

Abstract

ROBERTS, LINDA ENDERS. Not Now, Maybe Later, and Often Not at All: Situational, Institutional, Dispositional, Epistemological, and Technological Barriers to Business-Based Online Training Courses. (Under the direction of Paula Berardinelli.)

The purpose of the research was to determine whether the situational, institutional, dispositional, epistemological, and technological barriers that affect attrition in distance education apply to the business-based distance training arena. Although reports about distance training students indicate that attrition from distance training is a significant issue, the results from this study find that 90 percent of the business professionals who answered this survey that have taken business-based e-learning courses are not discontinuing their e-learning courses. This finding contradicts many published articles. The free-form comments written by the online learners who answered this survey provided some hints as to what may be keeping these business professionals from abandoning their e-learning courses. The respondents to this study acknowledge that interaction with other learners and with course facilitators, chunking of courses and curricula into appropriate sized pieces, technical support, good course design, and incentives to reach course or curriculum completion have kept them online.

**NOT NOW, MAYBE LATER, AND OFTEN NOT AT ALL:
SITUATIONAL, INSTITUTIONAL, DISPOSITIONAL, EPISTEMOLOGICAL, AND
TECHNOLOGICAL BARRIERS TO BUSINESS-BASED ONLINE TRAINING
COURSES**

by
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Dedication

Without the dedication and support of so many people, this dissertation could have never been completed.

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Biography

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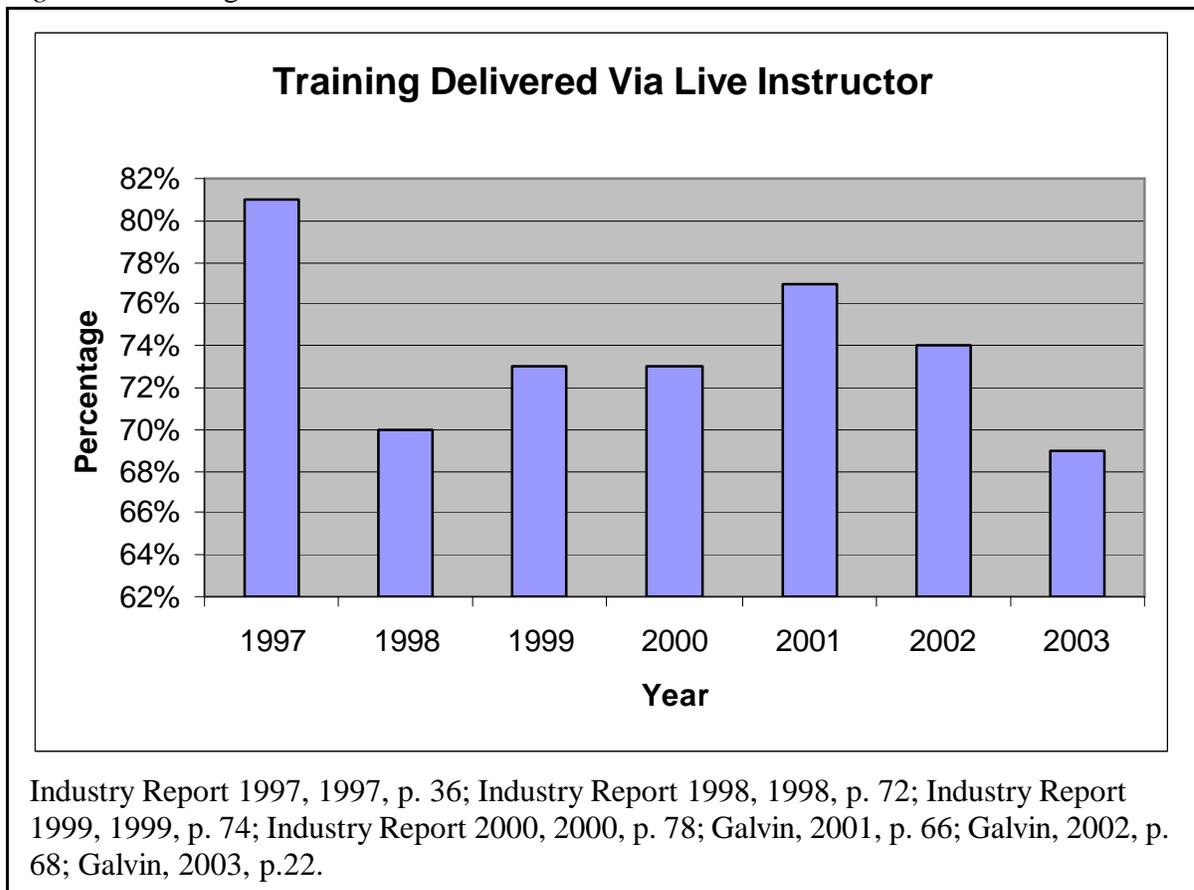
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Chapter 1: Introduction

Introduction

Brandon Hall, a distance learning guru, reports that in the year 2000, 92 percent of large corporations offered some form of online learning (Spitzer, 2001, p. 51). Even though 92 percent of large corporations offer e-learning, *Training* magazine reported that in 2001, 13 percent of all business training was delivered via computer with no formal instructor (Galvin, 2002, p. 68). This number falls sharply short of the predictions made by participants in the American Society for Training and Development (ASTD) benchmarking service who predicted that the amount of distance training to be delivered by businesses in 2001 would be 19.8 percent (Van Buren, 2001, p. 16). This number falls even shorter of the bold prediction by Corporate University Xchange, a corporate education research and consulting firm, that 96 percent of all training would be delivered online as early as the year 2003 (Matthews, 2000, p.102). In fact, the percentage of training courses delivered via live instructor has increased since 1998 from 70 percent in 1998 to 77 percent in 2001 (see Figure 1). This number has decreased in 2002 and in 2003 with courses delivered via live instructor hitting an all-time low of 69 percent in 2003.

Figure 1. Training Delivered Via Live Instructor 1997-2002



In addition to decreased e-learning delivery by corporations, the attrition rates, also known as dropout rates, for business-based e-learning courses are also much higher than for traditional face-to-face classroom training courses. In a survey of 4,100 online learners, Corporate University Xchange found that 85 percent of the learners surveyed dropped out from their e-learning courses in 2000 and 70 percent dropped out in 2001 (Alexander, 2002, p. 15). This number is in sharp contrast to the traditional face-to-face classroom training dropout rate of 15 percent (Alexander, 2002, p. 15). Osberg (2002) reports that at Sun Microsystems, only 25 percent of learners finish their self-paced e-learning courses (p. 46). These two reports could be the exceptions, but the chatter in journals and at conferences speaks otherwise.

Zielinski (2000b) writes, “A training manager for a health maintenance organization who’d rolled out an online library and accompanying curriculum reported that 80 percent of those who began courses didn’t see them through to completion. Another training manager had just launched a curriculum on Microsoft Office products, giving employees a choice of taking a Web-based course or a two-day, instructor-led classroom program on the same topic. While more than 90 percent of those who chose the classroom option completed the training, only 50 percent of the self-paced Web learners did” (p. 66).

What accounts for the decreased amount of distance training provided by corporations? Van Buren (2001) in the ASTD *State of the Industry* report notes that several of ASTD’s benchmarking companies reported declining enrollments in distance training due to past negative experiences with distance training (p. 17). This finding highlights the need to ensure distance training is well designed for the distance training student. In order to better understand how a distance training course can be better designed, first the past negative experiences and the experiences that have lead to dropout of distance training need to be explored.

Little empirical research has been done on attrition in business-based distance training. Most journal articles provide anecdotal evidence for why adult trainees abandon distance training courses. Rossett (2000) notes that she dropped out of a distance training course because the “beauty of ‘anywhere, anytime, whenever you want’ too readily turn[ed] into not now, maybe later, and often not at all” (p. 99). The daily distractions of the phone and door and fun diversions had her doing anything but her e-learning course.

But lack of personal motivation is a different issue when it pertains to business- or career-related e-learning, especially e-learning that may be required for a job. If management

believes that a learner should complete the e-learning course on his or her own time—at lunch, on breaks, or after work hours—there might be some dissension in the ranks about having to complete a course on personal time. Then the personal motivation issue becomes a work/life balance issue. Zielinski (2000a) writes, “Supporters of online learning often argue that its ‘anytime, anywhere’ nature benefits the rank and file. ... This is true, as far as it goes. But the more literal translation, Reali [president of CyberSkills Computer Training Centers in Winston-Salem, NC] believes is often this: Let’s move learning out of the workday and into the employees’ own-uncompensated-time” (p. 39). Many learners when faced with choosing between spending time with their families or taking an e-learning course would pick spending time with their families. And the learner may choose to take the course in the classroom as to not have to use personal time to take the course.

Others cite the major distractions at work. A study by Corporate University Xchange (2000) notes, “e-Learners were quite vocal about their inability to complete courses from their desktop because of frequent distractions from co-workers. Also, these e-learners were often unable to complete assignments because the course only resided on their company’s intranet (nearly 75 percent indicated the course they participated in resided on the corporate intranet). Nearly 65 percent of e-learners stated their ‘ideal’ place for online learning is the home office rather than the workplace” (pp. 4-5). Learners seem to have more flexibility with their time at home and can work interrupted in the early morning or the late evening or after their children have gone to bed.

Another reason cited is that e-learning can be boring and confusing. Many e-learning offerings, especially early e-learning attempts, were little more than the text of the traditional face-to-face course put online with a few graphics added for emphasis. Spitzer (2001) notes,

“DL [distance learning] has frequently been undermined by content that is little more than information dumping, confusing navigation, long download times, eyestrain from endless text screens, and so-called ‘discussions’ that are really just monologues posted on online bulletin boards” (p. 51).

Others point to a less ominous reason for attrition in business-based distance training. With e-learning, learners may not want to complete an entire training course. These learners may find the information they need and leave so that they may start using this new information. Zielinski (2000b) notes, “Online learners take from a given course only the content they feel they need to improve a specific skill or to learn a certain task. Then they blow off the remainder” (p. 66). Will Thalheimer (2003) disagrees with this reason. He writes in a personal opinion piece, “Some have argued that completion rates don’t matter because learners can cherry pick the information they need. This argument is bogus. ... How do they [the learners] know what they need within the fog of a topic they know little about?” (p. 70). In most e-learning classes, Thalheimer feels the user would have a hard time finding the exact piece of information they need or even know exactly what they need to learn and master. He does, however, feel this reason would hold up for help systems and performance-support tools that are designed to provide a learner with just-in-time information.

Researchers interested in distance education, however, have spent considerable time researching the factors that contribute to the dropout of higher education students from distance education courses. Garrison (1987) notes that attrition and dropout from higher education distance education courses is one of the most studied issues in distance education (p. 95).

Most studies to date on attrition in higher education distance education courses have

contributed individual factors that may affect academic persistence in distance education courses. For example, Belawati (1998) found that five written interventions did not significantly increase student persistence but did find age, gender, number of children, previous education level, employment, and course load to have an impact on persistence. Students with fewer courses, who attended examinations, who completed self-tests, and had a study program were more likely to register for courses in the next term. Brown (1996) found the top three factors contributing to the decision to drop out were mainly institutional factors: difficulty contacting tutors, insufficient support from tutors, and the course was too time consuming. Carr, Fullerton, Severino, and McHugh (1996) found academic habits influenced persistence. They found that students who studied 20 or more hours weekly, had a study partner or group, and approached their coursework “vigorously” or “compulsively” were less likely to drop out (p. 11). Dille and Mezack (1991) found students with an internal locus of control, with a less concrete learning style, with a higher grade point average, that are older, with more college credits, who are single or married, and with more college courses completed were more successful. They found that students with an internal locus of control, or students who feel their academic success is a product of their academic abilities and efforts, were more successful in distance education courses. Fjortoft (1995) found perceived intrinsic benefits of obtaining a post-baccalaureate pharmacy program degree contributed to persistence. Frew and Weber (1995) found that costs, other commitments, dissatisfaction with the quality of the course, and acceptance of an offer of a course from another institution influenced the lack of persistence. Gibson (1996) found academic self-concept to be strongly associated with students’ overall persistence in a distance education program. Kemp (2002) found that work commitments and resiliency skills influenced persistence. Kumar (1999)

found that academic self-concept contributed the most to persistence. Minich (1996) found that students cited personal reasons as the main reasons for withdrawal from telecourses. Parker (1999) found that locus of control, specifically participants with an external locus of control, and source of financial assistance could predict nearly 85 percent of dropout from distance education. Rekkedal (1973/1983) found a strong correlation between turn around time of homework assignments and the completion of the mathematics course. Taylor et al. (1986), on the other hand, found no relationship between low turn around rates for assignments and drop out rates across multiple institutions. Selvam (1999) found that the main causes of distance education learner dissatisfaction include family factors, educational factors, and occupational factors. Shin and Kim (1999) found that face-to-face supplemental activities and social integration contributed to persistence in the Korean National Open University. Siqueria de Freitas and Lynch (1986) found that satisfaction with the course, frequency of visits to a local center, professional activity while enrolled in the course, and perceptions concerning the content of the instructional material could predict 43 percent of course completion. Taplin (2000) found that women cited personal problems or family problems, including difficulties caring for young children; getting course materials in time; and that they did not have sufficient background to understand course materials as the most commonly mentioned reasons they may withdraw from their distance education courses. Lastly, Thompson (1997) found that work, family, and study commitments were cited as the main reasons for why students dropped out from a distance education program.

A few researchers like Kember (1995) and Garland (1993b) have proposed models to account for attrition from higher education distance education courses. Kember proposed a longitudinal model to explain dropout from distance education. He based his model on the

longitudinal-process model developed by Tinto (1993) to explain dropout from higher education. Tinto's model notes that dropout from higher education is a complex process where factors such as a student's background, a student's interaction with the higher education institution, and whether or not the student is committed to the system all influence the student's decision to leave the institution prior to program completion. Since Tinto's (1993) model was developed for full-time traditional undergraduate higher education students, Kember (1995) broadens the independent variables in the model to include items that pertain to distance education students.

Garland (1993c) completed an ethnographic study on distance education students enrolled in natural resource science courses at the University of British Columbia. Based on her findings, she proposed a model to explain attrition in higher education distance education courses. This model contains four sets of barriers to explain attrition. Table 1 describes these sets of barriers.

Table 1

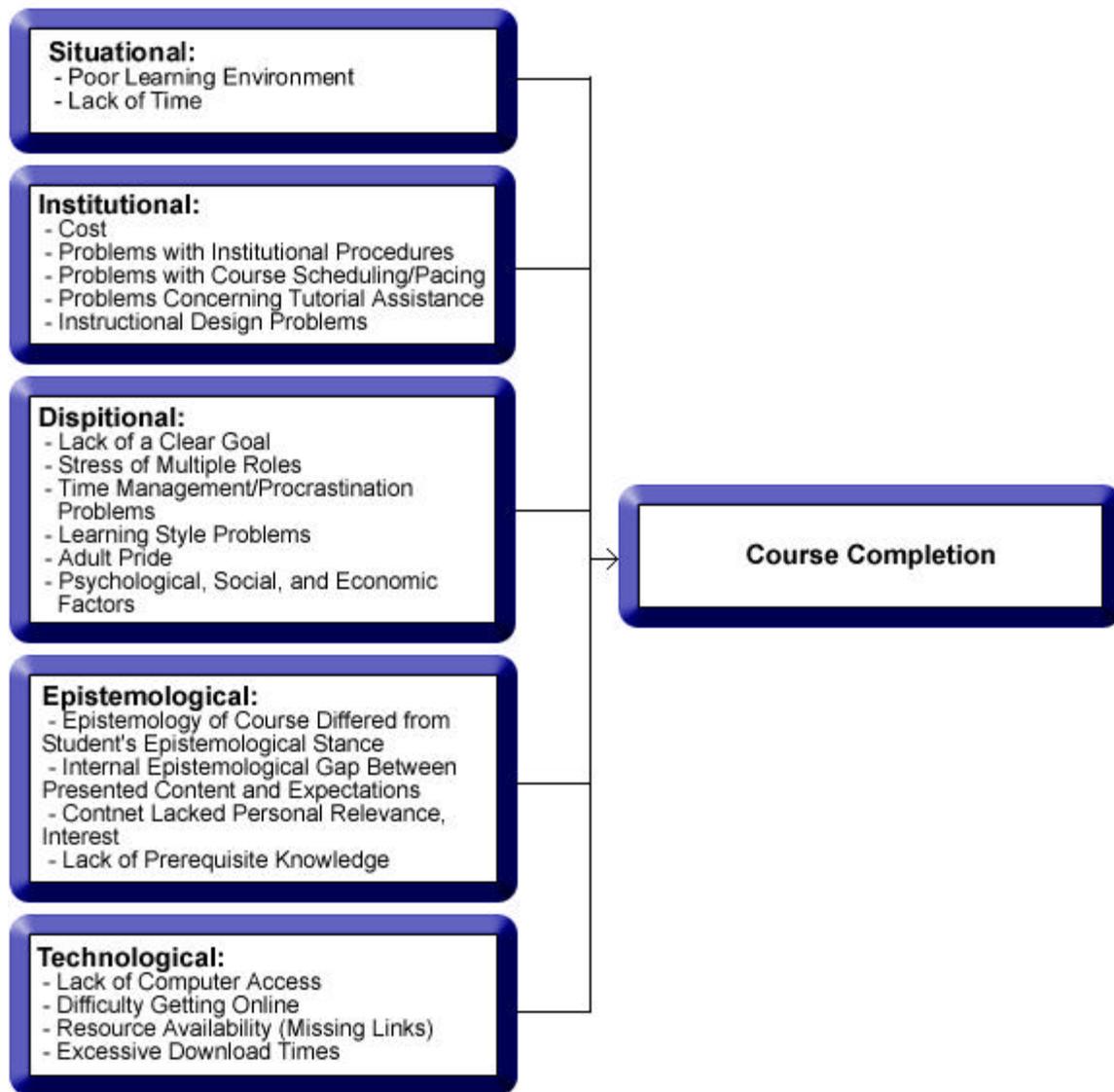
Barriers to the Completion of Distance Education

Barrier	Description
Situational Barriers	Barriers that stem from a person's life situation and can include items such as a poor learning environment and time constraints.
Institutional Barriers	Barriers that can include items such as course cost, admission requirements, course pacing, and limited support services.
Dispositional Barriers	Barriers that are related to the students' psychological and sociological natures such as their attitudes, confidence, leaning styles, and motivation.
Epistemological Barriers	Barriers that can include items such as overall research paradigm, role of theory, extent of modeling and quantification, level of jargon in courses, and aspects of communication approaches and styles (pp. 13-14).

Schilke (2001) extends Garland's conceptual framework and includes technology as a potential barrier to completion of distance education courses. Schilke (2001) notes that the primary distance education instructional methods used in the distance education courses at the time of Garland's (1993c) study were paper-based and did not include technology-based instructional methods. Technology barriers include technology issues for both the students and the institution and include lack of reliable computer access, difficulty getting on to the Internet, resource availability like missing or broken links, and excessive download times.

Figure 2 illustrates these barriers.

Figure 2. Barriers to the Completion of Distance Education



Statement of the Problem

Currently, there are no national statistics that collect national attrition rates in higher education distance education (Carr, 2000) or in business-based distance training. However, self-reported data from higher education institutions note that there is a lower completion rate in distance education courses. One higher education institution reported only a 58 percent completion rate in distance education courses versus a 71 percent completion rate in the same

courses offered in a traditional classroom setting (Carr, 2000, p. A40). Several studies (Belawati, 1998; Bernard & Amundsen, 1989; Brown, 1996; Carr, Fullerton, Severino, & McHugh, 1996; Chyung, 2001; Dille & Mezack, 1991; Fjortoft, 1995; Frew & Weber, 1995; Garland, 1993b; Gibson, 1996; Gibson & Graff, 1992; Kember, 1995; Kemp, 2002; Kumar, 1999; Minich, 1996; Morgan & Tam, 1999; Parker, 1999; Rekkedal 1973/1983; Roberts, Boyton, Buete, & Dawson, 1991; Schilke, 2001; Selvam, 1999; Shin & Kim, 1999; Siqueria de Freitas & Lynch, 1986; Sweet, 1986; Taplin, 2000, Taylor, et al. 1986; Thompson, 1997; Wilkinson & Sherman, 1989; Woodley, de Lange, & Tanewski, 2001) have examined the issues surrounding attrition in higher education distance education. While there is a rich body of literature on factors that affect attrition in higher education distance education, it is unclear whether or not the factors found in these studies will apply to the business-based distance training arena.

Statement of the Purpose

The purpose of this study is to determine the predictive value of Garland's potential barriers to persistence in distance education on business-based distance training.

Research Questions

1. What is the predictive value of:
 - Situational (poor learning environment and lack of time)
 - Institutional (cost, problems with institutional procedures, problems with course scheduling/pacing, problems concerning tutorial assistance, and instructional design problems)

- Dispositional (lack of a clear goal, stress of multiple roles, time management/procrastination problems, learning style problems, adult pride, and psychological, social and economic factors)
- Epistemological (Epistemology of course differed from student's epistemological stance, internal epistemological gap between presented content and expectations, content lacked personal relevance/interest, and lack of prerequisite knowledge)
- Technological (Lack of reliable computer access, difficulty getting on to the Internet, resource availability like missing or broken links, and excessive download times)

on business-based distance training trainee's completion rates?

Significance of the Study

This study is important because it will add to the small body of knowledge related to attrition issues in business-based distance training. This study will explore the barriers to completion of business-based distance training. While many studies on barriers of completion have been performed in the higher education distance education arena, few studies have been done in the business-based distance training arena. This study will also be a resource for researchers and practitioners in the field of distance training who are interested in learning what contributes to attrition from business-based distance training initiatives so that future distance training initiatives can be better suited for the distance training learner. This study will also build a foundation for future research into attrition from business-based distance training courses.

Definitions

- Attainer — A student or learner “who leaves before completion but who has nonetheless achieved some personal goal — a specific skill, for example” (Martinez, 2003, p. 3).
- Attrition — “A decrease in the number of learners or students engaged in some course of study” (Martinez, 2003, p. 2).
- Distance Education — “Distance education is planned learning that normally occurs in a different place from teaching and as a result requires special techniques of course design, special instructional techniques, special methods of communication by electronic and other technology, as well as special organizational and administrative arrangements” (Moore & Kearsley, 1996, p. 2).
- Dropout — “Leaving school before the completion of a given stage of education or leaving at some intermediate or non-terminal point in a cycle of schooling” (Ostman, Wagner, & Barrowclough, 1988, p. 7).
- Education — Learning directed at knowledge for broad and long-term usefulness.
- Longitudinal — “Each component will influence the succeeding components in the model” (Kember, 1989, p. 279).
- Model — “Simplified versions of reality that strip away the minute details to concentrate on factors that are assumed or deduced to be important” (Kember, 1989 May/June, p. 279).
- Persistence — “The act of continuing toward an educational goal” (Martinez, 2003, p. 3).

- Retention — “The number of learners or students who progress from one part of an educational program to the next” (Martinez, 2003, p. 3).
- Stopout — A learner who leaves a program of study but who comes back at a later time to finish (Martinez, 2003, p. 3).
- Technology-Based Training — “Anything that involves using technology to deliver lessons. Examples include: Web-based training ...; computerized self-study; and videoconferencing, audioconferencing, and teleconferencing” (Galvin, 2002, p. 25).
- Traditional Training — “Anything that does not involve using technology to deliver lessons. Examples include: classroom training with a live instructor in front of a room or a computer lab full of learners ...; non-computerized self-study ...; noncomputerized games; seminars/lectures; and outdoor programs” (Galvin, 2002, p. 25).
- Training — “Systematic practice in the performance of a skill” (UNESCO, 1992, p.124).

Summary

This chapter details the conceptual framework within which this dissertation will be framed. Based on the work of Garland (1993c), this dissertation will explore whether the barriers that affect attrition in distance education apply to the business-based distance training arena.

The remaining chapters in this dissertation detail the theoretical underpinning, procedures, analysis, and conclusions for this study. “Chapter 2: Literature Review” on page 16 provides a review of relevant literature for this study. “Chapter 3: Methodology” on

page 40 provides the research methodology for this study. “Chapter 4: Results” on page 52 details the descriptive statistics and analytic results from this study. Finally, “Chapter 5: Conclusions” on page 66 provides a set of conclusions based on the results from this study. A set of appendices provides supplementary material including study documents and the complete detailed analysis of the survey data.

Chapter 2: Literature Review

Introduction

Distance education, sometimes called e-learning, online learning, computer-based training, web-based training, technology-based training, distance learning, and a whole host of other catchy terms, has had many definitions through the years. Distance education's first definitions reflected its roots in correspondence education. Otto Peters (1994) in 1965 defined distance education as "instruction by the exchange of letters between teacher and student, a process in which the contributions of both are usually based on specially prepared and methodically developed printed course material" (p. 27). The definitions of distance education evolved with the introduction of new educational technologies and delivery systems.

Desmond Keegan (1996) provides the following definition of distance education:

Distance education is a form of education characterized by:

- the quasi-permanent separation of teacher and learner throughout the length of the learning process (this distinguishes it from conventional face-to-face education);
- the influence of an educational organization both in the planning and preparation of learning materials and in the provision of student support services (this distinguishes it from private study and teach-yourself programmes);
- the use of technical media — print, audio, video or computer — to unite teacher and learner and carry the content of the course;

- the provision of two-way communication so that the student may benefit from or even initiate dialogue (this distinguishes it from other uses of technology in education); and
- the quasi-permanent absence of the learning group throughout the length of the learning process so that in groups, with the possibility of occasional meetings, either face-to-face or by electronic means, for both didactic and socialization purposes (p. 50).

Unfortunately, Keegan's fifth characteristic does not take into effect some of the newer distance education technologies such as webcasts and videoconferencing that allow for more contact, so his definition of distance education needs to be refined further. Moore and Kearsley (1996) provide a generic definition of distance education that includes the current technologies available and can include technologies still to come. Moore and Kearsley (1996) write, "Distance education is planned learning that normally occurs in a different place from teaching and as a result requires special techniques of course design, special instructional techniques, special methods of communication by electronic and other technology, as well as special organizational and administrative arrangements" (p. 2).

Distance education or distance learning is the broadest term used for training not delivered in a traditional classroom and incorporates all forms of distance education including correspondence courses and courses delivered using technology such as the Internet and CD-ROMs. Distance training is a subset of distance education and takes from the rich history of the areas of distance education and training.

History of Distance Education

Distance education was not invented in the computer age. One of the earliest reported

distance education initiatives was in Europe in 1856 where Charles Toussaint and Gustav Langenscheidt of Berlin, Germany formed a school to teach languages by correspondence (Watkins, 1991, p. 2). In 1871 James Stuart proposed a traveling circuit of lecturing professors (which later became University Extension System at the University of Cambridge) (Sherow & Wedemeyer, 1990, p. 8). Stuart also formed the foundation for correspondence study by offering courses for women through the mail. He incorporated a syllabus and an exam sheet to go along with printed lessons that he sent out to his female subscribers. At the time there was a personal taboo on personal interviews between men and women (Sherow & Wedemeyer, 1990, p. 8).

In the United States, the earliest documented correspondence courses was in 1873 when Anna Eliot Ticknor established a correspondence system for women out of her home in Boston, MA known as the Society to Encourage Studies at Home. This program was very well known and ran for 24 years and enrolled around 10,000 women before it ended with the death of the founder in 1896 (Sherow & Wedemeyer, 1990, pp. 8-9).

The most influential early correspondence program in the United States was the Chautauqua Institute, first founded in 1874 as a summer assembly to provide training for the improvement of Sunday School teaching, and then expanded as the Chautauqua Literary and Scientific Circle to offer non-degree university-level correspondence programs in liberal arts (Sherow & Wedemeyer, 1990, pp. 9-10). William Rainey Harper, who in 1892 was hired to be the first president for the University of Chicago, was first hired to teach Hebrew at the Chautauqua summer institute (Sherow & Wedemeyer, 1990, p. 10) and in 1885 first publicly announced the American Correspondence system that was adopted by the Chautauqua Institute. Harper then opened the University of Chicago with an extension division and with

plans for a correspondence department. This correspondence department enrolled its first correspondence student in 1892 (Sherow & Wedemeyer, 1990, p. 11). The program was dismantled in 1963 (Pittman, 1990, p. 74; Watkins, 1991, pp. 6-8).

The second most influential correspondence program was out of the University of Wisconsin in Madison where in the 1889-1890 school year offered correspondence courses in its catalog as a function of university extension. The program did not do well and was phased out by 1900. In 1906, however, Charles Van Hise, then president of the University of Wisconsin, announced the reemergence of correspondence courses at the University of Wisconsin. This new correspondence course program added vocational and industrial courses to the traditional classical course offerings. Van Hise recognized that prior correspondence systems failed due to lack of administrative support and so he appointed a full-time Director of Correspondence Instruction. He also appointed a Director of Extension Division that took care of the industrial courses (Sherow & Wedemeyer, 1990, p. 14; Watkins, 1991, p. 12).

These early efforts did not only include paper. Technology was added to correspondence courses as it was being developed. From 1910 to 1920, lantern slides and motion pictures were added to courses (Watkins, 1991, p. 25). In 1920, the “School of the Air”, WHA radio, was launched at the University of Wisconsin in Madison. The radio station first broadcast weather and market reports but wanted to supplement traditional correspondence education with educational radio programming. In the 1930s and 1940s, 20 educational radio stations were broadcasting on the AM band (Sherow & Wedemeyer, 1990, p. 16). Between the world wars, the federal government granted radio broadcasting licenses to 202 colleges, universities, and school boards. During this period, 13 institutions offered instructional radio courses (Watkins, 1991, p. 25).

Between 1948 and 1952, WOI-TV in Ames, IA (owned by the Iowa State College) provided educational television programming (Sherow & Wedemeyer, 1990, p. 17). By 1952, 242 (of 2,053) television channels were reserved for educational groups only (Sherow & Wedemeyer, 1990, p. 17). The federal Educational Television Facilities Act in 1962 provided funds for the construction of educational television stations. The Corporation for Public Broadcasting, organized in the late 1960s due mainly to a report issued by the Carnegie Commission on Educational Television in 1965, led Congress to pass the Public Broadcasting Act of 1967 (Moore & Kearsley, 1996, p. 28).

World War II also had a major influence on distance education. With thousands of new military recruits to train and some on sophisticated weapons, the military turned to educational films and other audiovisual technologies to train their recruits. During the war years from 1941 to 1945, the Division of Visual Aids for War Training within the U. S. Office of Education produced 457 sound motion pictures, 432 silent filmstrips, and 457 instructors' manuals (McNeil, 2003, The 1940s).

Cable television came on to the educational scene in 1952. In 1972, the Federal Communications Commission (FCC) required all cable television providers to set aside an educational channel. The University of Kentucky established one of the first educational channels—the Appalachian Community Service Network—that today is known as The Learning Channel (Moore & Kearsley, 1996, p. 29).

Through the years, other technologies and delivery methods were developed and used in distance education. These technologies include audioconferencing, videoconferencing, and satellite transmission.

The most rapid changes in distance education came about due to the computer. In the

1970s and the 1980s, computer-based training (CBT), where the learner read a series of computer screens and then answered questions on the material, was developed. The first such systems developed for computer aided instruction was Programmed Logic for Automatic Teaching Operations (PLATO). PLATO was developed at the University of Illinois at Urbana-Champaign by Professor Don Bitzer, then Director of the Computer-based Education Research Laboratory (CERL), and a host of other engineers (Woolley, 1994, p. 5).

Instructional designers who used PLATO created educational software using a programming language named TUTOR. At first, the PLATO system could only support a single classroom of computer terminals, but in the early 1970s, PLATO was moved to a mainframe environment that allowed for up to 1,000 students to connect to PLATO at the same time (Woolley, 1994, p. 5). Control Data Corporation acquired the rights to develop and market PLATO and started setting up PLATO systems around 1975. The Control Data Corporation had over 100 PLATO systems in the field by 1985 (Woolley, 1994, p. 5).

CBT efforts were continually hampered due to changing hardware platforms (the mainframe computer to the PC) and to the diverse number of platforms and operating systems available (IBM-compatible PCs, UNIX, Apple, and Macintosh). Even floppy drives for diskettes evolved over this period of time and changed standards from the 5 ¼-inch floppy drive to the 3 ½-inch floppy drive. These changes, plus the rapid changes in content, made creating CBT programs costly and challenging.

In the 1990s, the advent of the Internet and standard Web browsers has made distance education efforts flourish. Analysts predict that 90 percent of all higher education institutions will offer distance education courses by 2004 and make distance education a 20 billion dollar industry by 2005 (Barron, 2001, p. 1). The National Center For Education Statistics (NCES)

surveyed all two-year and four-year postsecondary institutions and found that in the 1997-1998 school year, 1,680 of the 5,010 two-year and four-year post-secondary higher education institutions offered distance education courses and another 20 percent of these institutions planned to start offering distance education courses in the next three years (Lewis, Snow, Farris, & Levin, 1999, p. 12). The NCES completed this study again for the 2000-2001 school year and found that 2,320 institutions, or 56 percent of all the two-year and four-year degree-granting institutions, offered distance education courses and that another 12 percent of institutions planned to start offering distance education courses in the next three years (Tabs, 2003, p. 3). This new data reflects a 22.5 percent gain in the number of institutions offering distance education from the 1997-1998 school year. In the business world, e-learning is flourishing as well. Brandon Hall, a distance learning guru, reports that in the year 2000, 92 percent of large corporations offered some form of online learning (Spitzer, 2001, p. 51).

Research in Attrition in Distance Training

Very little empirical research into the causes of attrition in business-based distance training has been conducted. The few articles written provide anecdotal evidence as to the causes of attrition from business-based distance training.

Zelinski (2001b) notes that there is a “consistent rumbling” (p. 66) among training professionals that attrition rates for distance training exceed the attrition and no-show rates for traditional training. He provides six reasons why trainees “bail” from on-line learning. These reasons include no or poor incentives to learn, a feeling of isolation, a preference for traditional training, poorly designed courses, on-line learners take from a course only the content they need, and “the perk factor,” training in a cube is much less fun than networking with colleges in a nice facility (p. 72). He also cites lack of accountability for completing

classes, course design, technology issues, and that the physical environment may not be conducive to learning as other reasons that students may abandon on-line learning.

Osberg (2002) notes that on-line learners quit because they do not find material they need quickly enough, they run out of time, they become bored with the course, and they are faced with interruptions. Osberg (2002) recommends that course developers integrate communication tools such as threaded discussions, chat sessions, and virtual classes, into the course to foster learner interaction and feedback.

ASTD and the Masie Center (2001) conducted a Learning Technology Acceptance Study to determine the barriers to learning technology acceptance and use. The study had two phases: in phase one, ASTD and the Masie Center surveyed the training functions of 16 North American companies with established on-line learning efforts offering 29 on-line courses and in phase two, ASTD and the Masie Center surveyed 2,185 trainees from seven of the phase one companies that had been offered at least one of the nine phase one courses. Although the study mainly sought to uncover the reasons why trainees do not start on-line courses, the research did present factors that provide a satisfactory experience for those learners who did begin on-line training courses. These factors include a positive previous on-line learning experience, how the learner was supported, a preference for on-line learning over traditional training, and the extent to which the on-line course was marketed. The one factor that contributed to negative overall satisfaction with on-line courses is the context in which the on-line course was taken. On-line learners did not like to take the course away from their workplace or at home (p. 27).

While these two articles and one study provide interesting anecdotal information, the reasons why learners do not begin business-based training courses, and the factors for a

satisfactory on-line learning experience, they do not provide any concrete barriers to attrition in business-based distance training. More research is needed to determine the reasons why learners abandon business-based distance training.

Research in Attrition in Distance Education

Single Variables

Most studies to date on attrition in higher education distance education courses have contributed individual factors that may affect academic persistence in distance education courses. The following paragraphs detail these studies.

Belawati (1998) surveyed newly enrolled students at the Indonesian Open University to test the effectiveness of five interventions (written contact with the students) aimed at making students more accustomed to independent study and to aid in persistence. Belawati (1998) also interviewed 16 of these students on their perceptions on the effectiveness of the five written interventions. Belawati (1998) found that the interventions did not significantly increase student persistence but did find the following variables to have an impact on persistence: age, gender, number of children, previous education level, employment, and course load.

Brown (1996) surveyed, via telephone, 170 students who had dropped out from the Faculty of Arts program at Deakin University in Victoria, Australia to determine the reasons for leaving the program. Brown (1996) measured the importance of 12 factors (costs too high, more time needed with family, expectations of course not met, written materials inadequate, insufficient support from tutors, difficulty contacting tutors, course too time consuming, course too difficult, change in employment, change in family, feeling isolated, and alternate course available nearby) on the students' decision to drop out from the program. The top three

factors contributing to drop out were mainly institutional factors: the students had difficulty contacting tutors, the students received insufficient support from tutors, and the students found the distance education course too time consuming.

Carr, Fullerton, Severino, and McHugh (1996) surveyed 59 dropouts and 68 completers of a two-year distance education certificate program, Community-based Nurse-Midwifery Education Program, developed for certified nurses by the Frontier School of Midwifery and Family Nursing. The authors wished to determine the individual and program factors that influenced success in the nurse-midwifery program. The authors found that academic habits influenced persistence. Specifically, the researchers found that distance education students who had a “study buddy,” approached their coursework “vigorously or compulsively,” and who studied at least 21 hours per week were less like to drop out from the program (p. 11).

Chyung (2001), realizing that the online versions of the masters degree programs offered through the Department of Instructional and Performance Technology at Boise State University in Idaho had a 44 percent attrition rate between the years of 1989 and 1996, implemented an overhaul of the masters degree programs “to improve the motivational appeal of the instruction and help the online learners feel satisfied with the online instruction system” (pp. 40-41). Chyung (2001) implemented a series of interventions based on Keller’s (1987) ARCS model which seeks to influence the degree of the learners’ motivation to learn in four areas: attention, relevance, confidence, and satisfaction. After three semesters (at the end of 1997), the attrition rate for the masters degree programs decreased by 22 percent and by the end of the 1999-2000 academic year, the attrition rate had dropped to 15 percent.

Dille and Mezack (1991) surveyed 188 students enrolled for credit in one of four

undergraduate courses via telecourse (video-based) in a southwestern community college to identify the factors that may predict academically unsuccessful students. The participants completed three survey instruments, a demographic survey developed by the authors, Rotter's Internal-External Locus of Control Scale, and Kolb's Learning Style Inventory. Dille and Mezack (1991) found seven variables to be significant. They found that students are more successful with an internal locus of control, or students who believe academic success is a product of their abilities and efforts were more successful in distance education courses. Dille and Mezak (1991) write, "This attitude would encourage students to put in the necessary hours and hard work because they would expect this effort to effect [sic] their success" (p. 29). They also found that students with a lower Concrete Experience (CE) score on Kolb's Inventory, students who relate less to people; with a less concrete learning style; with a higher grade point average, students who with stronger academic skills; who are older, with more maturity and self-discipline and more college credits; who are single and married; and with more college courses completed were more successful. Dille and Mezak (1999) note, "Older students would be expected to perform better in telecourses for several reasons. First, age often brings greater maturity and more self-discipline.... Second, older students are likely to have completed more college credits hours than younger students.... Finally, older students are likely to be working full time, have a family, and be paying for their own college tuition and related expenses. They might put a higher value on time and money...." (p. 32).

Fjortoft (1995) surveyed 198 post-baccalaureate pharmacy students to determine which of the following five sets of variables—individual characteristics, previous college experience, intrinsic job satisfaction, attitude toward individual learning, and intrinsic and extrinsic perceived benefits of persisting to degree completion—contributed to persistence in

the pharmacy distance education program. Fjortoft (1995) found that students with higher levels of perceived intrinsic benefits of obtaining a post-baccalaureate pharmacy degree were more likely to persist in the program. Intrinsic benefits refer to factors related to job contentment. Fjortoft (1995) notes, “Individuals saw the academic coursework as an avenue to enhanced job performance, enhanced job satisfaction, improved clinical skills, better patient care, and as a way to remain current with knowledge” (p. 6).

Frew and Weber (1995) surveyed 104 past and current students of a Graduate Certificate of Business in Tourism and Graduate Diploma of Business in Tourism Management program at Monash University in Australia to determine why the program had a high attrition rate (44 percent) in the first four years of its existence. The reasons stated by the participants for withdrawal from the program were cost of the course, the interference of the required workload for the course with other commitments, dissatisfaction with the quality of the course, and acceptance of an offer for a tourism course from another institution (p. 58).

Gibson (1996) interviewed 16 self-selected distance education students seven times during their first year of study to explore their perceived confidence, perceived competence, commitment, and barriers and enhancers of educational progress, and the breadth of resources used in their studies over a period of time (p. 26). Gibson (1996) found that the participants’ academic self-concept changed over time as they became more or less competent or confident with their studies. Gibson (1996) also found academic self-concept to be strongly associated with the students’ overall persistence in the distance education program.

Kemp (2002) surveyed 460 students registered for their first undergraduate course at Athabasca University in Canada to determine if life events, external commitments, and personal resiliency would affect persistence in their distance education course. Life events

included the number of “noteworthy occurrences who advent is either indicative of, or requires significant change in, the ongoing life pattern of the individual” (p. 67) experienced since the participant turned 18 years old. External commitments included family, personal, home, work, community, and financial commitments. Resiliency is defined as “those behaviors in which people engage when they are confronted with a life event or external commitment” (p. 67). Kemp (2002) found that work commitments and resiliency skills influenced persistence in the distance education course. Kemp (2002) writes, “Individuals who show high levels of ‘resilient’ characteristics may behave in such a way that they adjust more easily than others to life events and external commitments” (p. 73). Students with a high resiliency score may persist longer in a distance education course when they are confronted with obstacles and have to deal with them on their own.

Kumar (1999) surveyed all 760 final-year distance education students enrolled in the Arts and Commerce bachelors degree program at the Indira Gandhi National Open University in Delhi, India to determine if the learner characteristics of learners’ academic self-concept, the student’s self-perception of his or her academic abilities; study habits, the student’s method and approach to learning; and attitudes toward distance education, the student’s reaction to the elements of a distance education system; would explain learners’ academic performance in distance education courses. Kumar (1999) found a moderate positive correlation between learners’ academic self-concept and learners’ academic performance and a low positive correlation between both learners’ study habits and learner’s attitude toward distance education courses and learners’ academic performance. Learner’s academic self-concept explained the most, explaining almost 24 percent of the variance in learners’ academic performance. These two researchers found that academic self-concept is a

dynamic and changing concept and can become more positive through the aid of enhancers and can decline due to detractors. Enhancers to academic self-concept include empathy by professors, personal success, mastering content, progress toward an educational goal, familiarity with the process of distance learning, and self-growth. Detractors from academic self-perception include unfamiliarity with distance education progress, balance, skills deficiencies, and lack of knowledge of teacher expectations. These researchers conclude that “distance education institutions should tailor their self-instructional materials in ways that will raise students’ academic self-concept ... so that performance is improved” (Kumar, 1999, p. 57).

Minich (1996) surveyed the 355 students who withdrew from a telecourse in winter term 1995 at Florida Community College in Jacksonville, Florida to find out why telecourses had a higher withdrawal rate than their traditional course counterparts. Minich (1996) found that students cited personal reasons (family responsibilities, change in employment, business travel, personal or family illness, or other personal commitments) as the main reasons for withdrawal from the telecourses. She concluded that “students withdraw from telecourses for the same reason they initially enrolled — personal reasons” (p. 4).

Parker (1999) surveyed 102 distance education students during their orientation for one of three for-credit distance education course at the Maricopa Community College in Phoenix, Arizona to determine whether the independent variables of locus of control, gender, number of distance education courses previously completed, age, financial assistance, and number of hours employed could explain the high rate of dropout from distance education courses. The 94 participants completed an information sheet and Rotter’s Locus of Control Scale. Parker (1999), like Dille and Mezack (1991), found that locus of control, specifically

participants with an external locus of control, and source of financial assistance could predict nearly 85 percent of dropout from distance education. Her findings on locus of control support previous research that shows that students with an internal locus of control were more focused on their educational goals.

Rekkedal (1973/1983) sought to determine whether turn around time, defined as “the time from the moment the student mails in the homework assignment for a study unit until it is received by the student with the tutor’s corrections and comments” (p. 232) in correspondence courses could influence drop out. Rekkedal (1973/1983) split the 127 participants, students enrolled in a basic mathematics course at the NKI-skolen in Oslo, Norway, into two groups. Sixty-nine participants were placed in the quick turnaround group and the tutor corrected their assignments in one day for a total turn around time of less than one week. Fifty-eight participants were placed in the delayed turnaround group and the tutor delayed their assignments for an additional three days after correction for a total turn around time of more than a week. Rekkedal (1973/1983) found a strong correlation between turn around time and completion of the mathematics course. The quick response group had a 91.3 percent course completion rate while 69 percent of the delayed response group completed the course. Rekkedal (1973/1983) concludes that it is likely that drop-out rates can be lowered in correspondence courses by reducing the turn around time for assignments.

Taylor et al. (1986) sought to reproduce the study conducted by Rekkedal (1973/1983) in a variety of distance education institutions including the Allama Iqbal Open University in Pakistan, the Darling Downs Institute of Advanced Education in Australia, the Open Learning Institute of British Columbia in Canada, the Tasmanian State Institute of Technology, and the University of the South Pacific. Taylor et al. (1986) sought to determine if the findings of

Rekkedal (1973/1983) hold up when studied at multiple locations. Taylor et al. (1986) found no relationship between low turn around rates for assignments and drop out rates across multiple locations. Taylor et al. (1986) notes, “The specific institutional context in which a study is undertaken has a major influence on relationships between the variables under investigation” (p. 86) and says that caution should be taken when trying to generalize results of studies to other institutions.

Selvam (1999) surveyed 150 students at the Centre of Distance Education, Bharathidasan University in India to evaluate the level of dissatisfaction of distance learners. Selvam (1999) found that the main causes of learner dissatisfaction include family factors (more time needed to care for children, family commitments, money issues, or lack of family support), educational factors (difficulty of work, no library facility, lack of understanding, not relevant to job, or no facilities to work with peers), and occupational factors (too much work at work, promotion, transfer, or assignment of additional responsibility).

Shin and Kim (1999) initially surveyed 9,809 students and then re-surveyed 1,994 students one year later from the Korea National Open University (KNOU) to see whether the independent variables of job load, the extent participants felt overload from their workplace; social integration, the extent to which participants feel a part of the KNOU; willingness, the extent participants are willing to complete the courses; amount of study time, the amount of time participants put into coursework; planned learning, the extent to which participants organize their learning; and face-to-face supplemental activities, the extent to which participants participate in face-to-face lectures; would affect the students’ grade point averages (GPA) and their future enrollment. Shin and Kim (1999) found that the amount of study time learners spent on course work has the most effect on their GPA. They also found

that face-to-face supplemental activities had the most effect on predicting subsequent enrollment. The researchers also found that social integration had a negative impact on persistence; learners who received more support were more likely to drop out. This finding contradicts current research. Shin and Kim (1999) theorize that “distance learners who receive more support from those around them tend to avoid enrolling the subsequent semester largely due to a lack to confidence to complete their studies, couples with the felt pressure coming from the expectations of others” (p. 90).

Siqueria de Freitas and Lynch (1986) surveyed 521 adults enrolled in the third cohort enrolled in the Introductory Course at the National Open University of Venezuela (UNA) to determine the institutional and individual factors that affect completion of the Introductory Course. Siqueria de Freitas and Lynch (1986) found that satisfaction with the course, frequency of visits to the UNA local center, professional activity while enrolled in the course, and perceptions concerning the content of the instructional material could predict 43 percent of course completion.

Taplin (2000) surveyed and interviewed 50 women studying at the Indiria Ghandi National Open University in Dehli, India to determine “the problems experienced by female distance education students which might contribute to their dropping out of their courses” (p. 192). Taplin (2000) found the women cited personal problems or family problems, including difficulties caring for young children; getting course materials in time; and that they did not have sufficient background to understand course materials as the reasons they may withdraw from their courses.

Thompson (1997) surveyed 504 students enrolled in the fourth year of the Bachelor of Education degree program at Edith Cowan University in Australia to determine the effect of

13 independent variables (age; gender; number of years of teaching experience; number of years since completing pre-service training; state in the course; current occupation; geographical location; method of communication with tutor, other students, and external studies office; administrative issues; personal circumstances; work related issues; perceived benefit of completing the course; and relevance of unit content to perceived career needs and interests) on distance education course completion. Thompson (1997) found that the variables of less teaching experience, with fewer semesters of study in the course, and with lower course grade point averages to have significant impacts on persistence. Participants cited work, family, and study commitments as the main reasons for leaving the course. The leavers were also much less satisfied with the communication with and the feedback from their course tutor.

Wilkinson and Sherman (1989) interviewed administrators and professors from two distance education programs to determine if they felt student procrastination is a factor that influences dropout from distance education courses. For the first program, the authors interviewed three faculty and the distance education coordinator from a school in a rural portion of a southeastern state that had about 200 distance education students in about eight courses per semester. For the second program, the authors interviewed two faculty and two distance education programs directors (one incoming, one outgoing) in a densely populated urban area of the same southeastern state that had about 3,100 distance education students in over 50 courses per semester. The eight participants provided the same four answers to explain dropout from distance education: students do not have realistic expectations, students need more structure, students who finish generally start early and pace themselves, and students who participate in distance education are atypical students. The eight participants

recognized the existence of procrastination and that procrastination can affect course completion but only did so with prompting.

Models

Sweet (1986) and Bernard and Amundsen (1989) both attempted to validate Tinto's (1993) Longitudinal Model of Departure from Institutions of Higher Education, developed to explain the attrition of traditional students at four-year higher education institutions, to a distance education setting. Tinto (1993) argues, "Individual departure from institutions can be viewed as arising out of a longitudinal process of interactions between an individual with given attributes, skills, financial resources, prior educational experiences, and dispositions and other members of the academic and social systems of the institution. The individual's experience in those systems, as indicated by his/her intellectual and social interaction, continually modifies his or her intentions and commitments" (pp. 113-115).

Sweet (1986) surveyed 356 students enrolled in courses at the Open Learning Institute, a dedicated distance education university in British Columbia, Canada. Sweet (1986) modified Tinto's (1993) model and Sweet's (1986) independent variables include student characteristics (age, sex, geographic location, locus of control, and goal expectation), academic integration (perceived academic performance and course materials ratings), social integration (tutor ratings), attitude orientation (goal satisfaction and institutional commitment), and persistence (assignment completion and exam completion). While Sweet (1986) concludes that Tinto's (1993) model "is an appropriate framework for further research on student dropout from non-traditional educational institutions" (p. 210), the independent variables in Sweet's (1986) model accounted for only 19 percent ($R^2 = 19$) of the reasons why

students dropped out of distance education courses.

Bernard and Amundsen (1989) replicated the study performed by Sweet (1986) to determine if Tinto's (1993) Model of Persistence and Withdrawal in Higher Education is an appropriate framework to study the issue of dropout from distance education. Bernard and Amundsen (1989) surveyed 553 students enrolled in three distance education courses (Communication, Business Administration, and Accounting) in the Personal Education Program offered by the Institute of Canadian Bankers. Bernard and Amundsen (1989) theorize that courses with stricter control (like courses that emphasize instruction in verbal and intellectual skills) will have a greater emphasis on teaching material than on two-way communication between the student and his or her tutor or institution and that course with less control (like courses that emphasize instruction in cognitive skills and attitudes) will place greater emphasis on communication. Bernard and Amundsen (1989) found like Sweet (1986) that Tinto's (1993) model is an appropriate framework for research on student attrition in distance education programs. They do note that any model developed to explain attrition in distance education programs must take into consideration the type of course offered.

Kember (1995) proposes a model of student progress which is based on Tinto's (1993) Logitudinal Model of Departure from Institutions of Higher Education. To initially develop this model, Kember, Murphy, Suaw, and Yuen (1991) surveyed, using the Distance Education Student Progress (DESP) questionnaire they developed, 1,060 distance education students enrolled in either the Textiles and Clothing, Taxation, or Business Administration courses in Hong Kong. From this study, a two-track model was proposed. In this model, a students' entry characteristics such as age, years of working experience, marital status, salary, and highest academic qualification direct them down one of the two tracks. Kember (1995) notes, "Those

with favorable situations tend to proceed on the positive track and are able to integrate socially and academically. Others take the lower, negative track where they have greater difficulties achieving social and academic integration” (p. 64). Kember (1995) completed a replication study after developing this model of student progress on distance education students enrolled in courses at three institutions in Hong Kong. Kember (1995) found enough similarity between both path models to confirm his initial findings (p. 155).

Roberts, Boyton, Buete, and Dawson (1991) used Kember’s (1989) linear-process model of drop-out to investigate the success or failure of 38 students enrolled in the Design Drawing and Landscaping or the Microbiology for Nurses distance education courses at the Charles Sturt University-Riverina in Australia and to determine the validity of Kember’s (1989) model. During the investigation, the authors collapsed four of the model’s components into two. They collapsed academic environment and academic integration into one item and they collapsed social and work environment and social and work integration into one item. The authors collapsed these items because they found them to be so similar. Roberts et al. (1991) found Kember’s (1989) model to be “an appropriate and workable theoretical framework” (p. 82) and the authors found the model useful to determine both the reasons students withdrawal from their courses and for the reasons why students continue with their studies.

Woodley, de Lange, and Tanewski (2001) replicated Kember’s (1995) study of student progress using the Distance Education Student Progress (DESP) questionnaire developed by Kember (1995) and using the statistical techniques used by Kember (1995). Woodley et al. (2001) surveyed 851 distance education students enrolled in four business courses at the Open University of the United Kingdom to determine whether the independent

variables of social integration, academic integration, external attribution, and academic incompatibility could explain attrition from distance education courses. Woodley et al. (2001) noted that Kember said that the independent variables in his model could explain 80 percent of the variance of adult student persistence in the group of Hong Kong students. Unfortunately, the study done by Woodley et al. (2001) rejects Kember's (1995) model as they could not replicate Kember's results and due to issues with the internal consistency of the DESP questionnaire.

Garland's (1993c) conceptual model is based on the work of Rubenson (1986) who classified the barriers to participation in distance education into three categories: situational, institutional, and dispositional barriers. Garland adds the category of epistemological barriers based on the research of Morgan and Tam (1999) and Bernard and Amundsen (1989). Bernard and Amundsen (1989) concluded that "adoptions of any model of program attrition to explain course dropout must take into consideration factors related to the nature of the learning task in individual courses" (p. 43). Garland (1993c) completed an ethnographic study on distance education students enrolled in natural resource science class at the University of British Columbia, Canada to "clarify the specific nature of any situational, institutional, dispositional and epistemological barriers" (p. 14) in participation in distance education courses. The barriers found as a result of her study include situational barriers or barriers that stem from a person's life situation and can include items such as a poor learning environment and time constraints; institutional barriers or barriers introduced by an educational institution that hinder a student and can include items such as course cost, admission requirements, course pacing, and limited support services; dispositional barriers or barriers that are related to the students' psychological and sociological natures such as their attitudes, confidence, leaning

styles, and motivation; and epistemological barriers or barriers that can include items such as overall research paradigm, role of theory, extent of modeling and quantification, level of jargon in courses, and aspects of communication approaches and styles (pp. 13-14).

Schilke (2001) extends Garland's (1993b) conceptual framework to include technology as a potential barrier to completion of distance education courses. Schilke (2001) notes that the primary distance education instructional methods used in the distance education courses at the time of Garland's (1993c) study were paper-based and did not include technology-based instructional methods. Technology barriers include technology issues for both the students and the institution and include lack of reliable computer access, difficulty getting on to the Internet, resource availability like missing or broken links, and excessive download times.

An earlier study using a conceptual framework of barriers was done by Gibson and Graff (1992). Gibson and Graff (1992) surveyed 210 graduates and drop-outs from four University of Wisconsin System Extended Degree programs to determine whether or not learning styles, psychosocial, and sub-environmental variables can predict success in an undergraduate distance education degree program. Gibson and Graff (1992) based their survey on the three categories of barriers (situational, institutional, and dispositional) categorized by Cross (1981) with the addition of a fourth category named independent study barriers. Gibson and Graff (1992) found that independent study barriers and dispositional barriers were most useful in predicting course completion. A student's overall expectancy of success, or confidence, alone explained almost 65 percent of course completion.

Morgan and Tam (1999) interviewed nine students persisting in and nine students withdrawing from an Advanced Diploma of Horticulture course to determine the non-

superficial barriers to persistence in distance education. Morgan and Tam's (1999) results are consistent with Garland's (1993b) findings in that students persisting and leaving distance education courses both faced barriers and that "no single factor can be attributable to student withdrawal or non-persistence. Rather it is the interaction of numerous factors — situational, institutional, dispositional and epistemological — that produces the outcome of completing or not completing the course" (p. 105).

Summary

This chapter describes the relevant history of the distance education and distance training arenas and the literature surrounding the study of attrition in distance education. While there is interesting anecdotal information about the reasons for attrition in business-based distance training courses, the literature does not provide any concrete barriers to explain the attrition rates in business-based distance training courses. However, significant research has been done on the reasons for attrition in distance education and a set of five barriers has been developed to explain attrition in distance education. "Chapter 3: Methodology" on page 40 describes a study to see if the barriers to completion of distance education can explain the attrition in business-based distance training courses.

Chapter 3: Methodology

Introduction

The influence for this study comes from Garland (1993b) (now Maureen Kent). She has investigated the variables affecting persistence in distance education in the natural sciences for her doctoral dissertation. Because her study looks at the variables affecting persistence in distance education, the results of her study may or may not apply to business-based distance training. This study seeks to determine if these variables affect the persistence in business-based distance training.

Design

This study uses a cross-sectional, correlational design.

Population and Sample

Population

The target population for this study are all members of the North Carolina Chapter of the Project Management Institute (NC PMI) who have taken e-learning courses, for a total population of approximately 1,223 participants (N=1,223). The NC PMI members are business professionals who are required to take 60 continuing education credits over a three-year period to maintain their Project Management Professional (PMP) certification. E-learning, as well as attending seminars or workshops, completing formal academic education, performing volunteer service to professional or community organizations, or authoring an article or book on project management all qualify in fulfilling this continuing education requirement.

Sample

The North Carolina Chapter of the PMI would not provide the names and email

addresses of the members of their chapter for random sampling purposes. Instead, the members of the North Carolina Chapter of the PMI were emailed a newsletter by the Vice President of Communications in which contained a request to fill out the survey. The NC PMI members who attended the February 19, 2004 chapter meeting were also handed a flier asking them to complete the survey as well. For a copy of the newsletter and flier, see “Appendix A: Survey Letter and Survey Flier” on page 87.

Instrumentation

Because the studies done by Garland (1993c) and Schilke (2001) were qualitative studies, a survey instrument was created for this study. The survey instrument has two parts. Part one contains questions regarding the demographic information of the respondents including questions about their gender, ethnicity, age, position, business or industry, number of distance training courses completed, where the distance education course was taken, instructional media used for the distance training course, whether or not the respondents felt prepared to take the distance training course, whether or not the distance training course was mandatory, and whether or not the respondents completed the distance training course. Part two contains questions relating to the five barrier groups. Each of these five barrier groups has between seven and 12 related questions. Each of the questions uses a Likert-type scale from 1 (strongly agree) to 4 (strongly disagree) (de Vaus, 2002, p. 105). A score of 0 means the question did not apply to the responder. For a copy of this survey, see “Appendix B: Survey Instrument” on page 89.

Independent Variables

There are five independent variables in the study: Situational, questions regarding the participants’ life situation; Institutional, questions regarding the corporation; Dispositional,

questions regarding the participants' psychological and sociological natures; Epistemological, questions regarding the way the participants learn; and Technological, questions related to technology and Internet issues.

Dependent Variable

The dependent variable is course completion (persistence).

Reliability

Litwin (2003) notes, "Reliability is a statistical measure of the reproducibility or stability of the data gathered by the survey instrument" (p. 6). To assess reliability of the survey in this study, Cronbach's coefficient alpha, an internal consistency indices of reliability, was used to assess the internal reliability of the instrument and the extent to which individual items that constitute a test correlate with one another (Litwin, 2003, pp. 20-25).

Scale reliability of the questions in the pilot instrument was assessed by calculating Cronbach's coefficient alpha. These alpha numbers are reported in Table 2.

Table 2

Pilot Instrument Reliability

Variable	Number of Items	Range	Mean	Standard Deviation	Coefficient Alpha
Situational Variables	12	1-5	43.6	8.26	0.79
Institutional Variables	12	1-5	44.8	6.46	0.80
Dispositional Variables	9	1-5	28.10	6.81	0.76
Epistemological Variables	7	1-5	19.2	6.37	0.87
Technological Variables	12	1-5	46.4	7.17	0.87

Hatcher and Stepanski (1994) note, “For scales used in research, [internal] reliability coefficients less than 0.70 are generally seen as inadequate” (p. 513). For the pilot instrument, the aggregate coefficient alpha estimates for all the factors exceeded 0.70. These coefficient alpha estimates can be found in Table 2. Since the demographic variables of gender, ethnicity, age, position, business or industry, number of distance training courses taken, where the distance training course was taken, instructional media used for the distance training course, whether the respondent felt prepared to take the distance training course, whether or not the distance training course was mandatory, and whether or not the respondent completed the distance training course can be precisely measured and do not have multiple questions in the survey instrument, coefficient alpha estimates were not performed for these demographic variables.

To measure the extent to which individual items that constitute a test correlate with

each other, Cronbach's coefficient alpha number for the individual variables was examined to determine whether the scale can be improved by removing a variable that demonstrates poor correlation with other variables (Hatcher & Stepanski, 1994, p. 513). Table 5 through Table 9 in "Appendix C: Chronbach Coefficient Alpha Numbers" on page 102 provide these Cronbach coefficient alpha numbers. Since removing any of the variables would not substantially improve the scale, no variables were removed from the survey instrument.

Validity

Validity "is how well they [items, scales, and whole survey instruments] measure what they are intended to measure" (Litwin, 2003, p. 31). To measure the validity of the survey instrument used in this study, content validity measures were employed. To measure content validity, a pilot study was conducted to identify errors, highlight design issues, and predict problem areas with the survey (Litwin, 2003, pp. 57-67). Also the survey instrument was evaluated by the four dissertation committee members and their combined opinions were used to improve the quality and content of the instrument (Litwin, 2003, pp. 32-33). The following paragraphs detail the results from the pilot study.

Pilot Study

The pilot study was administered to the 76 members of a publications organization at a software development company from December 3, 2003 to December 16, 2003. These 76 people were sent an email that asked them to take the online survey at <http://www.surveymonkey.com>. All of the people in this organization have had the opportunity to participate in distance training courses at their workplace. Twenty-four people completed the survey in the two week period the survey was available.

The respondents were very candid and made comments regarding hygiene errors, the

organization of the survey, and the wording of individual questions. One participant even completed a full copy edit on the email and survey instrument. Some of the specific changes made to the survey instrument, based on the feedback received, included correcting three typos; changing the wording of five questions; adding a question to the instrument on whether or not the e-learning course was mandatory; adding “pharmaceutical” to the list of businesses or industries from which a respondent can select; adding “university or college lab,” “conference,” and “seminar” to the list of places to work on an e-learning course from which a respondent can select; changing the CD-ROM media selection by adding DVD to it and thus making the selection CD-ROM/DVD; adding “I don’t know” as a valid selection to the types of access the participants have to the Web/Internet; making the section instructions more consistent; and adding logic to the survey that moves the participant to the end of the survey if he or she selects “none” for the number of e-learning courses he or she has taken.

One participant questioned why all the questions were mandatory. One great feature of web survey design tools is the ability to force participants to answer questions. Dillman (2000) states that participants should not be forced to answer questions (p. 394). Dillman (2000) writes, “Sometimes there are legitimate reasons for objecting to a question and sometimes the respondent may, in fact, be unable to pick one of the answer choices. The frustration associated with this requirement seems likely to lead to annoyance and premature terminations” (p. 394). Dillman (2000) goes on to note that if the researcher indicated in an email or letter to the participant that their responses to the survey were voluntary, making the questions required violates this promise (p. 394). So, the requirement that all of the questions must be answered (except for the question on whether or not the participant completed the e-learning course) were removed. The question on whether or not the participant completed the

e-learning course remained required as the skip logic of the survey hinges on this question.

Some of the comments regarding question numbering were not addressed. Section and question numbering were not altered because they are controlled by the survey web tool.

“Appendix D: Participant Comments on Pilot Instrument” on page 106 lists all the comments made by pilot test participants. The final, revised version of the survey instrument can be found in “Appendix B: Survey Instrument” on page 89.

Data Collection

A newsletter was emailed by the Vice President of Communications of the North Carolina Chapter of the Project Management Institute (NC PMI) to the members of the NC PMI and a flier was handed out to the members of the NC PMI who attended the chapter meeting on February 19, 2004. The newsletter and flier can be found in “Appendix A: Survey Letter and Survey Flier” on page 87. The email and flier explain the purpose of the study and instructions for accessing the survey on-line. The email also emphasized that all responses will remain confidential. The web site was available for two weeks—from February 17, 2004 to March 2, 2004. When the survey was closed, 127 online surveys had been completed. Table 3 provides the survey response rates over the two week period.

Table 3

Survey Return Rates

Date	Number of Surveys Returned	Cumulative Total
2/17/2004	3	3
2/18/2004	3	6
2/19/2004	15	21
2/20/2004	6	27
2/21/2004	2	29
2/22/2004	2	31
2/23/2004	2	33
2/24/2004	37	70
2/25/2004	20	90
2/26/2004	11	101
2/27/2004	3	104
2/28/2004	2	106
2/29/2004	4	110
3/1/2004	13	123
3/2/2004	4	127

Responses received after the web site's closure were used to determine non-response bias (Fowler, 1993, p. 40), or "bias introduced into a sample by people who either refuse to participate in the study or to answer particular questions [or by] being systematically different from those who do respond" (de Vaus, 2002, p. 362). To determine if non-response bias exists, the responses received after the web site's closure were compared with a representative sample of the responses received in time to see if significant differences exist.

Four responses were entered after the survey window had closed. These four responses

were collected and analyzed for non-response bias. For the actual study, the average respondent to the survey is a white (90.91%) male (56.98%) aged 30-39 (44.32%) who works in a technology (20.22%) position. He has taken one to three (44.32%) web- or Internet-based (74.71%) e-learning courses by himself (79.31%). He felt prepared (95.35%) to take the e-learning course and in the end he did complete (89.89%) the e-learning course. The respondents who completed the survey after the closure date closely matched this profile. The late respondent is white (100%) male (50%) or female (50%) and works in a technology (50%) position. He or she has taken one to three (50%) web- or Internet-based (100%) e-learning courses by himself or herself (50%). He or she felt prepared (100%) to take the e-learning course and in the end he did complete (66.67%) the e-learning course. Since the late respondents seem to closely match the demographic data of the actual survey respondents, non-response bias does not appear to be an issue for this study. For a complete frequency analysis of the four late responders, see “Appendix G: Frequency Distributions for Responses After Survey Closed” on page 119.

Data Analysis

The responses to the survey are stored in the internal database at <http://www.surveymonkey.com>. Once the survey window had expired, the data in the <http://www.surveymonkey.com> database was downloaded in Microsoft Excel spreadsheet format. From this Microsoft Excel spreadsheet, the data was imported into the SAS statistical software program for analysis.

1. For this study, the research question is: What is the predictive value of:
 - Situational (poor learning environment and lack of time)

- Institutional (cost, problems with institutional procedures, problems with course scheduling/pacing, problems concerning tutorial assistance, and instructional design problems)
- Dispositional (lack of a clear goal, stress of multiple roles, time management/procrastination problems, learning style problems, adult pride, and psychological, social and economic factors)
- Epistemological (Epistemology of course differed from student's epistemological stance, internal epistemological gap between presented content and expectations, content lacked personal relevance/interest, and lack of prerequisite knowledge)
- Technological (Lack of reliable computer access, difficulty getting on to the Internet, resource availability like missing or broken links, and excessive download times)

on business-based distance training trainee's completion rates?

To answer the research question, chi-square tests and logistic regression will be used. First, a chi-square test will be performed to determine if relationships exist between the non-completers and the five barrier groups. If the chi-square tests indicates that differences exist, a logistic regression test will be performed. Logistic regression is appropriate when the dependent variable is a dichotomy, in this case completion or not, and the independent variables are continuous variables, categorical variables, or both. Logistic regression estimates the probability of a certain event occurring (Agresti & Finlay, 1997, p. 576).

Study Schedule

Table 4 details the schedule for the study.

Table 4

Survey Schedule

Date	Activity
9/26/03	Committee meeting
12/3/03	Email sent to begin pilot study
12/16/03	Pilot study ends
2/17/03	Newsletter sent to begin study
2/19/04	Newsletters handed out
3/2/04	Study ends
3/3/04	Commence data analysis
3/15/04	Draft of dissertation available

Limitations

The names and email addresses of the North Carolina Chapter of the Project Management Institute were not provided, so true random sampling could not be performed. Also, an element of snowball sampling occurred as the NC PMI members indicated that they had asked their colleagues to fill out the survey as well. Further studies using random sampling methods should be performed to see if the results are similar.

Although care has been taken to select a professional organization that only contains business professionals, the sample might contain student members and business professionals who have taken distance education and not distance training. Further studies using actual professional employees who have taken distance training only should be performed to see if the results are similar.

All participants involved in the study must have email and Internet access and therefore might exclude some members of the population.

Summary

The proceeding sections of this chapter detail the research design of the study on the predictive ability of situational, institutional, dispositional, epistemological, and technological barriers on business-based distance training completion rates.

Chapter 4: Results

Introduction

One hundred and twenty-seven surveys were completed online at <http://www.surveymonkey.com>. Twenty-nine of the surveys were discarded because the respondents indicated that they had never taken an e-learning course. A further nine surveys were discarded—not because the respondents had not taken an e-learning course—but because they did not indicate whether or not they had completed their latest e-learning course. Subtracting these 38 responses from the original set of 127 responses leaves a sample size of 89 (n=89). The following paragraphs describe the results from the sample of 89 responses. For a complete frequency analysis of these 89 responses, see “Appendix E: Frequency Distributions” on page 111. For a complete frequency analysis of the entire set of 127 respondents, see “Appendix F: Frequency Distributions for All Responses” on page 115.

Descriptive Statistics

The average respondent to the survey is a white (90.91%) male (56.98%) aged 30-39 (44.32%) who works in a technology (20.22%) position. He has taken one to three (44.32%) web- or Internet-based (74.71%) e-learning courses by himself (79.31%). He felt prepared (95.35%) to take the e-learning course and in the end he did complete (89.89%) the e-learning course. The following paragraphs detail the descriptive statistics for the variables gender, the participants' gender; ethnicity, the participants' ethnicity breakdown; age, the participants' age breakdown; position, in which position the participants work; industry, in which business or industry the participants work; numcourses, the number of e-learning courses in which the participants have participated; delivery, the instructional media used for the e-learning course; participation, whether or not the participants were alone when taking the e-learning course;

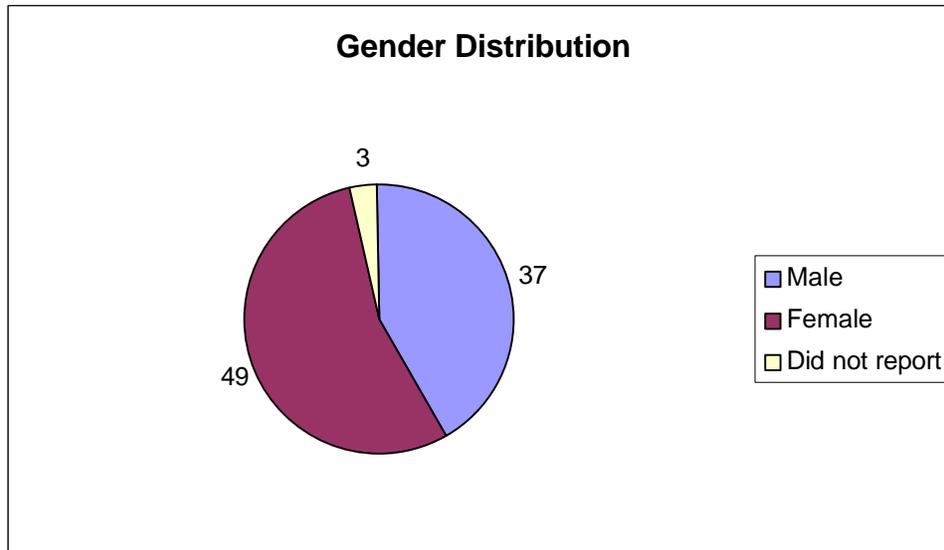
preparation, whether or not the participants felt prepared to take an e-learning course; required, whether or not the e-learning course was mandated by their organization; takereq, whether or not the participants would have taken the e-learning course if it was not required; and completed, whether or not the participants completed their e-learning course.

Gender

Thirty-seven of the respondents are female (43.02%) and 49 of the respondents (56.98%) are male. Three respondents chose not report their gender when taking the survey.

Figure 3 illustrates this dichotomy.

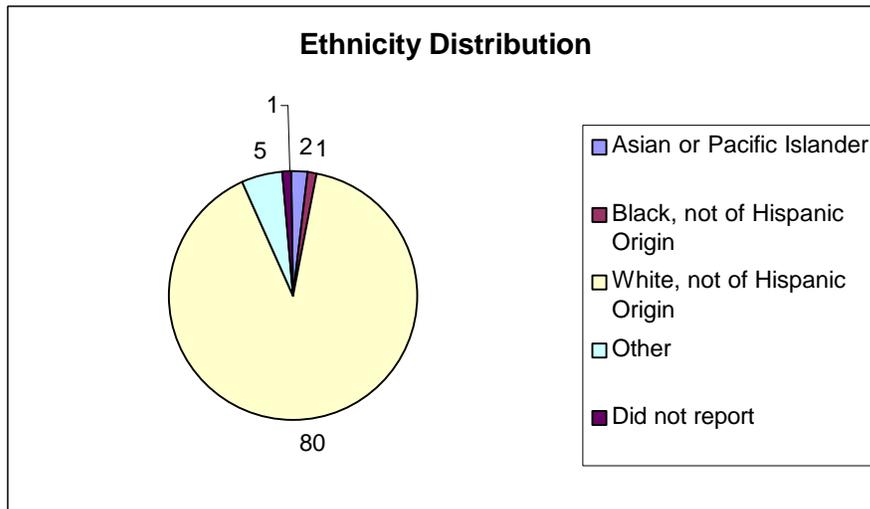
Figure 3. Gender Distribution



Ethnicity

Two of respondents to the survey are Asians or Pacific Islanders, one respondent is Black and is not of Hispanic origin, 80 respondents are White and are not of Hispanic origin, and five respondents selected “other” for their ethnicity. The values provided by the respondents who selected the “other” category include British, English, American Italian, White European, and Multi-racial. One respondent did not provide his or her ethnicity information. Respondents were allowed to select one or more of the nine following ethnicity categories on the survey instrument: American Indian/Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic Origin; Cuban American; Hispanic American; Mexican American; Puerto Rican; White, not of Hispanic Origin; or Other. The largest ethnic group represented in the sample is the White, not of Hispanic Origin ethnic group (90.91%). There were a few surveys completed by persons of the Black, not of Hispanic Origin ethnic group (1.14%) and by persons of the Asian or Pacific Islander ethnic group (2.27%). There are no persons from the American Indian/Alaskan Native or Hispanic ethnic groups represented in the completed surveys. Figure 4 provides the ethnicity breakdown.

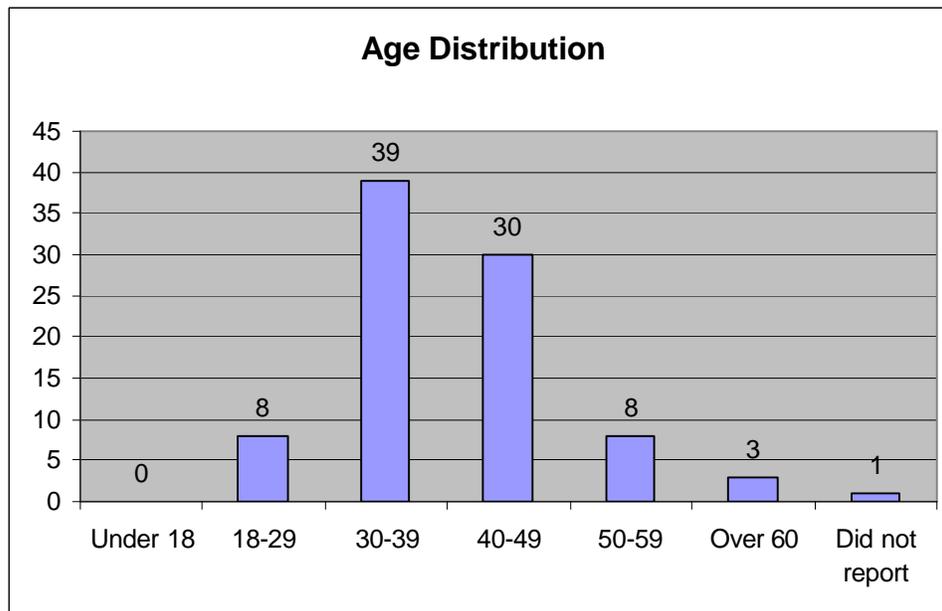
Figure 4. Ethnicity Distribution



Age

No respondents were under 18 years of age. Eight respondents are from 18 to 29 years old (9.09%). Thirty-nine respondents are from 30 to 39 years old (44.32%). Thirty respondents are from 40 to 49 years old (34.09%). Eight respondents are 50 to 59 years old (9.09%). Three respondents indicated that they are over 60 years old (3.41%). One respondent did not indicate his or her age category. Figure 5 illustrates the age distribution of the respondents. The age variable appears to be fairly normally distributed.

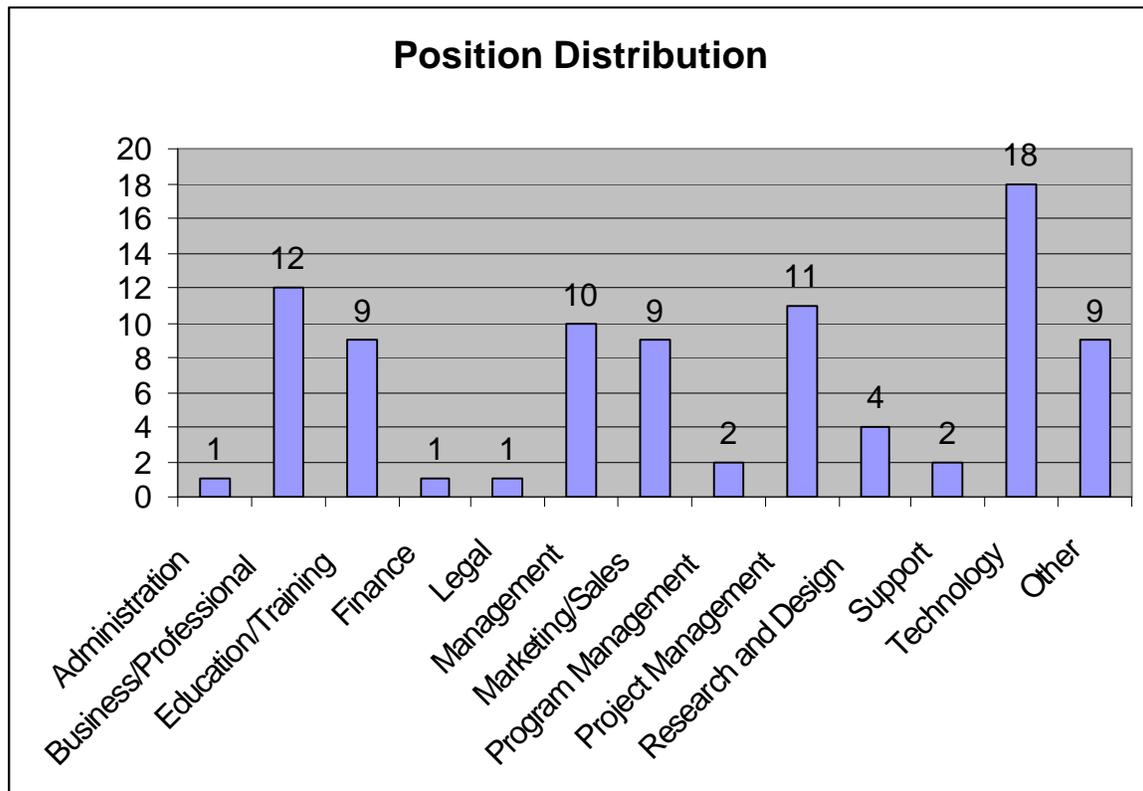
Figure 5. Age Distribution



Position

The respondents are spread among all the position categories. The respondents selected the Technology category the most (20.22%). The respondents were allowed to select from one of the 13 following categories on the survey instrument: administration, business/professional, education/training, finance, legal, management, marketing/sales, program management, project management, research and design, support, technology, and other. Nine respondents selected the “other” category (10.11%). The positions provided by eight of the nine respondents in the “other” category are homemaker, teacher, consultant, student, career coaching and management consulting, logistics, CEO, and technical writing/documentation. Figure 6 illustrates the position distribution.

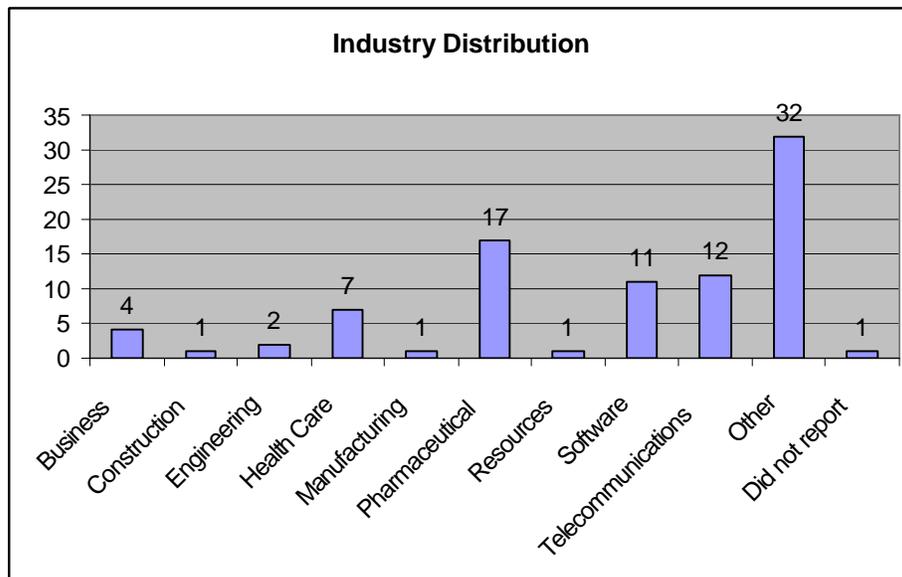
Figure 6. Position Distribution



Industry

The respondents were spread among the 10 industry categories with the category of “other” selected with the most frequency (36.36%). The values provided by the 32 respondents who selected the “other” category include academic medical research, advertising, benefits, change management, consulting (2), consumer products, data networking, education/training (8), financial services, government (2), insurance (2), international corporate relocation, Internet (2), Internet services consulting, IT/computer services (3), legal services, retail (2), and translation/interpretation. The large spread among industries is not surprising as most business or industries employ project managers in some capacity. The respondents were allowed to select one of the 10 following business or industry categories on the survey instrument: business, construction, engineering, health care, manufacturing, pharmaceutical, resources, software, telecommunications, and other. One respondent did not report the business or industry in which he or she works. Figure 7 illustrates the represented business or industries.

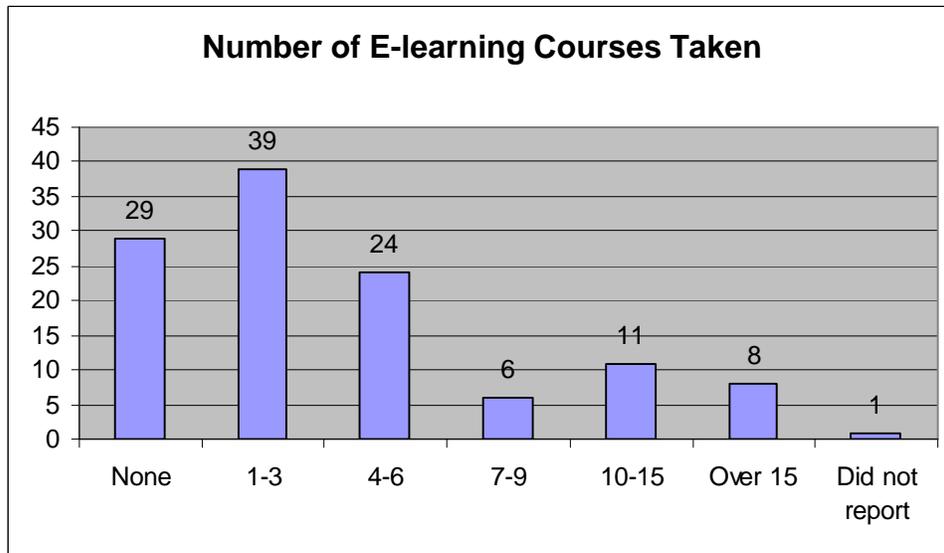
Figure 7. Industry Distribution



Number of E-learning Courses Taken

Twenty-nine respondents have never taken an e-learning course. These results (plus the results from the nine respondents who did not indicate whether or not they had completed their latest e-learning course) were removed from the final sample. Of the remaining 89 results, 39 respondents (44.32%) have taken from one to three e-learning courses, 24 respondents (27.27%) have taken from four to six e-learning courses, six respondents (6.82%) have taken from seven to nine e-learning courses, 11 respondents (12.50%) have taken from 10 to 15 e-learning courses, and eight respondents (9.09%) have taken over 15 e-learning courses. One respondent did not indicate how many e-learning courses he or she has taken. Figure 8 illustrates the distribution of the number of e-learning courses the respondents have taken.

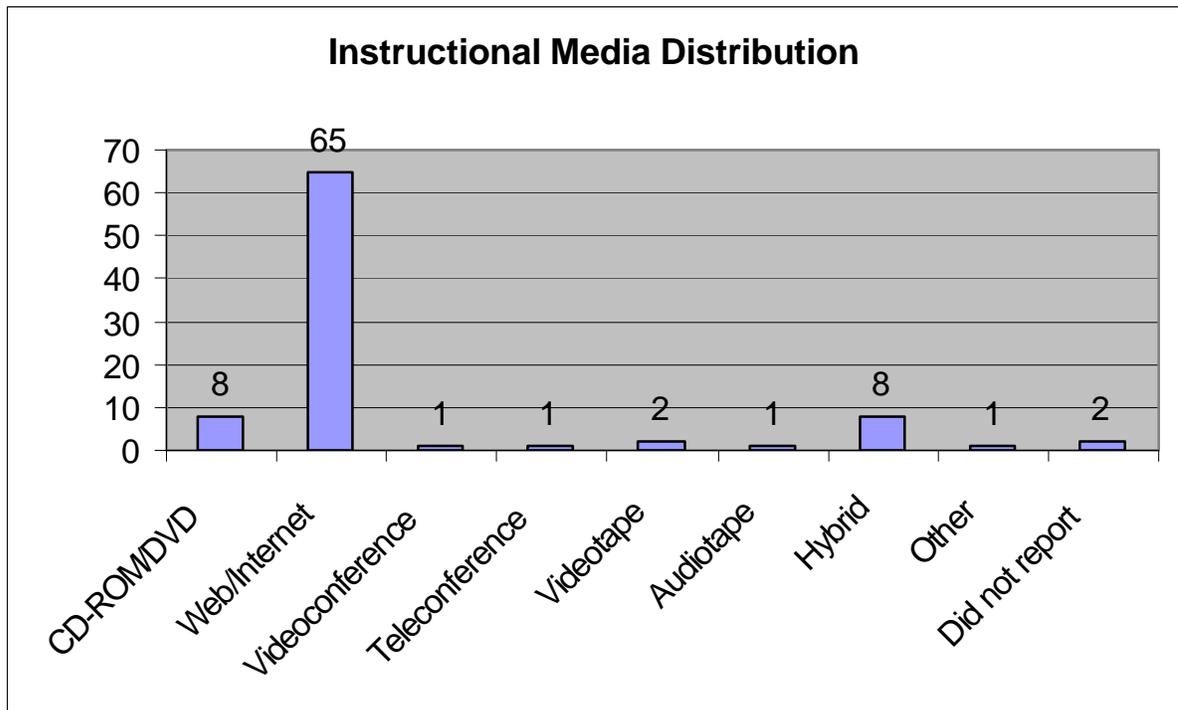
Figure 8. Number of E-learning Courses Taken Distribution



Instructional Media

The majority (65 respondents or 74.71%) of the respondents' e-learning courses used the web or the Internet as their delivery method. One respondent did not indicate the instructional media used for the e-learning course in which he or she participated. This finding is not surprising as the most recent industry report conducted by *Training* magazine indicates that the delivery method of Internet/Intranet/Extranet is currently the leading type of technology-based instructional media that is being used by corporations. This study reports that 63 percent of the respondents to the *Training* magazine annual industry report use the Internet/Intranet/Extranet instructional delivery method always or often (Galvin, 2003, p. 30). Figure 9 shows the instructional media distribution for this study.

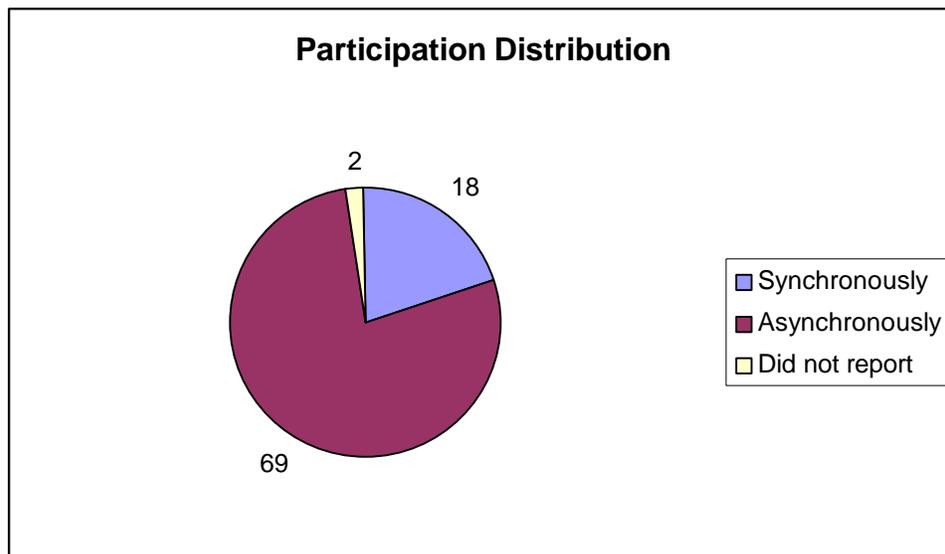
Figure 9. Instructional Media Distribution



Participation

The majority of the respondents (69 or 79.31%) participated in their e-learning courses asynchronously (alone). Eighteen respondents (20.69%) participated in their e-learning course synchronously (with other people online or in the same room). Two respondents did not indicate whether they participated in their e-learning course alone or with other people online or in the same room. This result is not surprising as these numbers are in line with the results from the most recent industry report conducted by *Training* magazine. This report indicates that 66 percent of the respondents to the *Training* magazine annual industry report interact only with their computer during their distance training courses and 34 percent of the respondents interact with a human instructor and/or other students during their distance training courses (Galvin, 2003, p. 44). Figure 10 illustrates the participation distribution for this study.

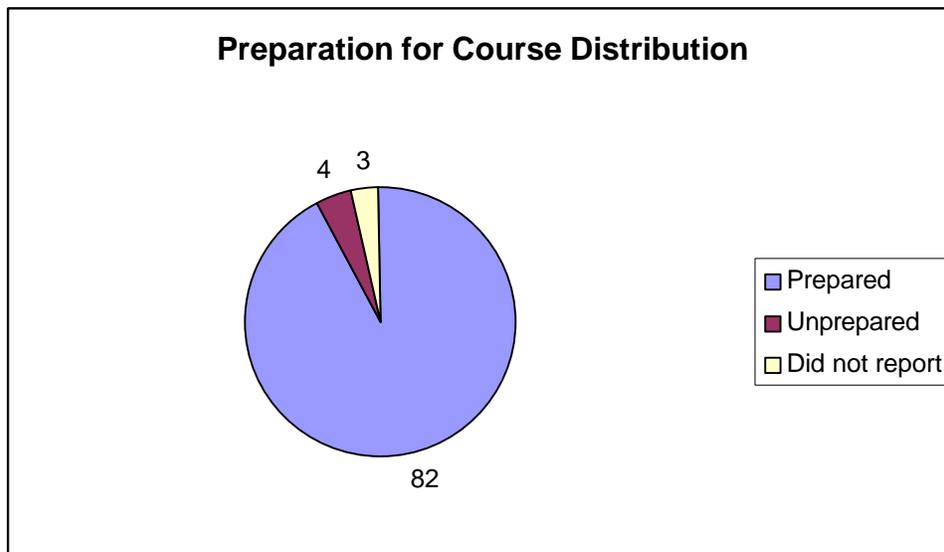
Figure 10. Participation Distribution



Preparation

The majority of the participants, 82 of 89 participants (95.35%), felt prepared to take their e-learning course. Four participants (4.65%) felt unprepared to take their e-learning course. Three participants did not indicate whether or not they felt prepared to take their e-learning course. This result is surprising as industry experts such as Rossett and Schafer (2003) write, “We see unprepared people with habits cultivated in classrooms dominated by instructors” (p. 42). These authors indicate that much more learner preparation is needed. Perhaps the respondents who answered this survey are not among the 68 percent of employees surveyed who were reluctant to begin taking voluntary e-learning courses and 31 percent who were reluctant to begin mandatory classes (ASTD & The Masie Center, 2001, p. 15). Figure 11 illustrates the preparation distribution for this study.

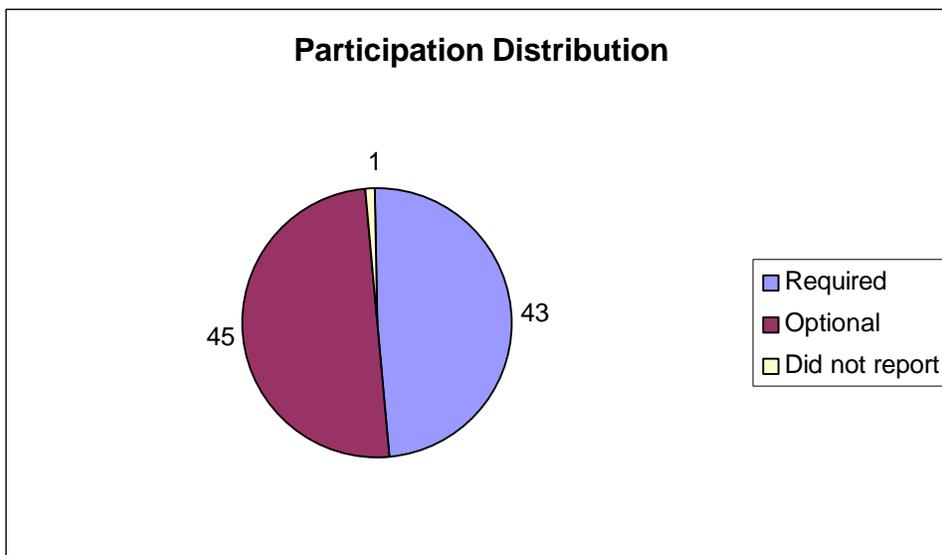
Figure 11. Preparation Distribution



Required/Optional Participation

The participants were about equally divided on whether or not they were required by their employers to take their e-learning course. Forty-three of the participants were required to take their e-learning course (48.86%) while 45 of the participants were not required to take their e-learning course (51.14%). One participant declined to answer whether or not he or she was required to take his or her e-learning course. Figure 12 illustrates this dichotomy.

Figure 12. Required Versus Optional Participation Distribution



The 43 participants who were required to take the e-learning course were then asked whether or not they would have taken the e-learning course even if it was not required by their employer. Surprisingly, 74.42% (or 32 respondents) indicated that they would not have taken the e-learning course if it was not a requirement of their employer. Eleven of the 43 participants would have taken the e-learning course (25.58%) regardless of the requirements made by their employer. Figure 13 illustrates this information.

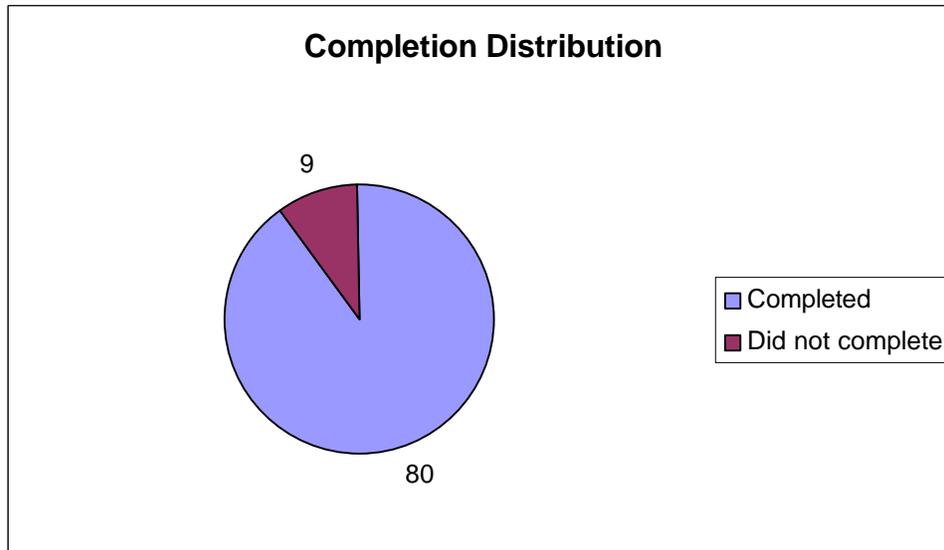
Figure 13. Taken Course Regardless of Requirements



Completion

The majority of the respondents, 89.89% or 80 respondents, completed their e-learning course. Nine respondents did not complete their e-learning course (10.11%). This result is very surprising as the industry practitioners and industry experts (Alexander, 2002; Frankola, 2001; Martinez, 2003; Osberg, 2002; Rossett & Schafer, 2003; Zielinski, 2000b) feel that attrition from distance education and from distance training is a major concern. This result appears to contradict reports that attrition is significant in distance training courses. Figure 14 illustrates these numbers.

Figure 14. Completion Distribution



Tests of Hypothesis

No chi-square tests or logistic regression analyses were performed on the data since such a small number of respondents (10.11%) did not complete their latest e-learning course. Also, of the nine respondents who did not complete their latest e-learning course, only six of the respondents provided any information on whether any of the barrier groups influenced

their decision to discontinue their studies.

Summary

In this chapter, the results from the study were reported. The average respondent to the survey is a white (90.91%) male (56.98%) aged 30-39 (44.32%) who works in a technology (20.22%) position. He has taken one to three (44.32%) web- or Internet-based (74.71%) e-learning courses by himself (79.31%). He felt prepared (95.35%) to take the e-learning course and in the end he did complete (89.89%) the e-learning course. Statistical analyses were not performed as the majority of the participants completed their e-learning course.

Chapter 5: Conclusions

Introduction

Although reports about distance education students indicate that there is an around 40 percent dropout rate from distance education courses (Carr, 2000, p. A40; Despain, 2003, p. 249) and anecdotal evidence provided by corporations indicate a that there can be a 70 to 85 percent dropout rate from distance training courses (Alexander, 2002, p. 15; Osberg, 2002, p. 46; Thalheimer, 2003, p. 70; Zielinski, 2000b, p. 66), the results from this study find that 90 percent of the business professionals who answered this survey that have taken business-based e-learning courses have not discontinued their e-learning courses. This finding contradicts many published articles stating that attrition from distance training is a significant issue (Alexander, 2002; Frankola, 2001; Martinez, 2003; Osberg, 2002; Rossett & Schafer, 2003; Zielinski, 2000b).

What accounts for this result? The free-form comments provided by the online learners who answered this survey provide some hints as to what may be keeping them from abandoning their e-learning courses. The respondents to this study acknowledge that interaction with other learners and with course facilitators, chunking of courses and curricula into appropriate sized pieces, technical support, good course design, and incentives to reach course or curriculum completion have kept them online. These comments appear to validate what industry experts and practitioners (Al-Ashkar, n.d.; Alexander, 2002; Frankola, 2001; Moshinskie, 2001; Osberg, 2002; Ramirez, 2003; Rinear, 2003; Spitzer, 2001; Zielinski, 2000b) in the distance education and the distance training arenas have recommended as retention strategies for e-learners. The following paragraphs detail the e-learning retention strategies that proved successful to the respondents.

Interaction

The study respondents who completed their e-learning courses most frequently cited interaction with other learners and with the course facilitator as the reason why they did not abandon their e-learning courses. The learners have spoken; they do not want to be alone in cyberspace taking e-learning. These e-learners like when interactive teaching techniques such as discussion boards, chat rooms, webcasts, teleconferences, interaction with instructors, and interaction other students is integrated into their distance training courses. One respondent writes, “Interaction with an instructor and other students is a crucial element in learning” and another respondent notes, “I have taken e-learning courses both alone and with a group. Both are good. With a group, you hear questions and answers that I might not have considered.” Another respondent writes, “[I] prefer [a] classroom setting or webcast. [I] miss interaction with other folks, Q&A, [and] how they interpret the material presented. [It] provides more depth of coverage and strengthens understanding and retention.”

The industry experts agree with these observations. Osberg (2002) notes, “Building the collaborative components of e-learning into your organization’s online training solution fosters learner interaction and feedback through threaded discussions, chat sessions, and virtual classes. Participants can share their ideas and experiences and benefit from that exchange of information” (p. 45). Moshinskie (2001) echoes this comment when he says, “Just as a trainer in the corporate classroom can provide visible extrinsic presence and support, the online environment needs to also encourage and help cyberlearners. Chat rooms, E-mail, electronic office hours, audio streaming, and online mentoring can supply the human touch-not only from the trainer but also from fellow students as well” (p. 9).

Distance education experts agree with this retention strategy as well. Dr. Eugene

Rubin, Chair of the Master of Distance Education at the University of Maryland University College, admits that he likes to use toll-free teleconferencing in his distance education courses. He says, "I think one of the most useful tools is teleconferencing. It is one that every student can access easily, and it really helps a student to be able to hear other students and ask questions" (Ramirez, 2003, p. 68). While these interactive components may spell more work for the course facilitator as emails need to be addressed in a timely fashion; discussion boards and chat rooms need to be monitored; and webcasts, videocasts, and teleconferences need to be set up and completed, these personal touches seem to aid in comprehension and enhance the e-learning experience.

Chunking

Chunking, or offering an e-learning course or curriculum in several "bite-sized" pieces, seems to have kept some respondents to this study going on to completion. Several respondents said they had taken shorter e-learning courses that were focused on one small topic such as a product overview or for continuing legal education requirements. One completer even said that he or she did not know if these short courses "met the definition of an e-learning course" as they were only two hours in length. Since these e-learning courses were so short in length and were focused on one specific topic, the participants could get the specific information they needed in a short period of time.

The experts agree with this chunking strategy. Moshinskie (2001) states, "When instruction is divided into compact learning chunks, ... the material can be effectively presented to the learner in a digestible fashion" (p. 9). Alexander (2002) agrees with this statement and says "Shorter courses would boost attrition rates" (p. 16) but cautions the instructional designer not to go overboard with chunking. If managers or training managers

track the e-learning modules or chunks taken by employees, with chunking, the number of pieces of information to track can exponentially increase and could cause confusion and frustration for the person in charge of tracking, especially if the organization does not have an automated tracking system.

Support

“Nothing can undermine online learning like network or server problems, and students who don’t know how to cope with them” (Spitzer, 2001, p. 53). E-learning course facilitators and instructional designers need to ensure that the e-learning product works across all company-supported platforms, with all company-supported web browsers, and with all company-supported operating systems. Course facilitators and instructional designers also need to ensure that the system and software requirements are clearly stated so a learner can quickly assess if his or her computer is compatible or if he or she needs new hardware or needs to download a specific plug-in in order to successfully begin and hopefully complete the e-learning course. And once involved with the online course, the learners need to know who to contact if technical issues arise.

One respondent noted that even though he or she completed the e-learning course, “I hit a technical glitch and there wasn’t anyone immediately available to assist. I had to wait more than a day for assistance.” This learner was patient. Many participants would not have waited that long and would have given up on the e-learning course. Zielinski (2000b) writes, “While learners may put up with the occasional technical snafu, repeated occurrences cause them to lose patience and throw in the towel, especially when it’s tough to get prompt help in fixing the problems” (p. 74).

Another respondent who did not complete his or her e-learning course writes, “I work

on a Mac and it turned out that the course was not fully Mac compatible and this caused an excessive waste of time.” It would be interesting to know if the course facilitator or training division knew that some of the employees at their company use the Apple Macintosh platform and would be taking their e-learning courses using that computer system. This issue could perhaps have been avoided with a more thorough technology assessment, testing, or clearer technical requirements for the e-learning course were developed and published. Zielinski (2000b) notes that testing can be an issue. He quotes industry expert Elliot Maisie who says, “When courses are tested, the guinea pigs often aren’t real students, but colleagues or other instructional designers.... Later, when the actual target learners confront the course, they are far less impressed—or far more confused—that the ‘users’ of the beta test” (p. 75).

Design

“DL [distance learning] has frequently been undermined by content that is little more than information dumping, confusing navigation, long download times, eyestrain from endless text screens, and so-called ‘discussions’ that are really just monologues posted on online bulletin boards” (Spitzer, 2001, p. 51). One respondent agrees with this statement, especially the statement about information dumping, and writes, “I also found that teachers didn’t really teach. They usually just cut and pasted things onto the website and asked us to read the material and if we had questions then contact them. Essentially the class was far more boring, I learned less, and had to spend way more time on it than I did for classes I should [go] up to school for.”

Good design is not innate. Instructors and instructional designers tasked with creating or purchasing online material need training and support when it comes to offering distance training courses or full curricula. Rinear (2003) notes, “Faculty need time and training to

design courses themselves, or they need support from course design specialists who can assist them” (p. 8). Without training and support, an organization cannot expect beautifully designed online courses.

And when let loose to design e-learning courses, instructional designers and course developers need to use the design tips provided by industry practitioners and industry experts. These good design tips include providing substantive and meaningful content, providing examples, and providing learner control. The following paragraphs provide more detail on these design topics.

Substantive and Meaningful Content

Course developers need to reject the impulse to publish all their course notes, lectures, and PowerPoint slides from their traditional training courses directly to their e-learning courses. Although this method may be easy and although these materials have worked well for instructors in the classroom, learners online want concise and meaningful content. Rossett and Schafer (2003) write, “Content must be ruled by the priorities of users, not the passions of subject matter experts” (p. 42). Just because instructional developers can provide online instruction about every imaginable software feature does not mean that they should.

Instructional designers should provide information on the features users want—and if that is impossible to know—on the most commonly used features or on the features about which customer support gets the most calls. Zielinski (2000b) echoes this recommendation and says to keep the “nice-to have training” (like all those rarely used features) off-line (p. 70).

The content should also grab the learners’ attention and keep it. Screen after screen of text is not a very good online learning experience. But if an instructional designer uses multimedia elements, they should have substance and not just be there for flash. “The use of

media should advance the purpose of the instruction, not create a distraction to it”

(Eisenheimer, 2003, Entertainment).

Examples

Instructional designers should also break up the content with concrete examples that help with mastery of the content. Horton and Horton (2002) write, “Many lectures in the classroom and online have too much theory and not enough concrete, specific, realistic examples. Remember, not everyone can reason from general concepts to particular application, or at least not without the help of examples that they can understand and apply” (p. 3). Horton and Horton (2003) suggest providing at least three examples for the learner that illustrate the key points of the lecture. These three examples should illustrate the simplest case, the most common case, and the complete case in order to allow the learner to grasp the concept, apply the concept to his or her work or life situation, and to show the full range of possibilities for the concept (p. 3). These experts also recommend placing these examples or practice items immediately after the concept is presented. Horton and Horton (2002) write, “In the courses we have taken, far too many of the presentations went on too long and covered too many concepts. By the time we had an opportunity to practice what we had learned, we had forgotten what we learned” (p. 3).

Learner Control

Online learners also like to have some control over their learning experiences. Horton and Horton (2002) write, “If you use dynamic and multimedia presentations, be sure to give learners control over how they experience the presentation” (p. 2). An instructional designer can never be sure what a user’s intentions are when he or she is looking at the course information. He or she may be looking for a specific piece of information, participating from

an unsuitable environment for audio or video (like in a cube or at a library), or have disabilities that prevent them from hearing or seeing the presentation. Allowing the user control over his or her learning experience can help keep him or her engaged and on to completion.

Incentives

The experts (Moshinskie, 2001; Spitzer, 2001; Zielinski, 2000b) also note that incentives for completion of e-learning courses or curricula can be motivating to employees. Zielinski (2000b) notes that some companies give tokens such as merchandise, gift certificates, or small monetary rewards when there is evidence that an employee has completed an online course or an entire curriculum (p. 70). Moshinskie (2001) also notes that some organizations celebrate the successful completion of e-learning courses (p.10). He says that having the facilitator (or an automated routine) send the online course completers a congratulatory email and having the organization publish the completers' names in a corporate newsletter may please the employees and may motivate other learners who have yet to complete the online course (p. 10). Zielinski (2000b) also notes that some corporations grant honorary corporate degrees upon successful completion of e-learning paths. These "degrees" can be stamped upon an employee's business cards, put in an employee's permanent file, and can be used when it is time for an organization to grant bonuses, pay raises, and promotions (p.70). Zielinski (2000b) writes, "Without a compelling incentive to complete self-paced training, today's time-strapped employees have a hard time staying the course" (p. 68).

In this study, no respondents mentioned any incentives that kept them from discontinuing their e-learning course, but one respondent did mention a disincentive that kept

him or her in the course. He or she writes, “This course was mandated by our compliance department but it wasn’t an immediate priority for me. When I delayed completion I was actually hounded to finish the course by an electronic ‘agent’ of our training tracking system which threatened to lock my computer account if I didn’t finish.” In this case, it would have been more work for the employee to get his or her computer system operating again than it was to complete the online course. The employee, therefore, had a compelling incentive to stay the course.

Conclusions and Recommendations

Although many published articles state that attrition from distance training is a significant issue (Alexander, 2002; Frankola, 2001; Martinez, 2003; Osberg, 2002; Rossett & Schafer, 2003; Zielinski, 2000b), this study found that about 90 percent of the respondents to this study completed their latest e-learning course. The comments provided by the respondents provided some hints as to what may have kept them through to completion. The respondents mentioned that interaction with other learners and with course facilitators, chunking of courses and curricula into appropriate sized pieces, technical support, good course design, and incentives to reach course or curriculum completion have kept them online.

The results found in this study may or may not reflect the actual attrition rates of all business professionals enrolled in business-based distance training courses. Although none of the respondents mentioned that they were taking their e-learning course for certification or continuing education credits, the population from which the sample was taken may be skewed as these business professionals are a highly motivated group of individuals as they need to take 60 continuing education credits over a three-year period to retain their Project

Management Professional certification and therefore would show more interest in completing their e-learning courses. Weaver (2002) writes, “Unless learners are highly motivated, they may not complete the training” (p.46). Or even start the online training. Further studies are needed to determine if the results found in this study compare to the results found in studies done on other types of business professionals.

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Appendix A: Survey Letter and Survey Flier

E-learners, I need your input!

If you have begun any e-learning course, I would like your feedback. Please take a few minutes to visit <http://www.surveymonkey.com/s.asp?u=22384381910> and complete the survey about your e-learning experience.

This research is part of my doctoral study in the Training and Development Program in the Department of Adult and Community College Education at North Carolina State University.

The purpose of the survey is to determine the reasons why learners like yourself quit e-learning courses. The feedback you provide is a valuable resource for shaping future e-learning efforts.

Completion of the survey should take approximately 15 minutes. Your participation is strictly voluntary. There are no penalties or lost benefits should you decide not to participate. You may discontinue your participation at any time.

Your responses will be held in the strictest of confidence. Data will be securely stored and all survey results will be reported in aggregate terms. No reference will be made in oral or written reports which could link you to the study.

Should you have questions about the survey or any aspect of this study, you may email me at lerober1@yahoo.com or call me at (919) 656-8941 between the hours of 8 a.m. and 5 p.m. Monday through Friday.

Regards,
Linda Enders Roberts, PMP
Graduate Student, North Carolina State University
Department of Adult and Community College Education



PMI

North Carolina Chapter of PMI®

Newsletter

February 2004

www.ncpmi.org

At the January Chapter Meeting!

Greg Barnes Nelson, NC PMI VP Programs, presented a Certificate of Appreciation to the January Chapter Meeting speakers, Dr. John Grinnell, Jr. and Dr. Bill McLaurin, Jr.



From left: Dr. Bill McLaurin, Jr., Dr. John Grinnell, Jr., Greg Barnes Nelson, PMP.



NCPMI President, Ross Butterworth (left) presented a Certificate of Appreciation to Branch Sternal, PhD, PMP for voluntary services he provided in evaluating the BOD Leadership Team using the Myers-Briggs instrument.

For your Professional Development Planning, here is NC PMI's New Education Offerings (NEO) being planned for 2004:

1. Developmental Leadership
 - 15 PDUs, 2 consecutive Saturdays.
2. Tools & Techniques for Effective Requirements Management
 - 7.5 PDUs, 1 day (Saturday)
3. Practical Risk Management
 - 1.5 hours Webinar format (1.5 PDUs) or
 - 1 day workshop (7.5 PDUs)
4. Project Management Fundamentals
 - 15 PDUs, 2 consecutive Saturdays
5. Effective Presentation Skills
 - 1 day workshop (7.5 PDUs)
6. Establishing a PMO
 - 1 day workshop (7.5 PDUs)
7. PMs - Do You Add Value?
 - 7.5 PDUs, 1 day (Saturday)

Details will follow in next month's Newsletter

E-learners, we need your input! If you have begun any e-learning course, please help a fellow NCPMI member, Linda Roberts. Please complete a survey about your e-learning experience by visiting <http://www.surveymonkey.com/s.asp?u=22384381910>

This research is part of a doctoral study in the Training and Development Program in the Department of Adult and Community College Education at North Carolina State University.

The purpose of the survey is to determine the reasons why learners quit e-learning courses. Your feedback is a valuable resource for shaping future e-learning efforts.

The survey will take approximately 15 minutes. Your responses will be held in the strictest of confidence.

If you have any questions about any aspect of this study, please email Linda at lerober1@yahoo.com or call her at (919) 656-8941.

Appendix B: Survey Instrument

PMI e-Learning Survey [Exit this survey >>](#)

1. Demographic Questions

1. My gender is:

Male Female

2. My ethnic group is:

American Indian/Alaskan Native
 Asian or Pacific Islander
 Black, not of Hispanic Origin
 Cuban American
 Hispanic American
 Mexican American
 Puerto Rican
 White, not of Hispanic Origin
 Other (please specify)

3. My age is:

Under 18 18-29 30-39 40-49 50-59 60 or Older

4. My position is:

Administration
 Business/Professional
 Education/Training
 Finance
 Legal
 Management
 Marketing/Sales
 Production/Manufacturing
 Program Management
 Project Management
 Research and Design
 Support
 Technology
 Other (please specify)

5. My business or industry is:

- Business
- Construction
- Engineering
- Health Care
- Manufacturing
- Pharmaceutical
- Resources
- Software
- Telecommunications
- Other (please specify)

6. The number of e-learning courses I have previously taken is:

- None 1-3 4-6 7-9 10-15 Over 15
-

7. I worked on the e-learning course at (click all that apply):

- Home
- Work
- Library
- University or College Lab
- Hotel
- Conference
- Seminar
- Other (please specify)

8. The e-learning course was delivered via:

- CD-ROM/DVD
- Web/Internet
- Videoconference
- Teleconference
- Videotape
- Audiotape
- Hybrid (more than one media)
- Other (please specify)

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2. Demographic Questions (continued)

Answer the following questions based on the last e-learning course you have taken.

9. If the e-learning course was Web- or Internet-based, what type of access did you have to the Web/Internet?

- T1
- Cable modem
- Dial-up
- DSL
- Don't know
- Other (please specify)

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3. Demographic Questions (continued)

Answer the following questions based on the last e-learning course you have taken.

10. I participated in the course:

Asynchronously (alone)	Synchronously (with other people online or in room)
<input type="radio"/>	<input type="radio"/>

11. I felt prepared for taking the e-learning course:

Yes	No
<input type="radio"/>	<input type="radio"/>

12. I was required to take the e-learning course:

Yes	No
<input type="radio"/>	<input type="radio"/>

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4. Demographic Questions (continued)

Answer the following questions based on the last e-learning course you have taken.

13. I would have taken the e-learning course even if it was not required:

Yes

No

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5. Demographic Questions (continued)

Answer the following questions based on the last e-learning course you have taken.

* 14. I completed the e-learning course:

Yes

No

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6. Situational Barriers

Answer the following questions based on the last e-learning course you have taken.

15. For each question on this web page, select the number at the right that best fits your opinion on whether the factor influenced your decision to quit the e-learning course.

Scale:

1 Strongly Agree

2 Agree

3 Disagree

4 Strongly Disagree

	1	2	3	4	N/A
My family commitments prevented me from completing the course:	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My supervisor did not allow me time to complete the course at work:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My supervisor did not clear my schedule so that I would have time to complete the course:	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My supervisor expected me to complete the course on my personal time:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My family did not allow me time to complete the course at home:	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I had to travel too often:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My co-workers interrupted me too frequently:	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I did not think the course was interesting:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My work commitments prevented me from completing the course:	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The course took longer to complete than I expected:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I found the course to be too difficult:	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I spent too much time working on the course:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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7. Institutional Barriers

Answer the following questions based on the last e-learning course you have taken.

16. For each question on this web page, select the number at the right that best fits your opinion on whether the factor influenced your decision to quit the e-learning course.

Scale:

1 Strongly Agree

2 Agree

3 Disagree

4 Strongly Disagree

	1	2	3	4	N/A
I found the course to be too formally designed:	<input type="radio"/>				
I had trouble signing up for the course:	<input type="radio"/>				
I found the course to be too informally designed:	<input type="radio"/>				
I found the course to be boring:	<input type="radio"/>				
I felt connected with the other students taking the course:	<input type="radio"/>				
I felt isolated when taking the course:	<input type="radio"/>				
I did not receive confirmation from the course registrar that I was enrolled in the course:	<input type="radio"/>				
I found the course to contain too much information:	<input type="radio"/>				
I found the course had too many graphics or pictures:	<input type="radio"/>				
I found the course had too much text:	<input type="radio"/>				
I did not receive the course information, web site information, and/or directions in a timely manner:	<input type="radio"/>				
I found the course to be too expensive:	<input type="radio"/>				

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8. Dispositional Barriers

Answer the following questions based on the last e-learning course you have taken.

17. For each question on this web page, select the number at the right that best fits your opinion on whether the factor influenced your decision to quit the e-learning course.

Scale:

1 Strongly Agree

2 Agree

3 Disagree

4 Strongly Disagree

	1	2	3	4	N/A
I was not willing to do the work the course required:	<input type="radio"/>				
I had other more important things to do at home:	<input type="radio"/>				
I prefer face-to-face instruction:	<input type="radio"/>				
I did not have the necessary time to complete the course:	<input type="radio"/>				
I was prepared to do the work the course required:	<input type="radio"/>				
I had other more important things to do at work:	<input type="radio"/>				
I found I did not learn well on my own:	<input type="radio"/>				
I did not like to ask questions:	<input type="radio"/>				
I could not fit the coursework into my schedule:	<input type="radio"/>				

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9. Epistemological Barriers

Answer the following questions based on the last e-learning course you have taken.

18. For each question on this web page, select the number at the right that best fits your opinion on whether the factor influenced your decision to quit the e-learning course.

Scale:

1 Strongly Agree

2 Agree

3 Disagree

4 Strongly Disagree

	1	2	3	4	N/A
The course did not live up to my expectations:	<input checked="" type="radio"/>				
The course was too technical:	<input type="radio"/>				
The course was not practical:	<input checked="" type="radio"/>				
The course was not interesting:	<input type="radio"/>				
I did not have the prerequisite subject-matter knowledge to complete the course:	<input checked="" type="radio"/>				
The examples in the course were not relevant to me:	<input type="radio"/>				
The course material did not apply to my work:	<input checked="" type="radio"/>				

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10. Technological Barriers

Answer the following questions based on the last e-learning course you have taken.

19. For each question on this web page, select the number at the right that best fits your opinion on whether the factor influenced your decision to quit the e-learning course.

Scale:

1 Strongly Agree

2 Agree

3 Disagree

4 Strongly Disagree

	1	2	3	4	N/A
I could not find a computer to use to take the course:	<input type="radio"/>				
I could not access the course at work:	<input type="radio"/>				
I had to wait too long to view course material:	<input type="radio"/>				
My computer was not working when I wanted to take the course:	<input type="radio"/>				
I could not access the Internet or Intranet to take the course:	<input type="radio"/>				
The supplementary material such as movies, video clips, audio clips, or reference material was not available:	<input type="radio"/>				
My computer did not have the required hardware in order to run the course:	<input type="radio"/>				
I did not have the prerequisite technical/computer knowledge to complete the course:	<input type="radio"/>				
The course contained too many broken hyperlinks:	<input type="radio"/>				
My computer did not have the required software to run the course:	<input type="radio"/>				
The course information took too long to download:	<input type="radio"/>				
I could not access the course at home:	<input type="radio"/>				

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11. Thank You!

Thank you for completing the survey!

20. Please use this space to add any additional factors that contributed to your quitting the e-learning course.

[<< Prev](#)

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12. Thank You!

Thank you for completing the survey!

21. Use this space to provide any additional comments:

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[Done >>](#)

Appendix C: Chronbach Coefficient Alpha Numbers

Table 5

Means, Standard Deviations, and Coefficient Alpha Reliability Estimates for Situational Variables

Variable	Mean	Std Dev	Alpha
Sfamily	4.10	0.99	0.79
Ssup	4.10	0.74	0.80
Scowork	3.60	1.43	0.73
Stravel	4.60	0.52	0.80
Spersonal	4.20	0.79	0.76
Sschedule	3.40	1.58	0.80
Shard	3.10	1.45	0.76
Stime	3.30	1.34	0.74
Sinteresting	3.10	1.10	0.72
Sworkcommit	3.20	1.75	0.73
Sfamilycommit	3.80	1.03	0.77
Slonger	3.10	1.60	0.76

Table 6

Means, Standard Deviations, and Coefficient Alpha Reliability Estimates for Institutional Variables

Variable	Mean	Std Dev	Alpha
Iexpensive	4.40	1.07	0.78
Iinfo	3.90	0.74	0.77
Iconnect	4.40	0.84	0.82
Ienroll	4.20	0.79	0.78
Iconfirm	4.70	0.48	0.44
Iformal	3.50	1.08	0.34
Iinformal	3.70	1.06	0.30
Iboring	2.90	1.20	0.74
Itooinfo	2.60	1.26	0.52
Itoopics	3.50	0.97	0.33
Itootext	3.10	0.99	0.69
Iisolated	3.90	0.87	0.37

Table 7

Means, Standard Deviations, and Coefficient Alpha Reliability Estimates for Dispositional Variables

Variable	Mean	Std Dev	Alpha
Dprepared	3.30	1.16	0.72
Dhome	3.20	1.55	0.76
Dwork	2.70	1.64	0.72
Dwilling	3.20	1.03	0.75
Dtime	2.30	1.16	0.68
Dfit	3.20	1.40	0.70
Df2f	3.10	1.20	0.69
Dlearnown	3.50	1.08	0.72
Dask	3.60	1.35	0.81

Table 8

Means, Standard Deviations, and Coefficient Alpha Reliability Estimates for Epistemological Variables

Variable	Mean	Std Dev	Alpha
Eapply_work	2.80	1.14	0.84
Eexamples	2.70	1.06	0.84
Eexpectations	2.60	1.43	0.84
Etechnical	2.80	1.14	0.84
Einteresting	2.30	1.25	0.82
Epractical	3.10	1.29	0.90
Eprereq	2.90	1.20	0.86

Table 9

Means, Standard Deviations, and Coefficient Alpha Reliability Estimates for Technological Variables

Variable	Mean	Std Dev	Alpha
Tacchome	3.90	1.29	0.88
Taccwork	4.00	0.82	0.86
Tbroken	3.90	0.57	0.86
Tacccomputer	3.80	0.92	0.85
Tcomputerbroke	4.00	0.67	0.85
Taccinternet	4.20	0.79	0.86
Tsupp	3.60	1.17	0.86
Tdownload	4.40	0.70	0.87
Twait	4.00	0.82	0.86
Treqhw	3.70	1.16	0.86
Tprreq	3.50	0.85	0.88
Treqsw	3.40	1.07	0.86

Appendix D: Participant Comments on Pilot Instrument

Table 10

Participant Comments on Pilot Instrument

Comments on Instrument Look and Feel
I don't understand why you have "1. Demographic Questions" on the first page of the survey, and then "2. Demographic Questions" at the top of the second page. The questions seem to be in the same category, namely Demographic Questions.
Each section should have unique instructions.
You have: 1. Demographic Questions [and then] 1. My gender is. I would not use "1. Demographic Questions" and then use "1." Again: 1. I haven't looked at the entire survey yet, but consider deleting the number before Demographic Questions or replacing "1." With "A."
I would not use "is" at the end of the phrases: 1. My gender is: 2. My ethnic group is: etc. Consider using "Gender," "Ethnic Group," "Age," etc. If I'm taking the time to complete a survey, I don't want to read extraneous words such as "my" and "is."
At the top of page [2] you say: For the following questions, please answer them with the most recent e-learning course you have begun in mind. I suggest: Please answer the following questions based on the most recent e-learning course that you have begun.—(you can use "taken" instead of begun)
At the top of page [3] you say: For the following questions, please answer them with the most recent e-learning course you have begun in mind. See Page 2 for my suggestion.
When trying to complete survey, I jumped from p. 4 to p. 10. I couldn't access anything in between. I'm going to click "Done" and re-enter survey to see if the same thing happens next time around.
You may get a comment about the questions for select one or select all that apply appearing differently.
You may want to include some intro text on the very first page of the survey, just to ease the user into the survey.
The design is great.
The interface is very nice - the only thing that I missed is that the lead-in to questions 9-13 say to complete it with the most recent e-learning class in mind. Since it is not in bold (like the survey questions are), I missed that at first.

Table 10

Participant Comments on Pilot Instrument (Continued)

<p>It would be nice to have a back button, and a way to “save” your answers, so you can go back later and complete the quiz.</p>
<p>The asterisks are confusing. It’s not until I try to go to the next page that I find out that the asterisks indicate those questions require an answer. Also, all but the last question require an answer, so the asterisks are not necessary. (And why are all of the questions mandatory?) Regarding answering the questions before proceeding to the next page, many people like to read the entire survey before answering any questions. Your format may suit your purposes, but it may frustrate your survey respondents. I don’t think that’s what you want.</p>
<p>In sections 3 and 4, change “For the following questions, please answer them with the most recent e-learning course you have begun in mind” to “Answer the following questions base on the last e-learning course you have taken” for consistency with wording on pp. 5 thru 9; also, wording on pp. 5 thru 9 is clearer and more concise.</p>
<p>Comments on Specific Questions Within Instrument</p>
<p>[Question 4] When I took the survey, I shoehorned technical writing into Business/ Professional. Is that where you would place it?</p>
<p>[Question 5] I have no idea what “Business” would cover. Is it something you would expect your survey population to know? Are you limiting your survey population to the businesses listed here? Otherwise, I’d expand this list.</p>
<p>[Question 6] If a person checks “none” for the number of courses taken, the logic should take the person to the end of the survey and not have them answer questions 7-13.</p>
<p>[Question 6] Remove the None selection. You only want responses if people have taken e-learning courses.</p>
<p>[Question 7] Add University, college, seminar, conference.</p>
<p>[Question 8] Add DVD to CD-ROM to make it CD-ROM/DVD.</p>
<p>In question 8, I do not equate “hybrid” with more than one media. I can’t come up with a better word just now but, to me, they are not the same.</p>
<p>Question 8: I’m wondering if this should be a check all that apply. I was just curious about your reasons for making it a select one question. It might be interesting to know what the class was a hybrid of? But that may not be important in your research, so you can disregard this comment if it’s not applicable.</p>
<p>For question 9, could you also give an “I don’t know” out? That way people who don’t know if they have cable modem or DSL, they just know it’s fast, will have a way out?</p>
<p>Where is question 9? --- Oh, I must have branched.</p>

Table 10

Participant Comments on Pilot Instrument (Continued)

I LOVE that in question 10 you defined asynchronously and synchronously - this is GREAT for people who may not be as familiar with the terms!
[Question 10] Good explanations of Synch. and Asynch.
For number 10, you say: I completed the course: Asynchronously [or] Synchronously. Comment: If you have to define the words in the survey, they are too complicated to use. Try using "Alone" instead of Asynchronously and "With others" instead of Synchronously. Make it simple.
Question #10 shouldn't say "completed."
* 10. I completed the course: Asynchronously (alone) Synchronously (with other people online or in room. Question 10 assumes that I completed the course. I did not...and, one of the things you want to find out, if I understood your other communication, is why people don't take courses.
For question 11, you say: "taking an e-learning course." Consider using "the" instead of "an" to match the rest of the articles on the page.
[Question 11] I found this to be ambiguous. I'm not sure how I was supposed to feel prepared for taking an e-learning course.
I'm not sure about question 12 - if they are answering questions keeping in mind the most recent e-learning course they have begun...then wouldn't they have enrolled in the course? This seems a bit unclear.
One choice under question 14 - "I had to travel too often." I suggest "too frequently."
[Question 14] Change "too hard" to "too difficult."
[Under question 15] "I found the course to contain to much information" - should be "...too much information"
[Under question 15] Why would this [I felt connected with the other students taking the course] make someone quit the course?
[Under question 15] Add "and" to the list in "I did not receive the course information, web site information, directions in a timely manner."
A choice under question 16 - "I prefer face-to-face instruction:" This is hard to answer. For some classes or types of information, I prefer face-to-face; for other content or situations, I prefer online. My answer for this question should be, "It depends."
[Under question 16] Add "not" to first question on preparation?

Table 10

Participant Comments on Pilot Instrument (Continued)

<p>Question 18: I clicked “Next” before answering all of the items. It said that there was an asterisk that would mark what I’d not answered. I could not find such an asterisk. On this feedback: It called the items “questions.” They are not questions.</p>
<p>I got question 19 even though I answered that I completed the e-learning course. It seems to me that this question is only applicable if you answer “no” in question 13....?</p>
<p>19. Please use this space to add any additional factors that contributed you your quitting the e-learning course. You may also use this space to provide any comments about this survey instrument. I think you mean “to your” not “you your.”</p>
<p>For number 19, you say: 19. Please use this space to add any additional factors that contributed you your quitting the e-learning course. You may also use this space to provide any comments about this survey instrument. Comments: Typo- “you your quitting” *** I didn’t quit the e-learning course! On the previous page I clicked on YES, I completed the course.</p>
<p>You have a grammar mistake, I believe: “contributed you your quitting the e-learning course.”</p>
<p>Question 19 assumes that I quit the course. Suggestions. Make it a two-part survey. Ask the subject to think of a course completed and a course not completed. Ask why the subject completed one and why the subject did not complete the other.</p>
<p>[Question 19] What if I didn’t quit the course? Add other questions to expand the possibilities or broaden this one.</p>
<p>Comments on Why Participant Quit E-learning</p>
<p>Most of the e-learning courses I have taken were optional and were to be done on my own time. Automated forms make it easy to sign up for an optional course without making any commitments. It is not surprising that people “add” with good intentions and “drop” when the course requires more time than we think is reasonable, given our other interests.</p>
<p>I used the course material to help me understand a document that I was editing.</p>
<p>My primary reasons were (1) not enough time to devote to the course because of work responsibilities, (2) course was too difficult to complete without personal interaction (being able to ask questions, etc.) and (3) examples were COMPLETELY irrelevant to my work situation.</p>
<p>The title of the course was misleading, and there wasn’t enough description of the course contents for me to know that the subject matter was not what I thought it was. After a few chapters, I realized my mistake. So my quitting was really more my fault than any fault on the part of the e-learning experience. I liked the buttons- they looked soft.</p>

Table 10

Participant Comments on Pilot Instrument (Continued)

General Comments
<p>An observation. There are two broad categories of e-learning courses: Optional and required. My personal experience indicates that successful completion of an optional course depends on relevance, content and currency. That is, I am more likely to complete a course if it is closely related to a task I need or want to do and contains information that is accurate and up-to-date. Otherwise I will complete it only if I am required to do so. With that in mind, consider asking a question such as “Were you required to take this course?” “If so, would you have completed it if you had not been required to do so?” Please feel free to get in touch with me if you have questions about my comments. My name is [personal information deleted].</p>
<p>I completed the e-learning course, so I guess this survey is mute? Did you only want those who did not finish an e-learning course to take this survey? I missed that point. Sorry.</p>
<p>What if a user wants to give comments on more than just their most recent e-learning course? For example, my most recent e-learning course was pretty uneventful, but one I took last semester would have been interesting to talk about.</p>

Appendix E: Frequency Distributions

Results for PMI e-Learning Survey 09:57 Thursday, March 4, 2004

Without the number of courses being none
and without completed being unanswered

The FREQ Procedure

Gender

Gender	Frequency	Percent	Cumulative Frequency	Cumulative Percent
<i>ff</i>				
Female	37	43.02	37	43.02
Male	49	56.98	86	100.00

Frequency Missing = 3

Race

Race	Frequency	Percent	Cumulative Frequency	Cumulative Percent
<i>ff</i>				
Asian or Pacific Islander	2	2.27	2	2.27
Black, not of Hispanic Origin	1	1.14	3	3.41
White, not of Hispanic Origin	80	90.91	83	94.32
Other	5	5.68	88	100.00

Frequency Missing = 1

Age

Age	Frequency	Percent	Cumulative Frequency	Cumulative Percent
<i>ff</i>				
18-29	8	9.09	8	9.09
30-39	39	44.32	47	53.41
40-49	30	34.09	77	87.50
50-59	8	9.09	85	96.59
60 or Older	3	3.41	88	100.00

Frequency Missing = 1

Position

Position	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Administration	1	1.12	1	1.12
Business/Professional	12	13.48	13	14.61
Education/Training	9	10.11	22	24.72
Finance	1	1.12	23	25.84
Legal	1	1.12	24	26.97
Management	10	11.24	34	38.20
Marketing/Sales	9	10.11	43	48.31
Program Management	2	2.25	45	50.56
Project Management	11	12.36	56	62.92
Research and Design	4	4.49	60	67.42
Support	2	2.25	62	69.66
Technology	18	20.22	80	89.89
Other	9	10.11	89	100.00

Industry

Industry	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Business	4	4.55	4	4.55
Construction	1	1.14	5	5.68
Engineering	2	2.27	7	7.95
Health Care	7	7.95	14	15.91
Manufacturing	1	1.14	15	17.05
Pharmaceutical	17	19.32	32	36.36
Resources	1	1.14	33	37.50
Software	11	12.50	44	50.00
Telecommunications	12	13.64	56	63.64
Other	32	36.36	88	100.00

Frequency Missing = 1

NumCourses

Num Courses	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1-3	39	44.32	39	44.32
4-6	24	27.27	63	71.59
7-9	6	6.82	69	78.41
10-15	11	12.50	80	90.91
Over 15	8	9.09	88	100.00

Frequency Missing = 1

Delivered

Delivered	Frequency	Percent	Cumulative Frequency	Cumulative Percent
CD-ROM/DVD	8	9.20	8	9.20
Web/Internet	65	74.71	73	83.91
Videoconference	1	1.15	74	85.06
Teleconference	1	1.15	75	86.21
Videotape	2	2.30	77	88.51
Audiotape	1	1.15	78	89.66
Hybrid	8	9.20	86	98.85
Other	1	1.15	87	100.00

Frequency Missing = 2

AsynchSynch

AsynchSynch	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Synchronously	18	20.69	18	20.69
Asynchronously	69	79.31	87	100.00

Frequency Missing = 2

Prepared

Prepared	Frequency	Percent	Cumul ative Frequency	Cumul ative Percent
No	4	4.65	4	4.65
Yes	82	95.35	86	100.00

Frequency Missing = 3

Requi red

Requi red	Frequency	Percent	Cumul ative Frequency	Cumul ative Percent
No	45	51.14	45	51.14
Yes	43	48.86	88	100.00

Frequency Missing = 1

TakeReq

Take Req	Frequency	Percent	Cumul ative Frequency	Cumul ative Percent
No	32	74.42	32	74.42
Yes	11	25.58	43	100.00

Frequency Missing = 46

Completed

Completed	Frequency	Percent	Cumul ative Frequency	Cumul ative Percent
No	9	10.11	9	10.11
Yes	80	89.89	89	100.00

Appendix F: Frequency Distributions for All Responses

Results for PMI e-Learning Survey 09:57 Thursday, March 4, 2004

The FREQ Procedure

Gender

Gender	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Female	65	52.85	65	52.85
Male	58	47.15	123	100.00

Frequency Missing = 4

Race

Race	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Asian or Pacific Islander	4	3.17	4	3.17
Black, not of Hispanic Origin	1	0.79	5	3.97
White, not of Hispanic Origin	113	89.68	118	93.65
Other	8	6.35	126	100.00

Frequency Missing = 1

Age

Age	Frequency	Percent	Cumulative Frequency	Cumulative Percent
18-29	12	9.52	12	9.52
30-39	56	44.44	68	53.97
40-49	41	32.54	109	86.51
50-59	12	9.52	121	96.03
60 or Older	5	3.97	126	100.00

Frequency Missing = 1

Position

Position	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Administration	2	1.57	2	1.57
Business/Professional	20	15.75	22	17.32
Education/Training	12	9.45	34	26.77
Finance	5	3.94	39	30.71
Legal	1	0.79	40	31.50
Management	11	8.66	51	40.16
Marketing/Sales	14	11.02	65	51.18
Program Management	2	1.57	67	52.76
Project Management	12	9.45	79	62.20
Research and Design	5	3.94	84	66.14
Support	3	2.36	87	68.50
Technology	23	18.11	110	86.61
Other	17	13.39	127	100.00

Industry

Industry	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Business	8	6.35	8	6.35
Construction	1	0.79	9	7.14
Engineering	2	1.59	11	8.73
Health Care	11	8.73	22	17.46
Manufacturing	4	3.17	26	20.63
Pharmaceutical	17	13.49	43	34.13
Resources	2	1.59	45	35.71
Software	13	10.32	58	46.03
Telecommunications	14	11.11	72	57.14
Other	54	42.86	126	100.00

Frequency Missing = 1

NumCourses

Num Courses	Frequency	Percent	Cumulative Frequency	Cumulative Percent
None	29	23.20	29	23.20
1-3	45	36.00	74	59.20
4-6	25	20.00	99	79.20
7-9	6	4.80	105	84.00
10-15	11	8.80	116	92.80
Over 15	9	7.20	125	100.00

Frequency Missing = 2

Delivered

Delivered	Frequency	Percent	Cumulative Frequency	Cumulative Percent
CD-ROM/DVD	10	10.10	10	10.10
Web/Internet	74	74.75	84	84.85
Videoconference	1	1.01	85	85.86
Teleconference	1	1.01	86	86.87
Videotape	2	2.02	88	88.89
Audiotape	1	1.01	89	89.90
Hybrid	8	8.08	97	97.98
Other	2	2.02	99	100.00

Frequency Missing = 28

AsynchSynch

AsynchSynch	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Synchronously	19	19.79	19	19.79
Asynchronously	77	80.21	96	100.00

Frequency Missing = 31

Prepared

Prepared	Frequency	Percent	Cumulative Frequency	Cumulative Percent
No	6	6.38	6	6.38
Yes	88	93.62	94	100.00

Frequency Missing = 33

Required

Required	Frequency	Percent	Cumulative Frequency	Cumulative Percent
No	53	55.21	53	55.21
Yes	43	44.79	96	100.00

Frequency Missing = 31

TakeReq

Take Req	Frequency	Percent	Cumulative Frequency	Cumulative Percent
No	32	74.42	32	74.42
Yes	11	25.58	43	100.00

Frequency Missing = 84

Completed

Completed	Frequency	Percent	Cumulative Frequency	Cumulative Percent
No	9	10.00	9	10.00
Yes	81	90.00	90	100.00

Frequency Missing = 37

Appendix G: Frequency Distributions for Responses After Survey Closed

Results for PMI e-Learning Survey 12:25 Sunday, March 14, 2004
For Persons Who Took the Survey After it Closed

The FREQ Procedure

Gender

Gender	Frequency	Percent	Cumulative Frequency	Cumulative Percent
<i>ff</i>				
Female	2	50.00	2	50.00
Male	2	50.00	4	100.00

Race

Race	Frequency	Percent	Cumulative Frequency	Cumulative Percent
<i>ff</i>				
White, not of Hispanic Origin	4	100.00	4	100.00

Age

Age	Frequency	Percent	Cumulative Frequency	Cumulative Percent
<i>ff</i>				
30-39	2	50.00	2	50.00
40-49	2	50.00	4	100.00

Position

Position	Frequency	Percent	Cumulative Frequency	Cumulative Percent
<i>ff</i>				
Education/Training	1	25.00	1	25.00
Program Management	1	25.00	2	50.00
Technology	2	50.00	4	100.00

Business

Business	Frequency	Percent	Cumulative Frequency	Cumulative Percent
<i>ff</i>				
Engineering	1	25.00	1	25.00
Pharmaceutical	1	25.00	2	50.00
Telecommunications	1	25.00	3	75.00
Other	1	25.00	4	100.00

NumCourses

Num Courses	Frequency	Percent	Cumulative Frequency	Cumulative Percent
<i>ff</i>				
None	1	25.00	1	25.00
1-3	2	50.00	3	75.00
10-15	1	25.00	4	100.00

Delivery

Delivery	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Web/Internet	3	100.00	3	100.00

Frequency Missing = 1

SynchAsynch

SynchAsynch	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Asynchronously	3	100.00	3	100.00

Frequency Missing = 1

Prepared

Prepared	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	3	100.00	3	100.00

Frequency Missing = 1

Required

Required	Frequency	Percent	Cumulative Frequency	Cumulative Percent
<i>ff</i>				
No	3	100.00	3	100.00

Frequency Missing = 1

Completed

Completed	Frequency	Percent	Cumulative Frequency	Cumulative Percent
<i>ff</i>				
No	1	33.33	1	33.33
Yes	2	66.67	3	100.00

Frequency Missing = 1