
	High (13)	.5000	.51075	24
	Total	.6622	.47620	74
Treatment	Low (4-6)	.6429	.49725	14
	Medium (7-8)	.9000	.30779	20
	High (13)	.7419	.44480	31
	Total	.7692	.42460	65
Total	Low (4-6)	.6667	.47871	33
	Medium (7-8)	.8235	.38501	51
	High (13)	.6364	.48548	55
	Total	.7122	.45436	139

Survey Results

Surveys were distributed to all participants in the treatment group via email on April 15, 2003. The purpose of the survey was to obtain student reactions to the computer-generated email reminders. Students were asked to return surveys by May 1, 2003. A follow-up email was sent to participants on April 25, 2003. Out of 40 participants in the treatment group, 27 surveys were returned by the May 1, 2003 deadline.

There were thirteen Likert-type questions within the survey. A four point scale was used: strongly agree (4) to strongly disagree (1). In addition to calculating percentages for the Likert responses, students were encouraged to enter any comments they felt relevant to their experience. Table 11 summarizes percentages of responses to questions in part A of the survey.

Table 11

Survey Section A Likert Questions and Response Means

Question	Response Percentages
1. I found the email reminders helpful.	Strongly agree=38.5% Agree =38.5% Disagree=15% Strongly disagree =8%
2. My view of the email reminders changed as the semester progressed.	Strongly agree =8% Agree =30% Disagree =54% Strongly disagree =8%
3. I need reminders about completing assignments throughout the semester.	Strongly agree =4% Agree =33% Disagree =41% Strongly disagree =22%
4. The email reminders made me feel less isolated as a distance learner.	Strongly agree =8% Agree =54% Disagree =19% Strongly disagree =19%
5. I would suggest using the email reminders in the future.	Strongly agree =22% Agree =56% Disagree =15% Strongly disagree =7%
6. The wording of the emails should change throughout the semester.	Strongly agree =8% Agree =46% Disagree =42% Strongly disagree =4%
7. Detailed analysis about my progress in the course should be included in the email.	Strongly agree =16% Agree=36% Disagree =44% Strongly disagree=4%

The majority of participants in the treatment group (77%) either strongly agreed or agreed that email reminders were helpful. One student stated, "I liked receiving the email reminders. I am very busy with family, work, community, etc. and found these reminders helpful in keeping me aware of my progress, or lack thereof."

Conversely, there were other students who did not find the reminders so helpful: "I did not like the reminders myself, they made me feel more stressed than I already was about completing my assignments." Still, others had mixed views about the reminders: "The email was helpful to keep on track, but also annoying because it didn't tell me if there was a problem or if the assignment was being graded or not..."

Section B of the survey revealed information more specific to the distance learning experience and the context in which treatment participants completed coursework (see Table 12). The majority of treatment group participants responding to the survey (70%) had completed from one to six hours in asynchronous distance courses prior to Spring 2003. These courses could have been outside of the ITMA program, or the courses could have included the ITMA program.

Survey responses revealed that the vast majority of respondents do complete coursework at home (84%), while 16% complete coursework at work. In addition, 80% of respondents reported that they work full time and go to school part time. Interestingly, only 59% of respondents reported completing coursework on the weekends, leaving 41% completing coursework at other times.

Based on their own definition of what a good time manager is, 81.5% of respondents either agreed or strongly agreed that they were good time managers. Consistent with characteristics of good time management, 78% of respondents either agreed or strongly agreed that they set aside a particular time each week to complete coursework.

Table 12

Survey Section B Likert Questions and Response Means

Question	Response Percentages
9. I have taken: <input type="checkbox"/> 1-3 <input type="checkbox"/> 4-6 <input type="checkbox"/> 7-9 <input type="checkbox"/> 10-12 asynchronous distance courses.	1-3 = 33% 4-6 =37% 7-9 =11% 10-12 =19%
10. I complete most of my distance course instruction from a computer at: <input type="checkbox"/> Home <input type="checkbox"/> The office/work <input type="checkbox"/> The library <input type="checkbox"/> Other	Home =84% The office/work =16% The library =0% Other =0%
11. I complete most of my coursework on the weekends. <input type="checkbox"/> 4=strongly agree <input type="checkbox"/> 3=agree <input type="checkbox"/> 2=disagree <input type="checkbox"/> 1=strongly disagree	Strongly agree =22% Agree =37% Disagree =37% Strongly disagree =4%
12. Which best describes your situation? <input type="checkbox"/> I work full time and go to school full time. <input type="checkbox"/> I work full time and go to school part time. <input type="checkbox"/> I work part time and go to school full time. <input type="checkbox"/> I work part time and go to school part time. <input type="checkbox"/> I go to school full time.	Full/Full =8% Full/Part =80% Part/Full =12% Part/Part =0% School Full = 0%
13. I set aside a particular time to complete coursework each week. <input type="checkbox"/> 4=strongly agree <input type="checkbox"/> 3=agree <input type="checkbox"/> 2=disagree <input type="checkbox"/> 1=strongly disagree	Strongly agree =15% Agree =63% Disagree =15% Strongly disagree =7%
14. I consider myself a good time manager (based on your own definition). <input type="checkbox"/> 4=strongly agree <input type="checkbox"/> 3=agree <input type="checkbox"/> 2=disagree <input type="checkbox"/> 1=strongly disagree	Strongly agree =30% Agree =51.5% Disagree =18.5% Strongly disagree =0%

Students also gave many valuable suggestions in the comment sections of the survey.

Many students felt the reminders would be more helpful if the timing of the reminders was

changed. Confirming this, one student stated, “The reminder should be sent one week before the deadline and again as a follow-up as needed. If help is available, the reminder could be used to encourage students to contact staff for assistance or if there are any questions.” Another stated, “Have you considered sending reminders prior to the deadline?...If I had to choose between the two notifications, I would choose to receive them prior to a due date.” See Appendix C for all student comments from the survey.

Demographics

Although analysis of demographic information was not a part of this study, it is important to report this type of information since learner population is a critical consideration in instructional development. At the beginning of each semester, students in the ITMA program are asked to update or complete an online student profile form where they list their personal information including age, residence, occupation and gender. Demographic information was collected from these online forms.

There were 74 of 82 participants reporting their age. The mean age of those reporting was 38.7, with a standard deviation of 8.24. Of the 82 in the sample, 81 reported gender with 51 being female and 30 being male. Only 53 participants reported occupation. Of those 53, 31 were K-12 educators, with the remaining 22 being from other occupations such as higher education and corporate training. There were 81 participants reporting residence. Of those 81 reporting, 23 were out of state leaving the majority of participants in state.

Limitations of the Study

The primary limitation of this study is that of the sample. Although participants of this study were randomly assigned to one of two groups, the sample size from which they were taken

was small ($N = 82$). The sample was taken from one distance learning program, therefore results may not be generalized to other populations.

Chapter Five

Discussion

Pacing studies of the 1960's and 1970's typically found a steadier rate of assignment completion when pacing contingencies were implemented throughout a semester (Lazar et al., 1977; Miller et al., 1974). Although the treatment group did submit assignments closer to the targeted due date as compared to the control group, the difference was not significant. The treatment employed in this study did not influence assignment completion rates. Although past studies did find a steadier rate of assignment completion when a treatment was implemented, course completion rates were not significantly different (e.g. Glick & Semb, 1978). The same is true for this study. The treatment did not significantly influence course completion.

With experience in the ITMA program comes the knowledge that suggested deadlines are in fact *suggested* deadlines. Learners new to the ITMA program may panic when they miss a deadline, assuming these deadlines are fixed as is generally the case in face-to-face environments. Learners experienced in the ITMA program are typically aware of the policies and understand that as long as they submit all work prior to the end of the term deadline, they will be awarded a final grade. The randomization used in this study ensured heterogeneous control and treatment groups so these differences were not observable. Each group had a fairly even blend of experienced and novice distance learners.

Serban (2000) conducted research that found policies such as number of distance courses learners are allowed to enroll in influence student success. As is true with traditional, on-campus courses, the more online courses a student enrolls in during a semester, the more likely that student will withdraw.

Although this study did not examine the influence of number of courses on assignment completion, it did reveal a significant difference among assignment number groups (low, medium, and high) for both assignment completion rate and course completion. This study revealed that the more assignments in a course, the closer assignments were submitted to the suggested deadline. Students submitted assignments more days past the suggested due dates when fewer assignments were in a course. This research is evidence that the number of assignments required in a distance course influences the timeliness of assignment completion and the likelihood of course completion.

Survey Discussion

Although the treatment was not found to significantly influence assignment completion rate or course completion, the survey completed by the treatment group yielded valuable information. Not all distance learners are self-directed, as earlier distance learning literature has suggested (Brookfield, 1995). Survey responses reinforced this literature as many experienced distance learners were seemingly irritated and offended by the notion of being reminded about a *suggested* deadline.

Lack of time or references to various life responsibilities were mentioned in four of the 31 survey responses. Students stated that getting assignments completed was not the problem, but lack of time was. In addition personal illness, numerous jobs, and family responsibilities were cited as reasons for missing deadlines. Again, these issues are consistent with literature on lack of time being a barrier to persistence in distance courses (Morgan & Tam, 1999).

Survey results revealed that most learners were in favor of changing the wording of the reminders throughout the semester and should provide more detailed analysis of student progress. These responses reveal that students do, in fact, prefer communication and institutional

support when learning at a distance. These results support the findings of Saba (2000), who found that maintenance of good communication between student and instructor in a distance program is essential in reducing attrition. It is possible for policies and procedures to be implemented within a distance program, that allow for this type of communication with distance learners.

Implications

In this study a significant difference in assignment completion rate and course completion was found between assignment groups. The findings of this study are important to distance course design. Due to the problems of procrastination and attrition in distance learning, distance education would benefit from more research on how the number of assignments in a course influences the assignment completion rate and course completion. This study found that the more assignments in course, assignments were submitted closer to the target due dates.

Research has shown that procrastination, and potentially attrition, can be reduced by implementing such strategies as providing orientation to distance learners, contacting students via email who are not submitting assignments, and increasing frequency and immediacy of feedback (Moore & Kearsley, 1996; Coggins, 1989; Kirkwood, 1989; Belawati, 1998; Eisenberg & Dowsett, 1990; Wilkinson & Sherman, 1990). These issues are not within the control of the student, but the institution and could potentially be addressed with minor policy and process changes to grading procedures. Student support cannot be overlooked in a distance program. This type of support may require the training of personnel, as many institutional staff may not be knowledgeable about providing this type of support to distance learners.

The survey responses revealed that assignment reminders perhaps would be better received by learners new to a distance program, rather than learners experienced in distance

learning. This idea is supported by the fact that some distance learners, possibly those who were experienced in distance learning, tended to become irritated and even offended at the idea of being reminded of a suggested deadline. Learners new to the distance environment may be more appreciative of the reminders even though the reminders were computer generated. Procedures of this sort would require a more in-depth analysis of learners prior to, or at the beginning of each term. Such methods could then be removed or replaced with new strategies of motivation and approaches that foster self-monitoring as students become more experienced in a program.

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Appendix A

Email Reminder

Dear [student's first name],

The target submission date for [assignment number and title] was [suggested due date]. While there is no penalty for submitting assignments past the suggested due date, we want to help you stay on track to finish the course. If you have already submitted your assignment, please disregard this reminder. If you have any questions or problems with the assignment, please feel free to contact itmahelp@vt.edu.

-Amy

Appendix B

ITMA Course Design: Email Reminder Survey

Part A

Instructions: For each of the following items, please rate each based on the degree to which you agree or disagree.

1. I found the email reminders helpful.

- 4=strongly agree
- 3=agree
- 2=disagree
- 1=strongly disagree

2. My view of the email reminders changed as the semester progressed.

- 4=strongly agree
- 3=agree
- 2=disagree
- 1=strongly disagree

3. I need reminders about completing assignments throughout the semester.

- 4=strongly agree
- 3=agree
- 2=disagree
- 1=strongly disagree

4. The email reminders made me feel less isolated as a distance learner.

- 4=strongly agree
- 3=agree
- 2=disagree
- 1=strongly disagree

5. I would suggest using the email reminders in the future.

- 4=strongly agree
- 3=agree
- 2=disagree
- 1=strongly disagree

6. The wording of the emails should change throughout the semester.

- 4=strongly agree
- 3=agree
- 2=disagree
- 1=strongly disagree

7. More detailed analysis about my progress in the course should be included in the email.

- 4=strongly agree
- 3=agree
- 2=disagree
- 1=strongly disagree

8. Comments/reactions to email reminders: (Click in the text box and type as much as you would like. The box will expand.)

Part B

Instructions: Please select the most suitable description of yourself by clicking in the appropriate box.

9. I have taken: 1-3 4-6 7-9 10-12 asynchronous distance courses.

10. I complete most of my distance course instruction from a computer at:

- Home
- The office/work
- The library
- Other

11. I complete most of my coursework on the weekends.

- 4=strongly agree
- 3=agree
- 2=disagree
- 1=strongly disagree

12. Which best describes your situation?

- I work full time and go to school full time.
- I work full time and go to school part time.
- I work part time and go to school full time.
- I work part time and go to school part time.
- I go to school full time.

13. I set aside a particular time to complete coursework each week.

- 4=strongly agree
- 3=agree
- 2=disagree
- 1=strongly disagree

14. I consider myself a good time manager (based on your own definition).

- 4=strongly agree
- 3=agree
- 2=disagree
- 1=strongly disagree

15. Comments: (Click in the text box and type as much as you would like.)

Thank you for completing our survey!
-ITMA staff

Appendix C

Treatment Student Survey Responses

Participant Comments (Q8)

The reminder should be sent one week before the deadline and again as a follow-up as needed. If help is available, the reminder could be used to encourage students to contact staff for assistance or if there are any questions.

I am a very organized person and I get very upset when I begin to run behind schedule. The e-mail reminders have the effect of greatly increasing my stress level. I am very much aware when I am behind in my course work due to the demands of my job and family. I do not need the e-mail to remind me of my being behind!

There were a number of times when the reminders were sent for an assignment that was already turned in.

Very helpful, please continue reminder notes.

I did not like the reminders myself, they made me feel more stressed than I already was about completing my assignments.

The email was helpful to keep on track, but also annoying because it didn't tell me if there was a problem or if the assignment was being graded or not. In the early part of the semester I was submitting on time but it took weeks to get feedback. I slowed down because I was tired of meeting the deadlines and not having any information on how I was doing. Now I find I'll need to go back and re-submit some of those assignments because the grader was looking for something different.

As we have learned throughout the ITMA program, communication is important to learning. The e-mails made me feel less isolated as a distance learner. However, I would recommend additional correspondence throughout the course of a semester. It would be helpful to have periodic updates and possibly sharing the questions asked by other students and answers provided. As a distance learner I have often wondered if I am the only individual struggling with a concept or some particular course related area. Currently, I am sure that the same questions are being asked more than once. If information was shared more freely, this would be eliminated.

I do not mind receiving an email reminder and was reminded of an assignment that I had completed, but not submitted. Before I realized the emails were automatically generated, they did provide a feeling of connection. After that, I viewed them as a courtesy reminder and nothing more. Had I realized these were automatically generated, Amy wouldn't have received emails from me apologizing for the inconvenience and trouble she had to go to for the notification. That just adds to her load. Changing the wording would offer variety, but that would be all. Probably more work than benefit. We all have access to our course progress and should be able to track this information. This seems like more work than benefit.

I knew at the beginning of the semester that I would not meet the flexible deadline assignments, based on the number of chapter that had to be read before completing the assignments, and because I had to travel/present at two different conferences during the semester. When I received the first reminder email, I thought it was 'real', and responded to let Amy know that I was mindful of the missed deadline, but that I would get it done. Once the second and subsequent reminder emails arrived, I quickly scanned them, but basically found them to be annoying because I detected that they were being sent automatically, and I don't need a reminder that I missed a 'deadline' that is flexible. If it were a mandatory deadline, I would say that the email would be justified.

I have not been late with any lessons, but I believe reminders are extremely helpful. Last summer I had a lesson I had turned in on time but did not get graded because the student online interface did not have a spot for it at the time I was ready to submit it. I did not realize it had not been graded until an Incomplete was posted as my grade. A simple email would have made a great difference for me.

The reminders are only effective when paired with prompt and constructive feedback. The Course Information section on Blackboard has the suggested due dates on it and that should be sufficient for date planning at this level of educational work. However, there is more to planning of course work than due dates. Prompt, individual feedback is crucial to learning in any environment and especially in this one because communication is already limited between student and teacher. Generic date reminders alone are not beneficial nor motivational in a student's efforts to stay on track throughout the semester.

I liked receiving the email reminders. I am very busy with family, work, community, etc. and found these reminders helpful in keeping me aware of my progress, or lack thereof.

Although I knew I was late in submitting my assignment (due to illness), the email reminder got me on the ball and prompted me to finish the assignment quicker. I was not aware of the new reminder system so when I got the reminder in the email, it was definitely the fire I needed to get back on track!

I was a bit nervous at first when I got a reminder but then I realized that it was a reassurance for me that my assignments had been received on time when I didn't receive one.

I did not receive any such reminders; however, I think it sounds like a good idea. My problem in submitting has been accessing the proper interface. All feedback for coursework is always appreciated. Thanks.

Participant Comments (Q15)

Time management is key to working in an online environment. Motivation is another. Online chat opportunities for each module could enhance learning. Those who can't make the online chat could always pull up the saved discussion materials for review. In some cases, material needs to be clarified by discussion, not by the "wrong" answer on a test (which often presents the material in just a different enough way to warrant discussion or debate).

I would like to have feedback on one activity before I continue on the next activity. At times, I find myself waiting to do an activity because I'm waiting for feedback on the previous one.

I think that reminder are very helpful.

I was better at managing my time for the last course. I think it was because I enjoyed it more.

Fortunately I am able to complete much of the course work at my job. I've been in a lot of transitions lately, such as moving across country, starting a new job, having to move again, so it's been tough finding time to complete the course work. It is nice to have some type of communication with staff and students, so I don't feel so isolated.

Have you considered sending reminders prior to the deadline? In one class, the grader did this and it was effective. If I had to choose between the two notifications, I would choose to receive them prior to a due date. This did increase my feeling of being connected, less distanced. Funny, isn't it?

It might be better to occasionally drop a 'real' personal email, like,
"Just wanted to check in to see how things going so far this semester, Lori.

Getting assignments graded in a quicker manner would be helpful to me, because I am a person who worries about whether I will need to do an assignment over.

I do not mind receiving the reminders. Unfortunately, my schedule is the greatest deterance to me completing assignments on time. If I had unlimited time I would get the assignments completed before the reminder comes. The reminder does not change my being able to get the assignment in any sooner. So, for me receiving the reminder does not help.

I have been very pleased with distance learning. Of course, not everyone is suited for this type of learning. However, if one is able to manage their time it is an excellent option for furthering one's education. Email reminders make the most sense when it comes to distance learning. A distant learner will be at their computer and it is the best way to communicate.

I am, in general, not a good time manager and that was my biggest concern in starting this program - whether or not I would disciplined enough to stay on track. To my surprise, the first semester went wonderfully well. My efforts met those of the ITMA staff and I did not have any trouble staying on track, grading was prompt and feedback consistent and constructive. I cannot say the same about this semester unfortunately.

Time management is really not a problem for me..I just have "no" time!

Not only do I teach high school full time during the day, I also adjunct teach two nights a week. Time management and organization are a MUST for me to complete my assignments in a timely manner.

Amy N. Kellogg

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OBJECTIVE:

Instructional Technologist

ACADEMIC PREPARATION:

Ph.D. candidate in Curriculum and Instruction, Virginia Tech, Blacksburg, VA

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Dissertation: *Using Computer Generated Reminders as Time Management Support to Influence Assignment Submission Rates and Course Completion in an Online Masters Program.*

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M.S. in Curriculum and Instruction, Radford University, Radford, VA 1997

Concentrations: Special Education

Advisor: Dr. Vicki Linkous

B.S. in Education, Radford University, Radford, VA 1995

Concentrations: Middle School Education, Science, Math

Minor, Mathematics

RESEARCH SKILLS:

- Survey and evaluation research techniques
- Utilized SPSS statistical program extensively
- Experimental design

PROFESSIONAL EXPERIENCE:

Professional Faculty, 2003-present

School of Nursing, Radford University, Radford VA

- Assist nursing faculty in the design and delivery of distance learning courses including online assessments.

Teaching Assistant/Course Designer, 2001-2003

Virginia Tech's Online Instructional Technology Masters of the Arts Program, Blacksburg, VA

Courses:

Introduction to Instructional Technology, Digital Video, Digital Audio, Instructional Media, Telecommunications, Instructional Design

Computer Support Technician, Summer 2001

Virginia Tech, Blacksburg, VA

- Provided hardware and software support for faculty and staff University-wide.

Senior Instructional Systems Designer, 2000 to present

Command Technologies, Inc.

- Designed and developed face-to-face and online training (computer-based, web-based training) curriculum.
- Utilized instructional design process, procedures, and methodologies to design CBT, multimedia applications, and web-based training (analysis, design, develop, implementation, and evaluation).
- Created storyboards, sketch graphic depictions, and develop audio scripts, program metaphors, instructionally significant organization of content, user navigation, and other related elements.
- Worked as part of a development team with subject matter experts, graphics designers, and multimedia developers.

Projects:

Acquisition Management Level 2 Course, Defense Acquisition University

Software Acquisition Management Level 1 Course, Defense Acquisition University

National Air Intelligence Center Spectral Exploitation Cell Training Management Plan and Training Design and Development

Director of Training and Curriculum Development, 1999-2000

Educational Options, Inc.

- Developed and implemented training for a web-based high school curriculum. Responsible for training school systems nationwide. Managed accounts totaling over one million dollars.
- Redesigned curriculum. Correlated curriculum with state education standards. Authored two textbooks used with online courses.
- Successfully employed written and oral communication skills when dealing with clients and their accounts. Led focus groups. Managed and coordinated multiple projects simultaneously.

Clients:

Amherst County Public Schools, VA

Baltimore City Public Schools, MD

Carroll County Public Schools, MD

Fairfax County, VA

Jefferson County, MO

Loudoun County Public Schools, VA

Loudoun County Social Services, VA

Molalla Public Schools, OR

Montgomery County Public Schools, MD

Polk County Public Schools, FL

St. Joseph Public Schools, MO

Westerville Public Schools, OH

Public School Teacher, 1995-1999

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Special Education Math and Science, Grades 9 through 12

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- *Using Computer Generated Reminders as Time Management Support to Influence Assignment Submission Rates and Course Completion in an Online Masters Program.*
- *A Longitudinal Study Examining the Changing Student Demographics in an Online Master's Program.*

PAPERS PRESENTED AT CONFERENCES:

Student Work Submission Patterns in an Online Master's Program. Presented at the Eastern Educational Research Association, Hilton Head, NC

A Longitudinal Study Examining the Changing Student Demographics in an Online Master's Program. Presented at the Eastern Educational Research Association, Hilton Head, NC

Online Assessment. Presented at the Maryland Assessment Group, Ocean City, MD, 2002

CURRENT RESEARCH INTERESTS:

Attrition in distance learning.
Procrastination and time management in asynchronous distance learning.
Student support in an online learning environment.
Lessening psychological distance in an online learning environment.
Improving human performance in organizations.

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American Society for Training and Development
Eastern Educational Research Association
International Society for Performance Improvement
Association for Educational Communications and Technology