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A Comparison of Learning in Adult Accelerated and Non-Accelerated Courses

Donald J. Green
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**A COMPARISON OF LEARNING IN ADULT ACCELERATED
AND NON-ACCELERATED COURSES**

by

Donald J. Green

**A Dissertation
Submitted to the
Faculty of The Graduate College
in partial fulfillment of the
requirements for the
Degree of Doctor of Education
Department of Educational Leadership**

**Western Michigan University
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A COMPARISON OF LEARNING IN ADULT ACCELERATED AND NON-ACCELERATED COURSES

Donald J. Green, Ed.D.

Western Michigan University, 2000

The focus of this study was a comparison of learning acquired by adult students in two accelerated sections and one nonaccelerated section of a college-level course in diversity held at a private school in the Midwestern United States. The course was identical in title, instructor, course materials, examinations, and course outcomes. To measure other potential differences in the experience of the three sections, student participants were asked to complete a precourse survey, postcourse survey, and postcourse classroom environmental assessment instrument called the College and University Classroom Environment Instrument (CUCEI; Treagust & Fraser, 1986).

Upon completion of the course, three methods were used to measure student learning in the three course sections. These were final examination, course grade, and a survey question found on the postcourse survey asking students to rate their knowledge acquisition in the course.

The findings of the study were that accelerated students outperformed their nonaccelerated counterparts on the final examination. Performance on the course grade and responses on the

survey question asking for student perception of learning were indistinguishable between sections.

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CHAPTER I

INTRODUCTION

Focus and Description of Study

This study was designed to compare learning in two instructional formats, an accelerated method and a full-length course as it would be commonly presented at a typical college. The results of the study will be used to examine the learning generated in an instructional format founded on acceleration.

Research Hypothesis

To fulfill the intent of this study, the following research hypothesis was employed: "In an adult college student population possessing prior work experience, student learning in accelerated instruction courses will not be equal to student learning in courses providing nonaccelerated instruction." Three operational hypotheses were be used to define the previously mentioned research hypothesis. They state that the mean final examination grade point average for the accelerated sections is greater or less than the mean final examination grade point average for the nonaccelerated sections, the mean course grade point average for the accelerated sections would be greater or less than the mean course grade point average for the nonaccelerated sections, and the average

accelerated student opinion score measuring perceived learning will be greater or less than the average nonaccelerated student opinion score.

Accelerated and Nonaccelerated Courses Defined

For this study, *accelerated course* means a course taught in half or less than half of the commonly required classroom contact hours. As an example, a course commonly taught in 64 hours during a semester might be offered in 32 hours over an 8-week period or 20 hours over a 5-week period.

A nonaccelerated course is any course offered in the amount of contact hours commonly expected for that course at its host college. As an example, if a four credit hour course were scheduled at a 16-week semester school, it would be expected the course have roughly 64 hours of student contact time in the classroom over some portion of that semester. It is important to keep in mind that this terminology has nothing to do with how these hours are scheduled in a semester or quarter but only the amount of contact hours in the classroom during a semester or quarter. Accelerated courses should not be construed with intensive courses which have a regular number of contact hours by meeting more often during a day or week for a shorter period of weeks.

Rationale

Demographic Changes in the Adult Student Population

During the last two decades, societal demands and changes have placed new pressures upon colleges and universities in the United States. For a variety of reasons, the population of adult college students has grown dramatically. During the 1960s and 1970s, the average student enrolled in a 4-year college was a recent high school graduate between the ages of 18 and 24. This is no longer true. In recent years, large numbers of students, ages 25 and older, are returning to college to complete associate and baccalaureate degrees. The National Center for Educational Statistics (1989) reports adult student enrollments increased 114% between 1970 and 1985, and estimates now affirm that college students over the age of 25 make up over 50% of the total population of college enrollments. Speer (1996) reports adult education continues to soar through the nineties.

With the sharp rise in adult student attendance, we are learning more about the specific needs of adult students (Brookfield, 1986; Holtzclaw, 1980). Adult students are placing more pressure upon colleges to offer learning that is appropriate to their special needs (Benshoff, 1993; Check, 1984; Peterson, 1983). Puryear and McDaniels (1990) assert, "It will become increasingly necessary to continue to design new programs and services, and restructure existing policies for the recruitment and retention of nontraditional students" (p. 201). Due to

this kind of pressure to restructure policies and services, a proliferation of adult degree programs is taking place.

Adult degree programs can be defined as any collegiate degree program that is primarily or exclusively aimed at an adult clientele (CAEL/ACE, 1993). These programs typically offer flexible course schedules, credit for prior learning, accelerated course schedules, credit by testing, a variety of locations, or some combination of the above. Conrad (1995) claims there are more than 1,200 such programs at colleges across the United States, and that number is growing fast.

There are many reasons adults are seeking out these adult degree programs. Conrad (1995) suggests four major reasons for their growth in attendance. First, employers are encouraging students to complete degrees. Second, many adults wish to advance in their careers and find a degree one of the most common requisites for a new position or promotion. Third, adults seek flexible means of achieving a college diploma due to rigorous work and family schedules; and fourth, because of declining enrollments among traditional college students, many colleges are aggressively recruiting the potential adult student.

In addition, this researcher would like to extend a fifth reason for the popularity of adult degree programs based on the researcher's experience in college adult education. Many adults quit college during their teens or early 20s and are now returning to complete degrees as a matter of pride and personal fulfillment. Of the many types of adult degree completion programs, one of the fastest growing forms is the accelerated degree program.

Accelerated Programs

Accelerated programs may offer some or all of the previously mentioned benefits of other adult degree programs but their greatest advantage to students is the accelerated or abbreviated format of the courses. This method of instruction condenses instruction of course content into fewer contact hours than the institution's commonly prescribed course length. While changing the number of contact hours for the class, these accelerated programs profess to provide learning comparable to a course of commonly prescribed length and identical content. Accelerated courses are commonly offered in the evening or on weekends to better accommodate the adult student's schedule.

By taking accelerated courses, adult students are able to complete, in 20 to 30 classroom hours, a course that might commonly require the student's attendance for 40 to 60 classroom hours. The advantage to the adult student, for whom time is one of the most precious resources (Cross, 1981; Kasworm, 1994), is obvious.

While being one of the fastest growing adult degree program formats, many academics take a critical view of accelerated learning programs. Conventional academics see these programs as shallow in learning, appealing to consumer demand with little regard for quality. Yet, with the critical reviews, accelerated instruction has received little empirical scrutiny. Further research is necessary to establish whether these programs offer comparable learning in less time.

Student Needs

As previously mentioned, adult students perceive themselves as educational consumers with different needs and expectations of higher education. When asked, adult students request more flexibility, faster completion of courses, and greater application to their lives (Cross, 1980, 1981; Kasworm, 1994). The combination of an escalating adult student market and the adult student's unique expectations has caused some colleges to rethink their current conventions and look to more nontraditional methods of instruction.

Patricia Cross (1981) identified time as one of the greatest barriers to the adult student's entry into college. Because of family and work demands, many of these adults desire greater flexibility in their education and want an instructional format that offers quality education with as few hours in the classroom as possible. This demand is a major factor which has given rise to accelerated adult degree programs.

Service to Colleges and Adult Students

With the availability of accelerated degree programs growing throughout the country, more adult students will have the choice of taking part. Many educators will desire proof of quality before offering such formats to their learners. Conventional opinion has long assumed that nothing valuable would come out of an accelerated instructional format. A primary question to be answered is whether accelerated programs can offer quality education with a fast, convenient schedule.

Unfortunately, research examining student performance in accelerated courses is uncommon and the few research studies available offer a variety of schedule formats and shed little light on the type of accelerated learning model now being employed throughout the United States.

Traditional length formats of college courses have always dominated college schedules. This was not necessarily due to evidence supporting this format but primarily out of tradition (Hefferlin, 1972). Continuing research offers the opportunity for promotion and refinement of different course formats and duration. For this reason, results of this study will offer further direction in the continuing development of new course schedules which may offer enhanced student life and learning.

Corporate Training Needs

While individual students are taking a greater interest in methods designed to hasten learning, corporations are also interested in the advantages of faster learning for their employees. Labeled “just-in-time” or “accelerated” training, it is the study of employee development with an emphasis on speed. Companies like IBM, Aetna, Hewlett-Packard, and 3M want employees learning what is necessary, when necessary, as quickly and efficiently as possible.

These large companies’ training staffs are already employing modularization of curricula, cooperative learning, and accelerated learning techniques in their training—all principles of accelerated

instruction model (Derouen & Kleiner, 1994; Doyle, 1991; Galahan, 1990; Gordon, 1989).

Training professionals will wish to see evidence of knowledge acquisition and retention in accelerated instruction. If acceleration accomplishes the feat of speeding learning, training professionals will see this as an opportunity to offer employees pertinent skills and knowledge as they are needed and employees will have more time for their routine responsibilities or more creative pursuits. Thus research in this area of accelerated learning may have a direct impact upon corporate productivity.

Conclusion

As accelerated instruction struggles for legitimacy, these education and training programs must offer students learning equal or better than learning offered in conventional educational formats. Based on the rationale described in the previous chapter, this study will provide a comparison of the learning generated in an instructional format founded on acceleration and the learning found in identical courses of a more conventional duration. The results of this study should add to the literature within the disciplines of adult learning and accelerated instruction, and be of value to a variety of audiences.

CHAPTER II

CONTEXT OF STUDY AND LITERATURE REVIEW

The primary relationship to be observed in this study is that of accelerated instruction and learning. To design a study which analyzes this relationship, many other independent variables affecting learning in the classroom must be identified and measured. The independent variables observed in this study are student age, text and course materials, student employment experience, instructional methods, and student motivation. Each of these variables will be discussed in this literature review. At the end of this section the researcher will describe how each variable will be measured in the study.

The following review of relevant research will cover four primary topics: the adult student, time and its effect on learning, an analysis of intensive and accelerated learning research, and the accelerated instruction format and its constructs. These four topics offer the reader a better understanding of the potential and constraints of this study.

Adult Student Characteristics

Adult students display a number of characteristics that can differentiate them from traditional students and influence their performance in the classroom. Some of these characteristics include high levels of motivation, a strong emphasis on timely learning, and the

anticipation of practical examples and application in their learning. A clarification of each of these characteristics will follow.

Motivation and Adult Students

Research points out that adult students tend to possess more internal motivation to learn (Miller, 1989; Nordstrom, 1989). Jones (1997) lists motivation as the first principle of adult learning. One of the qualities that may create this motivation in adults is a tendency toward goal attainment. Adults tend to set goals prior to any undertaking and are willing to work hard toward their attainment. Research has shown that motivation has a direct relationship to academic performance. In fact, adult motivation to learn can often be an internal desire for competence and self-determination (Deci & Ryan, 1985; Naccarato, 1988).

Conversely, in a research design similar to the one proposed here, Carrel and Menzel (1997) studied the effect of motivation on final examinations and found little correlation between the two.

The researcher suspects that, just as there appears to be a difference in motivation between adult and traditional age college students, there may be a difference in motivation between adult students who join accelerated programs and those who do not. In the next chapter, the researcher will describe the three methods to be employed in measuring potential differences in motivation and performance during this study.

Timely Learning

One motivation for adult students is their desire to immediately apply their learning. Adult students want to learn quickly and constructively. This is not the easiest combination for the instructor to master, but it is important that adult students perceive activities in the classroom as promoting their mastery of the given discipline (Kasworm, 1994). Adults wish to acquire knowledge, leave the classroom, and apply that knowledge to their lives.

Perceived Practicality and Application in Learning

The majority of adult students prefer active, practical learning (Hotzclaw, 1980; Miller, 1989). This includes discussions of current work experiences, realistic case studies, and learning that can be applied to the student's life. For most adult students, the value of application comes down to priorities in the adult student's life. If given a choice between formal learning and other activities in the adult student's life, adults may choose learning but only if there is an immediate value or return placed on the learning. The concern with this predilection toward application is a discomfort with abstract concepts or topics which are perceived as having no relevance (Miller, 1989). As part of the design of this study, the researcher will measure student perception of immediate application as part of instructional method and environment. Questions pertaining to this topic will be addressed in the College and University Classroom Environment Inventory (CUCED) discussed in Chapter II.

Time and Learning

A review of research on the concept of time and learning is crucial to the study of accelerated learning. Scott and Conrad (1992) perform an admirable critique of research involving the effects of time on learning. Scott and Conrad looked at three themes of importance to this study: massed versus distributed learning, concentrated study, and allocated time and learning.

Massed and Distributed Learning

Scott and Conrad state, “Researchers have found that distributing information over several spaced presentations is far superior to learning material in a single massed session” (p. 415). In fact, Dempster and Farris (1990) claim that the academic benefits of spaced learning, when compared with massed learning, are a most “dependable and robust phenomena” (p. 97). Lorge (1930) concurs, stating regular interpolated intervals between learning opportunities assist in trial periods of learning. But Lorge goes on to point out that once the material has passed beyond a “trial period” of time, then one cannot claim intervals between learning opportunities are helpful. This being the case, one must understand that “massed” learning is typically determined to be one or two events with very short periods of time between learning opportunities. In addition, it is difficult to judge what a “trial period” of learning is, especially when it involves adults who may possess threshold knowledge in the given topic received from work or life experiences.

While one might assume, based on theories of distributed versus massed learning, that conventional college classes would provide better learning when compared to accelerated courses, this may not be true. Accelerated courses are more likely to fit the model of spaced learning rather than massed learning with their weekly spaces between class meetings. Hefferlin (1972, cited in Scott & Conrad, 1992) makes a similar argument concerning intensive courses. Hefferlin states, "They [intensive courses] actually illustrate distributed practice, since they employ daily cycles of rest and effort comparable to the 24-hour cycle sometimes used in distributed practice experiments" (p. 94).

Since accelerated learning still allows for separations between learning opportunities, one cannot argue there is less interval time but perhaps that there are not as many intervals. Consequently, the adverse effect of massed instruction on learning has little impact upon accelerated learning theory.

Concentrated Study

Various research has shown that concentrated study, or immersion, can be beneficial to student learning (Csikszentmihalyi, 1982; Walberg, 1988). Due to the many outside responsibilities that often affect adult students' lives, it would be difficult to suggest accelerated courses should be considered "immersive" for students, but acceleration can serve to focus the students' academic attentions on one subject. Due to the intense nature of these courses, many students take only one course at a time.

Allocating Time and Its Effect on Learning

Many research studies find time is a contributing factor in successful student learning. The question may not be one of time's necessity but instead, the amount of time truly necessary. Walberg (1988) reviewed the literature on time and learning and suggests that, while time is necessary, it is only a "modest" predictor of academic achievement. Walberg goes on to say other factors are as valuable to student achievement, including student aptitude, the quality of instruction, and the classroom and home environments. This finding bolsters the belief championed by accelerated instruction programs across the country that time can be reduced if other qualities can be found in the process which will allow learning to advance.

An Analysis of Intensive and Accelerated Programs

Research concerning acceleration of college courses has been varied, including scheduling, duration, and vocabulary. This section is intended to clarify the differences between intensive and accelerated courses.

Intensive Courses

When performing research on accelerated learning, it is tempting to study "intensive courses" as well as accelerated ones. Previous research on speed and learning typically dealt with these "intensive courses," where course hours were compressed into fewer days or weeks

but actual seat time was identical to the common class. Most studies describe a specific course or program within a school that can be intensified. Even then, there are a multitude of models for intensive learning including weekend classes, 8-week semesters, week-long classes, as well as other instructional schedules all with a “seat time” equal to that of the regular semester (Allen, 1974; Berk, 1979; Curral & Kirk, 1986; Frank, 1973; Pflanzner & East, 1984; Wallace, 1972). While these studies may shed light on the question of massed versus distributed learning, they are not very useful in the study of accelerated courses because the number of classroom contact hours remains identical in all course sections. It is interesting to note that results on these studies were mixed. Some intensive course studies proved greater success for intensive schedules, some for conventional schedules, some claimed little or no difference.

Accelerated Courses

Research studies involving accelerated courses or programs are virtually nonexistent. Studies which do claim to involve accelerated learning have a variety of definitions for what constitutes an accelerated program including advanced placement into graduate school, credit for prior degrees and experience, or the previously mentioned intensive format (McDonald, 1995; Meinert & Dubansky, 1989). One study (Jenson, 1992) did analyze student performance in writing courses using an accelerated instruction model that reduced classroom contact hours. Jenson found the accelerated group of students did not perform at a

competency equivalent to the conventional group upon completion of the course. It should be noted, only one study of accelerated instruction has employed a model of accelerated learning so specific as the model being proposed. This study, Wlodkowski (1998) concludes that adult students in accelerated courses were able to achieve learning “indistinguishable” from their nonaccelerated counterparts even though course duration was shorter. The researcher concluded much of this performance was due to work experience, self-direction, and student goals. While this research was an excellent step in the research of accelerated learning, the previously mentioned study did not include measures of student opinion or final examinations nor an evaluation of course materials.

Consequently, based on a review of literature, there is very little research available on accelerated learning models similar to this model the researcher proposes to employ.

The Regis University Partner School's Accelerated Format and Constructs

This section is intended to clarify the format created by Regis University and applied by Regis and its partner schools in the acceleration of courses.

Accelerated Learning Theory Constructs

The format of accelerated education the school in this study subscribes to is one created and championed by Regis University, Denver, Colorado. This accelerated program model has been

transplanted to several “partner schools” who have replicated the majority of Regis University’s accelerated learning program requirements. Three of the primary requirements of the accelerated program are guidelines placed on student entry, an excellent faculty hiring and training program, and an expanded course outline, called a module, available to students in advance of the class. Each of these requirements will be discussed subsequently.

In addition to these requirements, the school involved in this project advocates certain tenets within its accelerated classrooms. These tenets include cooperative learning, an environment of facilitated discussion, acknowledgment of various learning styles, fun as a necessary part of learning, a respect for learning through work experience, a desire to provide learning in multiple approaches and media, and a desire to make learning applicable to life. Gill and Meier (1989), Johnson (1995), Kussrow (1993), and Zemke (1995) document all of these philosophies along with others, as common to the providing of accelerated learning. The first two, cooperative learning and facilitated discussion, will be discussed subsequently.

Student Demographics in Accelerated Programs

Demographic guidelines for entry into the accelerated degree program have required the student to be 23 years or age or older, possess 3 or more years of work experience, and possess at least 45 quarter or 30 semester college credits. Due to legal challenges of age discrimination, some schools in the partnership have recently chosen to eliminate age as

a restriction and have placed more emphasis on work experience. A question concerning student work experience has been included in one of this study's survey instruments. Previous research (Wlodkowski, 1998) has shown accelerated program students possess an average of 19 years work experience, while nonaccelerated students average 4 years.

Rationale for these requirements are the need for student maturity, a work experience base that can be used for application of theories and models discussed in class, and some knowledge of how traditional college courses function. While administrators involved with the model admit age and years of work experience are relatively arbitrary methods of establishing the existence of maturity and an understanding of the world of work, they serve as functional methods on which to assume a student population prepared for the accelerated learning environment.

Research provides proof that adult students generally share characteristics of dedication and motivation as learners (Aslanian & Brickell, 1980; Cross, 1980; Kasworm, 1978, 1994). With age, students seem to take a greater responsibility for academic performance and see a more immediate yield from the learning. Many students in accelerated programs complain that they "wasted" their prior college experiences by not applying themselves to learn more and earn higher grades.

Faculty Selection Process

The various accelerated programs who share the Regis accelerated model espouse a philosophy of facilitated instruction distinct from the

conventional lecture formats found in many schools. Instructors teaching in these programs undergo a rigorous assessment process. Instructors are not chosen solely for their academic qualifications but for their applied experience, interpersonal skills, and their ability to facilitate topical discussions and promote cooperative learning.

Facilitated Discussion and Cooperative Learning

The primary instructional tenets of the accelerated model include facilitated topical discussion, rather than lecture, and cooperative learning opportunities amongst students within the class. Both of these methods of instruction employ the collective experiential and academic knowledge possessed by the course participants and will be discussed further.

Facilitated Discussion

One of the primary methods of learning in the Regis accelerated model is facilitated discussion. Students are expected to suggest and discuss applications of the learning which relate to their work and personal life. This allows more of the course discussion to be self directed allowing learning which is more appealing to the adult student (Kasworm, 1994; Knowles, 1975; Merrian & Caffarella, 1991; Tough, 1979).

Students in these programs are asked to take part in deliberation concerning various theories or models and their validity in the student's life experiences. As previously mentioned, there is an assumption, based

on the requirements for program entry, that students will possess some basic knowledge of employment and be able to share those experiences with others. This prior work experience helps students visualize concepts based on their experiences and then compare those concepts with the experiences of others.

In discussions with administrators and students in the various accelerated programs involved in this study, there appears to be an expectation among students and faculty that each student will attend class prepared to take part in open discussion of the topic. Anecdotes are readily shared by students and faculty concerning past students who attended class unprepared. Peers have been known to politely inform a student of the necessity to be prepared for class and students have scolded faculty if they begin to “outline” the text to help an unprepared student catch up.

Cooperative Learning

As stated previously, the accelerated program in this study advocates greater practice of cooperative learning among students. Most authors of professional works and research studies on cooperative learning assert the cooperative approach to classroom instruction enhances pupil motivation to learn more than the traditional whole-class lecture approach and enhances academic achievement (Johnson & Johnson, 1985; Sharan & Shachar, 1988; Sharan & Sharan, 1976; Slavin, 1983; Slavin et al., 1985). Sharan and Shauvlov (1990) found cooperative learning creates positive social relations among classmates.

This is developed through peer collaboration and mutual assistance in small groups. It enhances motivation by having the students work together toward a common goal. These relationships between adults, in an accelerated environment of shared application of learning may lead to greater desire to learn and faster mastery of learning.

Course Modules

Another mechanism of the Regis accelerated model, employed by the school in this study, is the course module. This is a course pack including information such as course content, detailed assignments, periodical data or text useful during the course, grading criteria, and a schedule of course events and activities. Course modules add more credence to the argument that accelerated courses are distributed rather than massed learning. With modules, students are equipped to study ahead, prepared for each meeting of the class well in advance, and know the direction the course will take in future meetings. These modules are made available to students at least two weeks in advance of the course and allow students to read ahead, plan course projects, and schedule activities in their work and home life. In addition to the modules, faculty in these accelerated programs are encouraged to supply a syllabus which customizes grading criteria, special projects or topics the facilitator wishes to emphasize.

Conclusion

In conclusion, the relationship to be tested will be between speed of instruction and student learning. If the results of this study are as suggested by the hypothesis, that student learning in accelerated and nonaccelerated courses is not equal, the researcher will also review the measures of motivation in the two populations as a possible reason for the difference.

A review of the literature has proven that research has been conducted on several topics related to accelerated learning for adults yet no actual comparisons of learning between accelerated and conventional methods in postsecondary education appears to exist.

CHAPTER III

RESEARCH DESIGN AND METHODOLOGY

Design Overview

What follows is the process that was used to test the existence of a relationship between acceleration of instruction and student learning. This research project is a quasi-experimental posttest design employing three measures of student learning and is designed to analyze and compare sets of courses. The purpose of this design was to compare student academic performance in identical courses offered in both accelerated and nonaccelerated formats. The methods employed in measuring learning included a survey of each participant's perception of his or her learning, final examination grades, and course grades. The researcher took steps to control or measure the independent variables of student motivation, student effort, differences in course text and materials, student age, and student employment experience. The instructional process was also analyzed in an attempt to identify any differences in instructional method or classroom environment. The methods employed in measuring both dependent and independent variables will be discussed in detail in this section.

The Accelerated and Nonaccelerated Groups Defined

The accelerated group was comprised of all students participating in the selected accelerated course during the study. Instructional methods employed with the accelerated group were not prescribed but followed the process and norms of the Regis University instructional model.

The nonaccelerated group's course was the conventional length college course. The primary method of instruction for this course was not prescribed. The instructor of this class taught the accelerated group's course as well. It is presumed the instructional methods used in the nonaccelerated group's course were similar to those used in the accelerated group's course.

The researcher employed a survey instrument called the College and University Classroom Environment Instrument (CUCEI; Treagust & Fraser, 1986) to assess the instructional environment in all sections of the course being studied. This instrument is meant to identify any difference in instructional style and classroom environment that might influence the results. Of course, if the methods employed identify several differences in the independent variables, the outcomes of this research may be meaningless. The researcher attempted to find a number of sections of a course whose demographics are similar across sections. This allowed the researcher to compare results from the accelerated class with a sample from the nonaccelerated, which has been controlled for variables of age, work experience, and college experience.

Population Sampling

Three different levels of sample populations were necessary for this study: colleges, courses, and students. Much of the “selection” of these populations was a foregone conclusion due to a lack of availability of matching courses being offered in both the accelerated and conventional formats featuring the same instructor. The selection process for colleges, courses, and students will be discussed briefly in the following sections.

College Location

The study involved a small private Catholic college within the Midwestern United States. This school offers an accelerated program fundamentally similar to the Regis University accelerated learning model. The same Bachelor's Degree in Business Administration is offered through both the accelerated program and conventional courses. The course, Diversity and Multiculturalism, has identical course outcomes when offered in the school's conventional format or in the accelerated format.

College and Course Selection Process

The college was selected using a rather pragmatic process. The chosen college had to possess an accelerated adult degree program. The program had to possess a process similar to the Regis model described in this study, including processes for faculty selection, student admission

policy, faculty development, and course module development and distribution. The program had to have instructors who teach the same course in both the accelerated and nonaccelerated style. These limitations also mean no specific selection criteria were placed upon faculty other than the criteria listed above. Faculty only had to be allowed to teach the same course in both formats by the college offering the course.

Permission to conduct this study at the host college was requested from the program director of the participating department.

Courses Offered/Faculty Teaching

The choice of course used in this study was, again, a pragmatic one. The researcher was limited to courses taught in both the accelerated and nonaccelerated formats, by the same instructor, within a 9-month time period. This allowed very little choice for the researcher.

Students

Student participant selection was actually a foregone conclusion because the student population was based on the course chosen. Students involved in this study were already admitted to the college offering the course. Students enrolled in the accelerated course were accepted into the college's accelerated program or had guest student status in the program. All students included in this study were willing participants and were allowed to decline participation or leave the study at any time. All student participants remained anonymous in this study

and were identified to the researcher only by a four-number code to allow the researcher to match age, grades, and performance summaries to specific participants while maintaining their anonymity. Further details on the procedures for the collection and anonymity of student records can be found later in this chapter.

Instruments and Measuring Student Learning

For this study, student learning is defined as the student's ability to master performance outcomes specific to the course in which the student is participating. One of the challenges the researcher faced was the methods employed to measure student learning. Three methods were ultimately employed to measure student learning in this study. These measures are final examinations, course grades, and student surveys of perceived learning. Each will be covered individually in the following sections.

Final Examinations

The first method used to measure student learning was final examinations. The examinations were designed to measure the achievement of course outcomes for each set of classes. These kinds of "norm-referenced examinations" are a common method of comparing student performance within and across courses (Gronlund, 1993). These final examinations were developed by the instructor and were identical between the sections of the course. This allowed for a better comparison of grades.

Course Grades

A second measure of student learning employed in the study was a comparison of participants' overall course grades. Course grades are a very common method of comparing student performance within and across courses. As with all other data in this study, course grades were collected by coding each grade with the section and the last four digits of the student's social security number.

Surveys of Perceived Student Learning

A final measure of student learning was a question found on the postcourse survey. This question asked students their perception of their knowledge acquisition. The survey was based on a measure of student perception answered on a Likert-style scale. A copy of the postcourse survey can be found in Appendix B. The Likert-style results of the student perception of knowledge acquisition were tabulated showing an average score for the course section. Average scores for the accelerated and nonaccelerated sections were compared. Analysis of variance or Student's *t* test was used to measure differences in the average scores.

Instruments Measuring Variation Within the Study

Precourse and Postcourse Student Survey

The students participating in this study were asked to complete both a precourse survey (Appendix A) and postcourse survey (Appendix B) designed to analyze the instructional environment across the course

sections. The purpose of these surveys was to assess student perceptions of the course concerning such variables as student perception of their motivation concerning the course, expected and perceived learning in the course, reasons for taking the course, and student perceptions of course materials. The precourse survey also contained questions concerning student demographics.

Comparing Classroom Environment With the CUCEI

While a valid comparison of student performance was absolutely essential to the success of this study, a second measure was necessary as well. This measure—any perceived variation in classroom environment between the conventional classroom and the accelerated classroom—was necessary for two separate reasons. First, a comparison of mean scores on each question of the CUCEI was completed. The means were compared using an ANOVA. In addition, cross-tabulation with percentages was used to compare responses, by section and by question. If there was no statistical difference in scores, the researcher assumed essentially identical instructional techniques were employed in both sections of the class. If there was no statistical difference in student performance between course sections, a measure of classroom environment confirmed or denied any changes in instructional behaviors exhibited by the instructor. Second, if there was a difference in student performance, it was valuable to look for any perceived difference in the instructional environment.

The comparison of the instructional environment of the course sections was accomplished by the employment of the pre- and postcourse surveys and the College and University Classroom Environment Inventory (CUCEI) found in Appendix D. This inventory is designed to

assess the environment of college classrooms with small numbers of students. The instrument evaluates students' and instructors' perceptions of the following several psychosocial dimensions of actual or preferred classroom environment: personalization, involvement, student cohesiveness, satisfaction, task orientation, innovation, and individualization. . . . A research application of the CUCEI involving associations between student outcomes and classroom environment tentatively suggested that the nature of the classroom environment affects outcomes. (Treagust & Fraser, 1986, p. 3)

The CUCEI provides evidence of both internal consistency and discriminate validity and, as such, is an indicator of student perception of classroom environment in situations where either the individual or the class mean is the unit of analysis. In this study, the CUCEI was employed to assess the entire class's perception of the environment. With the class mean as the unit of analysis, Cronbach's alpha coefficient for the instrument ranged from 0.78 to 0.96. During assessment of the CUCEI's ability to measure classroom environment, correlations were formulated using each dimension within the CUCEI indexed against the remaining six dimensions within the instrument. Correlations were found to be of an acceptable range. Finally, a one-way ANOVA was employed to measure the differentiation between classrooms of each dimension of the instrument. Each dimension differentiated significantly between classrooms ($p < 0.001$). How this instrument was administered in the classroom will be detailed later in this chapter.

Verification of Course Outcomes

Prior to the beginning of the study, the researcher requested official course outlines or master syllabi from participating colleges. Sets of courses not sharing identical course outcomes were eliminated from the study.

Controls on Course Texts and Materials

Prior to the commencement of the study, the researcher determined if the two courses in any set to be studied shared the same text. Copies of all materials to be distributed in class were requested as well. The researcher ensured the consistency of materials across course sections.

In the event the set of courses did not use the same text, the postcourse questionnaire has a question regarding the student's perception of the course materials. Student perceptions of text and material effectiveness were recorded as a number corresponding to student attitude. An average score was taken for each section and compared to the corresponding sections of the same course using an ANOVA. If two sections exhibited different scores, this difference in texts and materials was reported.

Procedures to Collect Data

The following procedures were employed to collect the measures of learning from course participants in this study. Data collected were

divided into final examination grades, course grades, and postcourse surveys of student perceptions of learning.

Final Examination Grades

Upon completion of both courses, the instructor was asked to provide final examination scores for both courses in the set. These were matched to the participant's four-digit code. Final examination grades were requested only in course sets that share the same final examination.

Course Grades

Upon completion of both courses, the instructor or college registrar was asked to provide course grades for both courses in the set. As previously mentioned, the last four digits of each participant's social security number were used for identification so that a participant's demographic data, section number, academic performance, and opinion survey results could be kept collectively. The process was designed to maintain student anonymity.

Student Learning Perceptions Survey

Both prior to and at the completion of both courses, students were asked to complete a survey. Prior to the course, students were asked to measure their expectations of the course learning objectives and their perceptions of their motivation. After the course was completed, these students were asked to measure their perceptions of how well they

learned the course outcomes and how motivated they were during the class. The collecting of final examination scores, course grades, survey results, and age by the final four digits of the social security number allowed the researcher to create a database profiling each student while maintaining complete anonymity, even to the researcher. This allowed the researcher, in the nonaccelerated course, to create a subset of students above 22 years of age that could be compared directly to the student population in the accelerated courses

Procedures to Analyze Data

Three distinct sets of data were analyzed during this study. These were the analysis of the learning environment, student motivation, and student learning.

Analyzing Instructional Environment

Upon completion of the precourse survey, postcourse survey, and CUCEI, the researcher analyzed results from these surveys using cross-tabulation, correlation, and analysis of variance. The researcher wishes to make some assumptions about the consistencies and inconsistencies of the course sections before analyzing student performance in the various sections.

Measuring Student Motivation

The researcher believes students choosing to join accelerated programs may develop a deeper motivation in the classroom than

conventional students may. This motivation may be created for two similar, but distinctly different, reasons. First, students who choose to join an accelerated program may possess a very deep desire to complete their course work quickly. This desire to complete may create a motivation for success. Second, groups of students may develop an esprit de corps based on membership in a group, especially if that membership was a personal choice. The researcher has previously witnessed this mindset in students of accelerated programs.

A series of questions was designed and asked on the pre- and postcourse survey and the CUCEI. The scores measuring student motivation were averaged for the various sample populations. These means were compared against each other to reveal differences in motivation between these groups.

Measuring Student Learning

When mean scores were collected for each set of final examinations, course grades, and student survey results, an analysis of variance was used to evaluate any differences in the three section means.

When results of the instructional method and behavior surveys were been tabulated, those results were analyzed through comparison of mean scores for the two adult populations. A second comparison was made between the accelerated and nonaccelerated groups as two separate groups. These comparisons allowed the researcher to ascertain

any differences between instructional methods employed by an instructor within a set of courses.

Participant Anonymity

The last four digits of the student's social security number and the course he or she attended was employed to track each student record. This allowed students complete anonymity within the study. Instructors were asked to supply course and final grades using only the four-digit code and course title for identification. No one's identity was ever recorded.

Summary

With the previously mentioned research design and controls placed upon independent variables, the researcher planned to compare student academic performance in sets of accelerated and nonaccelerated courses. Various measures were used to evaluate academic performance, including final examination grades, course grades, and surveys of students' perceptions of learning.

CHAPTER IV

RESEARCH DATA

The purpose of this chapter is to review the statistical results from the administration of the precourse survey, the postcourse survey, the CUCEI, and the collection of grade reports in this study. It is the researcher's desire to present the statistical results in a format that is clear and unbiased.

The analysis of data for this research was a two-step process. In the first step, the course sections, both accelerated and nonaccelerated, were controlled and measured to deduce the similarities and differences between the sections in instruction, participants, environmental cues, and materials. These variables were examined in a number of ways.

To assure the similarity between the accelerated and nonaccelerated sections, the researcher was careful to select a course taught by the same instructor in both an accelerated and nonaccelerated format. The course, Cultural Diversity, a three-credit course, was presented using the same course materials and identical evaluation methods in all sections. Three sections were analyzed, two accelerated and one nonaccelerated.

To analyze the instructional environment across the course sections, both a precourse survey and postcourse survey were administered. The purpose of these surveys was to assess student

perceptions of the course concerning such variables as student perception of their motivation concerning the course, expected and perceived learning in the course, reasons for taking the course, student demographics, and student perceptions of course materials. Tables 1 and 2 present the results of the precourse and postcourse surveys.

As a final measure of similarities and differences across sections, a postcourse survey, called the CUCEI or College and University Classroom Environment Instrument, was administered which measures the classroom by asking 48 questions concerning the course and its implementation. This survey allowed the researcher a final analysis of the environment in both the accelerated and nonaccelerated sections.

When all data had been collected, analysis of variance was performed on the results from the precourse, postcourse, and CUCEI surveys. This analysis was meant to determine the similarities of response across the three course sections. The researcher chose to use an alpha of 0.01 to determine statistical similarity among section means.

One question of the seven asked in the precourse survey was found to show statistical differences across the three sections. This was Question 2, concerning the knowledge the participant expected to acquire.

Four questions found on the CUCEI were found to be significantly different across the three sections. These were Questions 10, 17, 24, and 31. These questions can be found in Table 3, listing results of the CUCEI.

Table 1
Results From the Precourse Survey

	Course Section		
	1 (Accel)	5 (Accel)	8 (Nonaccel)
1. Rate your motivation in taking this class:			
Motivated	0	0	2 (8%)
Somewhat motivated	2 (20%)	3 (43%)	12 (48%)
Somewhat unmotivated	8 (80%)	4 (57%)	11 (44%)
Unmotivated	0	0	0
2. In completing this course, the knowledge you expect to acquire would best be described as:			
Great deal	7 (70%)	2 (29%)	4 (17%)
Moderate	3 (30%)	4 (57%)	19 (79%)
Little	0	1 (14%)	1 (4%)
None	0	0	0
3. The amount of effort you plan to put forth in completing this class would best be described as:			
Great deal	6 (60%)	5 (62.5%)	16 (61%)
Moderate	4 (40%)	2 (25%)	9 (35%)
Little	0	1 (12.5%)	1 (4%)
None	0	0	0
4. You are taking this course because:			
Required	9 (100%)	5 (71%)	23 (92%)
Valuable	0	2 (29%)	1 (4%)
Schedule	0	0	1 (4%)
Appealing instructor	0	0	0
5. Are you currently enrolled in an accelerated program?			
Yes	9 (100%)	7 (100%)	1 (4%)
No	0	0	24 (96%)

Table 1—Continued

	Course Section		
	1 (Accel)	5 (Accel)	8 (Nonaccel)
6. How many years of work experience do you possess?			
2			3
4			2
5			1
6		1	1
7	1		1
8			3
9	1	1	
10	1	1	1
12	1		
13			2
14			2
16			2
18		1	1
19	1		1
20	2		2
21	1		
24			1
26		1	
27	1		1
30		1	
32	1		
35		1	1
Average work experience	17.8	19.1	12.6

Table 1—Continued

	Course Section		
	1 (Accel)	5 (Accel)	8 (Nonaccel)
7. What is your age?			
17			1
20			1
21			1
22			3
23			1
24			1
25			1
26	2		
27		1	1
29			2
30		1	3
31			1
32	1		1
33		1	
35			1
36	1	1	1
37	1		
38			1
39	2		
40	1		1
42			1
43			1
44		1	
45	1		
48	1		
51		1	
61			1
Total Cases	10	6	25
Average Age	36.8	36.83	30.72

Table 2
Results From Postcourse Survey

	Course Section		
	1 (Accel)	5 (Accel)	8 (Nonaccel)
1. Rate your motivation during this class:			
Motivated	8 (88.9%)	5 (71.4%)	18 (78.3%)
Somewhat motivated	1 (11.1%)	2 (28.6%)	5 (21.7%)
Somewhat unmotivated	0	0	0
Unmotivated	0	0	0
2. In completing this course, the knowledge you acquired would best be described as:			
Great deal	7 (77.8%)	4 (57.1%)	16 (69.6%)
Moderate	2 (22.2%)	3 (42.9%)	7 (30.4%)
Little	0	0	0
None	0	0	0
3. The amount of effort you put forth in completing this class would best be described as:			
Great deal	8 (88.9%)	4 (57.1%)	13 (56.5%)
Moderate	1 (11.1%)	3 (42.9%)	10 (43.5%)
Little	0	0	0
None	0	0	0
4. The texts and materials distributed in this course were:			
Valuable	8 (88.9%)	3 (42.9%)	16 (69.6%)
Somewhat valuable	0 (11.1%)	4 (57.1%)	7 (30.4%)
Of little value	0	0	0
No value	0	0	0

Table 3
The College and University Classroom Environment Instrument

	Course Section		
	1 (Accel)	5 (Accel)	8 (Nonaccel)
1. The teacher considers students' feelings.			
Strongly agree	7 (77.8%)	7 (100%)	21 (91.3%)
Agree	2 (22.2%)	0	2 (8.7%)
2. The teacher talks rather than listens.			
Strongly agree	0	0	2 (9.1%)
Agree	1 (11.1%)	1 (14.3%)	0
Disagree	5 (55.6%)	5 (71.4%)	15 (68.2%)
Strongly disagree	3 (33.3%)	1 (14.3%)	5 (22.7%)
3. The class is made up of individuals who don't know each other well.			
Strongly agree	1 (11.1%)	0	4 (17.4%)
Agree	7 (77.8%)	2 (28.6%)	10 (43.5%)
Disagree	1 (11.1%)	4 (57.1%)	5 (21.7%)
Strongly disagree	0	1 (14.3%)	4 (17.4%)
4. The students look forward to coming to classes.			
Strongly agree	1 (14.3%)	3 (42.9%)	14 (60.9%)
Agree	6 (85.7%)	4 (57.1%)	8 (34.8%)
Disagree	0	0	1 (4.3%)
5. Students know exactly what has to be done in our classes.			
Strongly agree	6 (66.7%)	4 (57.1%)	17 (73.9%)
Agree	3 (33.3%)	3 (42.9%)	6 (26.1%)
6. New ideas are seldom tried out in this class.			
Strongly agree	0	1 (14.3%)	0
Agree	0	1 (14.3%)	2 (8.7%)
Disagree	4 (50%)	3 (42.9%)	11 (47.8%)
Strongly disagree	4 (50%)	2 (28.6%)	10 (43.5%)

Table 3—Continued

	Course Section		
	1 (Accel)	5 (Accel)	8 (Nonaccel)
7. All students in the class are expected to do the same work in the same way and in the same time.			
Strongly agree	2 (22.2%)	3 (42.9%)	8 (34.8%)
Agree	3 (33.3%)	2 (28.6%)	11 (47.8%)
Disagree	2 (22.2%)	2 (28.6%)	3 (13%)
Strongly disagree	2 (22.2%)	0	1 (4.3%)
8. The teacher talks individually with students.			
Strongly agree	3 (33.3%)	3 (42.9%)	11 (47.8%)
Agree	5 (55.6%)	3 (42.9%)	10 (43.5%)
Disagree	1 (11.1%)	1 (14.3%)	2 (8.7%)
9. Students put effort into what they do in class.			
Strongly agree	5 (55.6%)	6 (85.7%)	11 (47.8%)
Agree	4 (44.4%)	1 (14.3%)	12 (52.2%)
10. Each student knows the other members of the class by their first names.			
Strongly agree	1 (11.1%)	5 (71.4%)	2 (8.7%)
Agree	8 (88.9%)	1 (14.3%)	11 (47.8%)
Disagree	0	1 (14.3%)	9 (39.1%)
Strongly disagree	0	0	1 (4.3%)
11. Students are dissatisfied with what is done in the class.			
Disagree	3 (33.3%)	3 (42.8%)	10 (43.5%)
Strongly disagree	6 (66.7%)	4 (57.1%)	13 (56.5%)
12. Getting a certain amount of work done is important in this class.			
Strongly agree	3 (37.5%)	2 (28.6%)	11 (47.8%)
Agree	5 (62.5%)	5 (71.4%)	11 (47.8%)
Disagree	0	0	1 (4.3%)

Table 3—Continued

	Course Section		
	1 (Accel)	5 (Accel)	8 (Nonaccel)
13. New and different ways of teaching are seldom used in this class.			
Strongly agree	0	1 (14.3%)	1 (4.3%)
Agree	0	0	1 (4.3%)
Disagree	7 (77.8%)	6 (85.7%)	14 (60.9%)
Strongly disagree	2 (22.2%)	0	7 (30.4%)
14. Students are generally allowed to work at their own pace.			
Strongly agree	1 (11.1%)	0	3 (13%)
Agree	6 (66.7%)	5 (71.4%)	17 (73.9%)
Disagree	2 (22.2%)	1 (14.3%)	3 (13%)
Strongly disagree	0	1 (14.3%)	0
15. The teacher goes out of his/her way to help students.			
Strongly agree	7 (77.7%)	6 (86.7%)	16 (69.6%)
Agree	2 (22.2%)	1 (14.3%)	5 (21.7%)
Disagree	0	0	2 (8.7%)
16. Students "clockwatch" in this class.			
Strongly agree	0	0	1 (4.3%)
Agree	0	0	1 (4.3%)
Disagree	4 (44.4%)	5 (71.4%)	14 (60.9%)
Strongly disagree	5 (55.6%)	2 (28.6%)	7 (30.4%)
17. Friendships are made among students in this class.			
Strongly agree	0	5 (71.4%)	7 (30.4%)
Agree	7 (77.8%)	2 (28.6%)	15 (65.2%)
Disagree	2 (22.2%)	0	1 (4.3%)
18. After the class the students have a sense of satisfaction.			
Strongly agree	5 (55.6%)	4 (57.1%)	11 (47.8%)
Agree	4 (44.4%)	3 (42.9%)	12 (52.2%)
19. The group often gets sidetracked instead of sticking to the point.			
Strongly agree	0	0	1 (4.3%)
Agree	0	0	1 (4.3%)
Disagree	7 (77.8%)	6 (85.7%)	15 (65.2%)
Strongly disagree	2 (22.2%)	1 (14.3%)	6 (26.1%)

Table 3—Continued

	Course Section		
	1 (Accel)	5 (Accel)	8 (Nonaccel)
20. The teacher thinks up innovative activities for students to do.			
Strongly agree	1 (12.5%)	1 (14.3%)	5 (21.7%)
Agree	6 (75%)	6 (85.7%)	17 (73.9%)
Disagree	1 (12.5%)	0	1 (4.3%)
21. Students have a say in how class time is spent.			
Strongly agree	3 (33.3%)	2 (28.6%)	5 (21.7%)
Agree	6 (66.7%)	5 (71.4%)	15 (65.2%)
Disagree	0	0	3 (13%)
22. The teacher helps each student who is having trouble with the work.			
Strongly agree	1 (11.1%)	3 (42.9%)	14 (63.6%)
Agree	8 (88.9%)	4 (57.1%)	8 (36.4%)
23. Students in this class pay attention to what others are saying.			
Strongly agree	7 (77.8%)	6 (85.7%)	13 (56.5%)
Agree	2 (22.2%)	1 (14.3%)	10 (43.5%)
24. Students don't have much chance to get to know each other in this class.			
Agree	3 (33.3%)	0	6 (26.1%)
Disagree	4 (44.4%)	2 (28.6%)	15 (65.2%)
Strongly disagree	2 (22.2%)	5 (71.4%)	2 (8.7%)
25. Classes are a waste of time.			
Disagree	2 (22.2%)	3 (42.9%)	7 (30.4%)
Strongly disagree	7 (77.8%)	4 (57.1%)	16 (69.9%)
26. This is a disorganized class.			
Disagree	1 (11.1%)	2 (28.6%)	5 (21.7%)
Strongly disagree	8 (88.9%)	5 (71.4%)	18 (78.3%)
27. Teaching approaches in this class are characterized by innovation and variety.			
Strongly agree	5 (55.6%)	1 (14.3%)	9 (40.9%)
Agree	4 (44.4%)	6 (85.7%)	13 (59.1%)

Table 3—Continued

	Course Section		
	1 (Accel)	5 (Accel)	8 (Nonaccel)
28. Students are allowed to choose activities and how they will work.			
Strongly agree	0	0	4 (17.4%)
Agree	5 (55.6%)	7 (100%)	9 (39.1%)
Disagree	4 (44.4%)	0	10 (43.5%)
29. The teacher seldom moves around the classroom to talk with students.			
Agree	3 (33.3%)	1 (14.3%)	4 (17.4%)
Disagree	3 (33.3%)	3 (42.9%)	11 (47.8%)
Strongly disagree	3 (33.3%)	3 (42.9%)	8 (34.8%)
30. Students seldom present their work to the class.			
Strongly agree	0	0	1 (4.3%)
Agree	0	1 (14.3%)	9 (39.1%)
Disagree	8 (88.9%)	6 (85.7%)	10 (43.5%)
Strongly disagree	1 (11.1%)	0	3 (13%)
31. It takes a long time to get to know everybody by his/her first name in this class.			
Strongly agree	0	0	3 (13.6%)
Agree	1 (11.1%)	1 (14.3%)	4 (18.2%)
Disagree	6 (66.7%)	1 (14.3%)	11 (50%)
Strongly disagree	2 (22.2%)	5 (71.4%)	4 (18.2%)
32. Classes are boring.			
Disagree	4 (44.4%)	2 (28.6%)	11 (47.8%)
Strongly disagree	5 (55.6%)	5 (71.4%)	12 (52.2%)
33. Class assignments are clear so everyone knows what to do.			
Strongly agree	5 (55.6%)	5 (71.4%)	14 (63.3%)
Agree	4 (44.4%)	2 (28.6%)	6 (37.3%)
Disagree	0	0	1 (4.3%)
Strongly disagree	0	0	1 (4.3%)

Table 3—Continued

	Course Section		
	1 (Accel)	5 (Accel)	8 (Nonaccel)
34. The seating in this class is arranged in the same way each week.			
Strongly agree	4 (44.4%)	0	7 (31.8%)
Agree	5 (55.6%)	6 (85.7%)	7 (31.8%)
Disagree	0	0	5 (22.7%)
Strongly disagree	0	1 (14.3%)	3 (13.6%)
35. Teaching approaches allow students to proceed at their own pace.			
Strongly agree	2 (22.2%)	1 (14.3%)	6 (27.3%)
Agree	5 (55.6%)	4 (57.1%)	13 (59.1%)
Disagree	2 (22.2%)	2 (28.6%)	3 (13.6%)
36. The teacher isn't interested in student's problems.			
Disagree	3 (33.3%)	1 (14.3%)	10 (43.5%)
Strongly disagree	6 (66.7%)	6 (85.7%)	13 (56.5%)
37. There are opportunities for student to express opinions in this class.			
Strongly agree	8 (88.9%)	5 (71.4%)	19 (86.4%)
Agree	1 (11.1%)	2 (28.6%)	3 (13.6%)
38. Students in this class get to know each other.			
Strongly agree	3 (33.3%)	5 (71.4%)	7 (30.4%)
Agree	5 (55.6%)	2 (28.6%)	15 (65.2%)
Disagree	1 (11.1%)	0	1 (4.3%)
39. Students enjoy going to this class.			
Strongly agree	4 (44.4%)	4 (57.1%)	13 (56.5%)
Agree	5 (55.6%)	3 (42.9%)	10 (43.5%)
40. This class seldom starts on time.			
Strongly agree	0	1 (14.3%)	0
Agree	0	0	1 (4.3%)
Disagree	4 (44.4%)	2 (28.6%)	7 (30.4%)
Strongly disagree	5 (55.6%)	4 (57.1%)	15 (65.2%)

Table 3—Continued

	Course Section		
	1 (Accel)	5 (Accel)	8 (Nonaccel)
41. The teacher often thinks of unusual class activities.			
Strongly agree	0	1 (14.3%)	2 (8.7%)
Agree	6 (75%)	2 (28.6%)	9 (39.1%)
Disagree	2 (25%)	4 (57.1%)	12 (52.2%)
42. There is little opportunity for a student to pursue his/her particular interests in this class.			
Agree	0	1 (14.3%)	2 (8.7%)
Disagree	5 (62.5%)	4 (57.1%)	10 (43.5%)
Strongly disagree	3 (37.5%)	2 (28.6%)	11 (47.8%)
43. The teacher is unfriendly and inconsiderate towards students.			
Disagree	1 (11.1%)	0	2 (8.7%)
Strongly disagree	8 (88.9%)	7 (100%)	21 (91.3%)
44. The teacher dominates class discussion.			
Agree	1 (11.1%)	0	5 (17.4%)
Disagree	6 (66.7%)	5 (71.4%)	10 (43.5%)
Strongly disagree	2 (22.2%)	2 (28.6%)	9 (39.1%)
45. Students in this class aren't very interested in getting to know each other.			
Agree	2 (22.2%)	1 (14.3%)	1 (4.3%)
Disagree	4 (44.4%)	1 (14.3%)	13 (56.5%)
Strongly disagree	3 (33.3%)	5 (71.4%)	9 (39.1%)
46. Classes are interesting.			
Strongly agree	7 (77.8%)	4 (57.1%)	15 (65.2%)
Agree	2 (22.2%)	3 (42.9%)	7 (30.4%)
Strongly disagree	0	0	1 (4.3%)
47. Activities in this class are clearly and carefully planned.			
Strongly agree	3 (33.3%)	3 (42.9%)	14 (60.9%)
Agree	6 (66.7%)	4 (57.1%)	7 (30.4%)
Disagree	0	0	1 (4.3%)
Strongly disagree	0	0	1 (4.3%)

Table 3—Continued

	Course Section		
	1 (Accel)	5 (Accel)	8 (Nonaccel)
48. Students seem to do the same type of activities in every class.			
Strongly agree	1 (11.1%)	0	0
Agree	3 (33.3%)	5 (71.4%)	9 (39.1%)
Disagree	5 (55.6%)	2 (28.6%)	10 (43.5%)
Strongly disagree	0	0	4 (17.4%)
49. The teacher is unfriendly and inconsiderate towards students.			
Disagree	1 (11.1%)	0	2 (8.7%)
Strongly disagree	8 (88.9%)	7 (100%)	21 (91.3%)

To complete this analysis, the researcher weighed the findings against the three operational hypotheses previously mentioned in Chapter I. Again, these hypotheses were that the mean final examination grade point average for the accelerated sections would be greater or less than the mean final examination grade point average for the nonaccelerated sections, the mean course grade point average for the accelerated sections would be greater or less than the mean course grade point average for the nonaccelerated sections, and the average accelerated student opinion score measuring perceived learning would be greater or less than the average nonaccelerated student opinion score.

To accomplish this analysis, the researcher used three measures of learning: final examination grade, course grade, and the student's perception of his or her learning during the class. The measures were collected from all three sections studied and the results are outlined further in this chapter.

Survey Results Comparing the Accelerated and Nonaccelerated Sections

Tables 1, 2, and 3 outline the three survey instruments used to compare the similarities and differences of the three sections studied. Table 1 reviews the results of the short precourse survey. The questions asked of student participants are listed within the table.

Table 2 reviews the results of the short postcourse survey. The questions asked of student participants are listed within the table. These questions concerned student perceptions of their motivation, acquisition of knowledge, and effort in completing the course. In addition, the researcher included a question on the student's perception of course materials. It should be mentioned that one of the questions in the postcourse survey, the third question concerning knowledge acquired in the course, plays a role in assessing the student's learning in the course.

Table 3 records the results from the College and University Classroom Environment Instrument. This instrument was the final tool in the assessment of similarities and differences between course sections.

Statistical Results for Measures of Student Learning

After completing the analysis to establish similarities and dissimilarities between the sections studied, the researcher analyzed the measures of student learning which included scores for student perception of knowledge acquired, final examination grade, and course grade. Course grades and final examination grades varied from 3.0 to 4.0 on a 4-point scale. This small spread in grades was a concern for the

researcher but was considered large enough to allow for differentiation in student performance. This was confirmed during the statistical analysis.

The scores were first analyzed by mean and by section, using analysis of variance. This same analysis was then employed to compare these same scores by combining the two accelerated sections and comparing an accelerated group and nonaccelerated group. The results of these analyses of variance are found in Table 4 below.

Table 4
Analysis of Variance for Measures of Learning

	<i>F</i>	Sig.
Student's final examination grade and section number	4.105	.025
Student's course grade and section number	1.412	.256
Student's perceived knowledge acquired during course and section number	.372	.692
Student's final examination grade and format of class	8.427	.006
Student's course grade and format of class	2.899	.097
Student's perceived knowledge acquired during course and format of class	.003	.958

Finally, the researcher ran tests for correlation on each of the dependent variables, perception of acquisition of knowledge, final examination grade, and course grade with each of the many independent

variables collected through the three survey instruments. Of these, any correlation significant to .5 or less is listed in Table 5.

Table 5
Significant Correlations for Pre, Post, CUCEI, and Grade Results

Student's perceived motivation (postcourse) and course grade	.454**
Student currently in accelerated program and final examination grade	.443**
Student's perceived motivation (precourse) and course grade	.425**
Format of section and final examination grade	.422**
Student's perceived motivation (postcourse) and final examination grade	.417**
Student's perceived motivation (precourse) and final examination grade	.394*
Student's expectations for learning (precourse) and final examination grade	.339*
Student's expectations for learning (precourse) and course grade	.320*

* Significant at 0.05. ** Significant at 0.01.

CHAPTER V

ANALYSIS OF DATA

This chapter is intended to interpret this study and its results, and to offer future direction in the research of accelerated learning.

Comparing the Instructional Experiences of Students in the Three Course Sections

As mentioned previously, this study was designed to analyze the learning in two different instructional formats by employing the same instructor, teaching the same course, at the same school, using the same course materials in both an accelerated and nonaccelerated format. This having taken place, the next step was to measure the environments within the three sections of the course to assess the differences and similarities between the various sections. This was done through the administration of several surveys. The researcher will begin the analysis of the results from these surveys.

Analysis of Precourse Survey

The precourse survey can be crudely divided into two types of questions, student opinion and demographic. Both serve to shed light on the differences and similarities between the three studied. The first four questions of the precourse survey are all student opinion questions and

each seems to have a pattern that shows a great deal of similarity in student responses across all sections.

Question 1 dealt with the student's motivation in taking this class. Responses seemed to center around "somewhat motivated" and "somewhat unmotivated" for all three sections.

Question 2 concerns the student's expectation of knowledge to be acquired in the course. The vast majority of all respondents in all sections expected the knowledge acquired to be "a great deal" or "moderate."

In Question 3, all respondents in all sections claimed the effort they would put forth in the class would be "a great deal" or "moderate."

In Question 4, concerning the student's reason for taking the class, the vast majority of respondents in all sections said they were taking the class because it was required.

The final three questions of the precourse survey concern student demographics. Some of these results were surprising to the researcher and will be discussed further on.

Question 5 dealt with the student's current enrollment in an accelerated program. Student responses to this question came as no surprise. Only one student in the nonaccelerated course was currently enrolled in an accelerated program. All students in the accelerated program were enrolled in the accelerated program. Due to "guest" status, some accelerated programs allow nonaccelerated students to attend an accelerated course. But in the course studied, this was not the case.

There were marked differences in responses to Questions 6 and 7.

Accelerated programs usually have age and/or work experience restrictions. It was the researcher's expectation that the age of the nonaccelerated section would be dramatically lower than that of the accelerated section. It was also assumed that work experience in the population of nonaccelerated students would be dramatically higher. While a number of students in the nonaccelerated section were of traditional college student age (17–22), surprisingly, the difference in age and experience when compared to the accelerated sections, was less dramatic than expected. Section 1, the nonaccelerated section, had an average age of 24.32 and an average work experience of 7.2 years. Section 5, one of the accelerated sections, had an average age of 36.83 and average work experience of 19.1. Section 8, the second accelerated section, had an average age of 30.72 and work experience of 12.6.

This set of demographics give a mix of results concerning the populations of these classrooms. In the nonaccelerated section we have added credence to the results of this study as they pertain to accelerated learning, as there was less chance of results being clouded by large age differences in the accelerated and nonaccelerated populations.

The difference, which was expected, concerned a lack of any “traditional age” college students in the accelerated section. This, as was previously mentioned, is due to the age requirement of the program. This difference could still create a variable of importance to this and future studies. While final examination performance in the two groups was similar and the accelerated group did outperform the nonaccelerated

group in course grade, the lack of “traditional age” college students in the accelerated section may affect the classroom environment in ways that result in higher academic performance.

Analysis of variance was performed on the mean scores of all questions on the precourse survey. Only the second question concerning student expectations of knowledge acquisition showed statistically significant differences across sections.

After careful analysis of the results from the precourse survey, the researcher found little to differentiate the three sections involved in the study from one another other than the status of the class as an accelerated or nonaccelerated section and the lack of traditional age college students in the accelerated section. This finding is of great importance to the study as it allows the researcher to isolate acceleration as an independent variable. Obviously, there are still many variables that cannot be controlled or, for that matter, even identified. Some of the variables that were identified but not controlled in this study will be discussed later in this chapter.

Analysis of Postcourse Survey

The postcourse survey involved four questions. Three were rephrased inquiries based on questions from the precourse survey. The fourth question dealt with the student’s opinion of the course materials. In all four questions from the postcourse survey—concerning motivation during class, knowledge acquired during the class, effort put forth during class, and opinion of texts and materials used in class—respondents in

all sections responded similarly. Responses were clustered at the same end of that question's scale. Percentage results can be found in Table 2, found on page 41. The responses were as follows:

Motivation: All responded with "motivated" or "somewhat motivated."

Knowledge Acquired: All responded with "great deal" or "moderate."

Effort in Class: All responded with "great deal" or "moderate."

Text and Materials: All responded with "valuable" or "somewhat valuable."

The researcher employed analysis of variance to discover any differences in student results across the three course sections. Again, after careful analysis of the results from the postcourse survey, the researcher found little to differentiate the three course sections from one another. This is valuable to the final results of the study as it offers proof that the sections were similar in their instructional environment and experiences.

Analysis of the College and University Environment Instrument Survey

The last and certainly most lengthy of the student surveys was the CUCEI (see Appendix D). This set of questions was first analyzed through cross-tabulation with percentages. Students from all sections, both accelerated and nonaccelerated, exhibited similar responses to the majority of CUCEI questions. Responses from all sections were typically clustered together in response to a question.

Of the 48 questions found in the CUCEI, only 4 questions showed any statistical difference between the three course sections: Question 10, concerning whether students know other student's names; Question 17, which concerned friendships being made by students in the class; Question 24, concerning students getting to know each other in class; and Question 31, which asked about the duration of time required to get to know student's names.

These four questions received an ANOVA statistic making them significant at an alpha level of 0.1. It is the researcher's opinion that these differences were caused by the variation in the size of the sections rather than its being an accelerated or nonaccelerated course. This does not mean that this difference should be disregarded but that it may involve an independent variable that the researcher did not mean to analyze, namely, class size. The nonaccelerated section had 25 students, while the two accelerated sections had 7 and 9 students.

A comparison of percentage responses was not the only analysis completed on the CUCEI. Correlation was completed on all CUCEI questions comparing them first by course section and then by course format (accelerated sections combined versus nonaccelerated section). Only one correlation was significant at a level of 0.05. This correlation involved the question of students being known by their first name and it was significant when comparing by section and by course format. It should be noted that this correlation may be misleading since the nonaccelerated course was also larger, making it more challenging for the instructor to refer to all students by first name. After careful

consideration the researcher concludes these three course sections of students have had a similar instructional experience, other than the acceleration of their courses and, as previously mentioned, the size of their sections.

Based upon the previous analysis, the researcher assumes a level of similarity between the sections of this course and will now begin to compare the academic performance and, subsequently, the learning of the students involved in the study.

Comparing Student Learning in the Accelerated and Nonaccelerated Sections

Three measures of learning were employed in this study. These include the student's perception of knowledge acquired during the course (found in the postcourse survey), the final examination for the course, and the course grade. An analysis of variance was completed on each of the three measures of learning applied in this study comparing the learning measures from the three sections. The measures of learning were analyzed first as an accelerated group or nonaccelerated group and then, based upon section number. Only one measure was found to be significant: final examination. When comparing the accelerated and nonaccelerated group, the Student's *t* test resulted in an *F* of 8.427 with a significance of 0.006. When the ANOVA was completed, based upon section number, the *F* became 4.105 with a significance of 0.024. This stands to reason if the two sections of accelerated students are really "one population." The effect of separating the results of the two sections

would be a statistical “watering down” of the ANOVA results or, vice versa, the combining of the results from the two accelerated sections would create a more robust result.

The researcher followed up the ANOVA across all three course sections with the Tukey HSD and Scheffé post-hoc tests. These rather more conservative tests compared the final examination performance for the nonaccelerated section (section 8) against the final examination performance of two accelerated sections, 1 and 5. The Tukey HSD results were statistics of 0.060 and 0.094, respectively, with an alpha level of 0.050. The results of the Scheffé were even more critical of the ANOVA results with significance levels of 0.074 and 0.114, respectively.

The Student's t test results comparing course grade across the accelerated and nonaccelerated sections did offer up a significance of 0.097. While not significant to a 0.05 level, the researcher thought it important to point out due to its not reaching a level of significance. The inconsistency between the Student t and ANOVA results in the final examination grade and the course grade may be caused by the addition of other grading criteria included in the course grade. Students may have had other work or experiences in the class that could impact the student's course grade but were not necessarily based upon knowledge of course content. Some of these might include attendance, relationships built between instructor and student, or the writing of papers where grading was not just based upon content knowledge but other factors such as grammar or writing style. This would give reason for the final

examination being a clearer relational measure of content learning than course grade.

The third measure of student learning, the survey question concerning student perception of acquisition of knowledge, seemed to be a complete failure as a measurement device. It had no correlation with any of the other variables in the study, especially the course and final examination grades. This may have something to do with human nature and our own self-perception of what we consider learning, what we consider to be “a great deal” versus “little” knowledge, what we begin with as a perception of expected learning, and what our actual goal is in completing the course. The researcher has chosen to disregard this measure within the study. Suggestions will be found later in this chapter concerning its application in future research as a more robust measure of learning.

Summation

In conclusion, we must return to the three operational hypotheses of this study. For the first operational hypothesis, that the mean final examination grade point average for the accelerated sections will be greater or less than the mean final examination grade point average for the nonaccelerated sections, we fail to reject the null hypothesis based upon the ANOVA and Student's *t* results from the collected data. The results of the two groups, accelerated and nonaccelerated, are different and the accelerated group had greater student learning, based upon final examination scores. The researcher found an average final examination

grade of 3.72 for the nonaccelerated students and a final examination grade of 4.0 for all accelerated students. The researcher is most cautious in this decision due to the results of the post-hoc testing of the three sections.

It is valuable to point out that the correlation for participation in the accelerated program and final examination grade, .443, is the second highest correlation the researcher found when comparing correlations for all variables measured in this study. Concerning final examinations, we must tentatively conclude the accelerated students outperformed the nonaccelerated students.

For the second operational hypothesis, the mean course grade point average for the accelerated sections would be greater or less than the mean course grade point average for the nonaccelerated sections, the researcher found an average course grade of 3.84 for the nonaccelerated students and an average course grade of 4.0 for all accelerated students. The researcher cannot make a statistical differentiation between the mean final examination scores from the accelerated and nonaccelerated groups. Therefore, we reject the null.

The third operational hypothesis states the average accelerated student opinion score, measuring perceived learning, will be greater or less than the average nonaccelerated student opinion score. The researcher found an average student opinion score of 2.7 for the nonaccelerated students and a student opinion score of 2.69 for all accelerated students. The research is again unable to make a differentiation between the survey responses of the accelerated group

and the nonaccelerated group and, therefore, must reject the null hypothesis.

The original null hypothesis of this study states, "In an adult college student population possessing prior work experience, student learning in accelerated instruction courses will not be equal to student learning in courses providing nonaccelerated instruction." The researcher fails to reject this null based upon only one of the measures of student learning, the mean scores of student final examinations. This conclusion is based upon the higher performance measured for the accelerated group on the course final examination.

Findings in Light of Existing Research Studies

As mentioned previously in this study, very little research has been directly focused on accelerated adult courses where "seat time" in class was actually diminished. One of the few exceptions is the work of Wlodkowski (1998). Wlodkowski offers insight into academic performance in adult accelerated programs at Regis University and its partner schools throughout the United States. This study, while designed quite differently from Wlodkowski's, furnishes similar results pointing to equal, if not superior academic performance among accelerated adult students.

Implications for Professionals

A number of progressive schools throughout the United States have embraced accelerated learning as an alternative for adult students.

This research offers support that adults in accelerated education can attain equivalent content knowledge to adults in a nonaccelerated format of the same course, perhaps even surpassing the performance of nonaccelerated students. Accelerated students have long claimed they have acquired as much knowledge in accelerated courses as they had in their nonaccelerated ones. This study offers tacit support for those perceptions. Hopefully, it is a first step in encouraging more colleges to attempt creative learning formats for adult students. This study also places a responsibility on professionals in adult accelerated programs to open up their programs to greater research so that more light can be shed on this form of instruction.

It is important to point out that this research was done at a school following the Regis University model for the development of an accelerated program. It will require further research to see if similar results are found in other accelerated programs or only those which adhere to Regis's criteria.

In a different arena of adult learning, corporate training, this research gives further encouragement to training professionals to apply accelerated learning techniques in their instruction. The results are not only beneficial financially by having employees spend less time in class, but may also give students equal or better learning because of the accelerated nature of the course.

Limitations of This Study

The following section will discuss the limitations of this study observed by the researcher. These include the measurement of student perceptions as a measure of learning, the control of the course grading system employed, the influence of the student mix within the classroom, the effect of student enrollment restrictions on student learning, and measurement of student motivation.

Student Perception as a Measure of Learning

The researcher's use of "student perception of knowledge acquired in course" seems to be a weak measure. There was no significant correlation with this measure as there was with both the final examination and the course grade. If such a measure were to be employed in future research, a more careful definition with behavioral anchors would need to be imposed. This might give students some basis for judgment of their acquisition of knowledge.

Course Grade Design

In addition to the measure of student perception of learning, the measure of course grade possesses a great deal of variation. Any study measuring student learning will possess greater accuracy if the course grading can be designed to eliminate as much subjectivity as possible.

Student Mix Within the Classroom

While the demographics of the accelerated classroom can be controlled in part, based on admission requirements, that is not the case with the conventional classroom. Students could be any age. This mix may affect the learning environments of each classroom very differently. The influence of the younger student upon the learning of the older student will require further research.

The Limited Number of Courses Studied

This study was based upon three sections of one college course. The results of any study are strengthened by larger numbers of experimental subjects. In the same way, this study, with its tight parameters for instruction, course outlines, and texts, is limited to one course subject.

Selective Enrollment

Most accelerated programs have age or work experience restrictions. Because of these restrictions, it is entirely possible students in the accelerated program may see themselves as a select group. This identity might have some effect on academic performance. If this identity exists, the researcher hopes its influence will be captured in the questions concerning motivation.

Student Motivation

The study seeks to discover student perceptions of personal motivation. While this is a worthwhile goal, the study's design does not allow for a great deal of comparison of motivation across participants. The survey is designed in such a manner to allow individuals to base the measures of motivation on a personal scale and not on a common one shared by all participants. The researcher sees motivation as a significant variable in the behaviors of adult learners. This is reinforced by current research on adult learning theory. In this study, the potential power of motivation becomes evident again. The correlation coefficient for precourse motivation and course grade was .425, and precourse motivation and final examination grade was .394. When comparing course grade and final examination grade with postcourse motivation, the correlation coefficients are .454 and .417, respectively. These were all significant to a 0.01 level. These measures speak to the relationship between motivation and student performance.

It is important to add that, in a research design similar to the one completed here, Carrel and Menzel (1997) studied the effect of motivation on final examinations and found little correlation between the two. Motivation, as a variable in the process of adult learning, may have more of an effect on the performance of the two groups, accelerated and nonaccelerated, than can be discerned by the design of this study, but that assertion flies in the face of Carrel and Menzel's research.

Further study of any connection between accelerated learning and motivation is necessary.

Suggestions for Future Research

More Breadth in Research

One study of three sections of a course does not does not create definitive answers. The research completed in this study begs for further research at multiple locations and offering multiple courses. Will results be replicated with a different instructor, different course content, or different locations? Only time and further research will tell.

Measuring Learning

In future research a more careful measurement of learning should be employed. This involves two different burdens for the researcher. First, future studies should include a more careful analysis of all variables the instructor will employ to formulate course grades. This will allow the researcher to better understand how the instructor plans to measure student performance in the course.

Second, the current study's results are limited by the design of the pre- and postcourse surveys. In its current form, the question dealing with the student's perceived learning has a great deal of inherent variation based on student perception. This measurement will have more power if the questions include behavioral definitions to give students clearer descriptions from which to choose. As an example, in the case of

the question concerning knowledge acquired in the class, descriptions could be offered to define what “great deal,” “moderate,” or “little” meant.

Motivation

In future research, the variable of motivation must be carefully quantified. Adult learning theory consistently points to motivation as a major quality of adult learners. When measured through carefully designed student responses motivation can be compared to student academic performance. Does enrollment in an accelerated course create greater motivation? Does greater motivation create the desire to be in an accelerated course? Does age affect motivation in educational pursuits? And perhaps most important to the design of this study, does perception of personal motivation level vary from person to person and how can that perception of personal motivation be compared against some standard of motivation and its effect upon academic performance?

Conclusions

This study offers initial research and conclusions on the potential for accelerated adult learning to be a successful alternative for adults who possess work experience and are seeking a college degree. This work provides a framework for future research and offers direction to future researchers and professionals. Further research is necessary to shed light on the multitude of variables involved in adult learning in accelerated formats.

Appendix A
Precourse Student Opinion Survey

STUDENT OPINION SURVEY 1

1. Rate your motivation in taking this class:
- ☐ motivated
 - ☐ somewhat motivated
 - ☐ somewhat unmotivated
 - ☐ unmotivated
2. In completing this course, the knowledge you expect to acquire would best be described as:
- ☐ a great deal
 - ☐ moderate
 - ☐ little
 - ☐ none
3. The amount of effort you plan to put forth in completing this class would best be described as:
- ☐ a great deal
 - ☐ moderate
 - ☐ little
 - ☐ none
4. You are taking this course because:
- ☐ it is required
 - ☐ valuable subject matter
 - ☐ course schedule
 - ☐ appealing instructor
5. Are you currently enrolled in an accelerated program?
- ☐ Yes
 - ☐ No
6. How many years of work experience do you possess? _____
7. What is your age? _____
- Course Number _____
- Section Number _____
- Course Title _____
- Last four digits of your social security number _____

Appendix B
Postcourse Student Opinion Survey

STUDENT OPINION SURVEY 2

1. Rate your motivation during this class:
- ☐ motivated
 - ☐ somewhat motivated
 - ☐ somewhat unmotivated
 - ☐ unmotivated
2. In completing this course, the knowledge you acquired would best be described as:
- ☐ a great deal
 - ☐ moderate
 - ☐ little
 - ☐ none
3. The amount of effort you put forth in completing this class would best be described as:
- ☐ a great deal
 - ☐ moderate
 - ☐ little
 - ☐ none
4. The texts and materials distributed in this course were:
- ☐ valuable
 - ☐ somewhat valuable
 - ☐ of little value
 - ☐ not valuable

Course Number _____

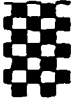
Section Number _____

Course Title _____

Last four digits of your
social security number _____

Appendix C

Permission Letter to Reproduce the College and University Classroom Environment Inventory



Professor Barry J Fraser FRASER BARRY FRASER FRASER
DIRECTOR

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Dr D Green

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Dear Dr Green

I am pleased to grant permission to both you and to Bell and Howell to publish the CUCEL.

Yours sincerely

BARRY J FRASER
Professor
Director
Science and Mathematics Education Centre



Appendix D
College and University Classroom Environment Inventory

COLLEGE AND UNIVERSITY CLASSROOM ENVIRONMENT INVENTORY

Directions

The purpose of this questionnaire is to find out your opinions about the class you are attending right now. This questionnaire is designed for use in gathering opinions about small classes (5–30 people).

This questionnaire assesses your opinion about what this class is actually like.

Indicate your opinion about each questionnaire statement by circling:

SA if you **STRONGLY AGREE** that it describes what this class is actually like.

A if you **AGREE** that it describes what this class is actually like.

D if you **DISAGREE** that it describes what this class is actually like.

SD if you **STRONGLY DISAGREE** that it describes what this class is actually like.

- | | | | | |
|---|----|---|---|----|
| 1. The teacher considers students' feelings. | SA | A | D | SD |
| 2. The teacher talks rather than listens. | SA | A | D | SD |
| 3. The class is made up of individuals who don't know each other well. | SA | A | D | SD |
| 4. The students look forward to coming to classes. | SA | A | D | SD |
| 5. Students know exactly what has to be done in our classes. | SA | A | D | SD |
| 6. New ideas are seldom tried out in this class. | SA | A | D | SD |
| 7. All students in the class are expected to do the same work in the same way and in the same time. | SA | A | D | SD |
| 8. The teacher talks individually with students. | SA | A | D | SD |
| 9. Students put effort into what they do in class. | SA | A | D | SD |
| 10. Each student knows the other members of the class by their first names. | SA | A | D | SD |
| 11. Students are dissatisfied with what is done in the class. | SA | A | D | SD |
| 12. Getting a certain amount of work done is important in this class. | SA | A | D | SD |
| 13. New and different ways of teaching are seldom used in this class. | SA | A | D | SD |
| 14. Students are generally allowed to work at their own pace. | SA | A | D | SD |

15. The teacher goes out of his/her way to help students.	SA	A	D	SD
16. Students "clockwatch" in this class.	SA	A	D	SD
17. Friendships are made among students in this class.	SA	A	D	SD
18. After the class the students have a sense of satisfaction.	SA	A	D	SD
19. The group often gets sidetracked instead of sticking to the point.	SA	A	D	SD
20. The teacher thinks up innovative activities for students to do.	SA	A	D	SD
21. Students have a say in how class time is spent.	SA	A	D	SD
22. The teacher helps each student who is having trouble with the work.	SA	A	D	SD
23. Students in this class pay attention to what others are saying.	SA	A	D	SD
24. Students don't have much chance to get to know each other in this class.	SA	A	D	SD
25. Classes are a waste of time.	SA	A	D	SD
26. This is a disorganized class.	SA	A	D	SD
27. Teaching approaches in this class are characterized by innovation and variety.	SA	A	D	SD
28. Students are allowed to choose activities and how they will work.	SA	A	D	SD
29. The teacher seldom moves around the classroom to talk with students.	SA	A	D	SD
30. Students seldom present their work to the class.	SA	A	D	SD
31. It takes a long time to get to know everybody by his/her first name in this class.	SA	A	D	SD
32. Classes are boring.	SA	A	D	SD
33. Class assignments are clear so everyone knows what to do.	SA	A	D	SD
34. The seating in this class is arranged in the same way each week.	SA	A	D	SD

- | | | | | |
|---|----|---|---|----|
| 35. Teaching approaches allow students to proceed at their own pace. | SA | A | D | SD |
| 36. The teacher isn't interested in student's problems. | SA | A | D | SD |
| 37. There are opportunities for student to express opinions in this class. | SA | A | D | SD |
| 38. Students in this class get to know each other. | SA | A | D | SD |
| 39. Student enjoy going to this class. | SA | A | D | SD |
| 40. This class seldom starts on time. | SA | A | D | SD |
| 41. The teacher often thinks of unusual class activities. | SA | A | D | SD |
| 42. There is little opportunity for a student to pursue his/her particular interests in this class. | SA | A | D | SD |
| 43. The teacher is unfriendly and inconsiderate towards students. | SA | A | D | SD |
| 44. The teacher dominates class discussion. | SA | A | D | SD |
| 45. Students in this class aren't very interested in getting to know each other. | SA | A | D | SD |
| 46. Classes are interesting. | SA | A | D | SD |
| 47. Activities in this class are clearly and carefully planned. | SA | A | D | SD |
| 48. Students seem to do the same type of activities in every class. | SA | A | D | SD |

Course Number _____

Last four digits of your
social security number _____

Instructor Name _____

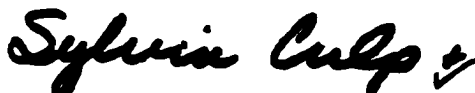
Appendix E
Human Subjects Institutional Review Board
Letter of Approval

WESTERN MICHIGAN UNIVERSITY

Date: 22 December 1998

To: David Cowden, Principal Investigator
Donald Green, Student Investigator for dissertation

From: Sylvia Culp, Chair



Re: HSIRB Project Number 98-10-11

This letter will serve as confirmation that your research project entitled "A Study of Adult Learning in Accelerated Courses" has been approved under the expedited category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application *at the Davenport College (Grand Rapids, Michigan) and Lewis University (Romeoville, Illinois) sites only.*

Please note that you may only conduct this research exactly in the form it was approved. You must seek specific board approval for any changes in this project. You must also seek reapproval if the project extends beyond the termination date noted below. In addition if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: 3 November 1999

Appendix F
Consent Form

WESTERN MICHIGAN UNIVERSITY
 H. S. I. R. B.
 Approved for use for one year from this date:
 DEC 22 1998
Sylvia Culp
 HSIRB Chair

**Western Michigan University
 Department of Educational Leadership**

You are invited to participate in a research project entitled "A Study of Adult Learning in Accelerated Courses" designed to analyze learning in adult college courses. The research is being conducted by Dr. Dave Cowden and Donald Green from Western Michigan University, Department of Educational Leadership. This research is being conducted as part of the dissertation requirements for Donald Green.

This research project is comprised of three short surveys that will be administered during your course and the anonymous collection of exam scores and course grades. The survey results and all scores collected will be kept anonymous and your students will code them by using the last four digits of their social security number. All data will be kept in association with the requested codes instead of student identification. This data will be stored at Western Michigan University.

One of the instruments to be administered in this research is the College and University Classroom Environment Instrument (CUCEI). This instrument is intended to measure the classroom environment. Because it is a measure of environment, there is the risk that implications can be made about your work. Approximately a dozen institutions will be taking part in this study. The investigators will obscure the identities of colleges, programs, courses, and faculty to protect from any reflection upon an individual faculty's work.

This research will benefit you, the faculty participant in two distinct ways. The researcher will be sharing results of the environment and learning measures with you. These results will be confidential to you and the researcher. In addition, during the researcher's work in accelerated learning, many faculty have asked about research projects comparing learning in different formats. This research could shed light on these questions.

You may choose not to participate or to end this study at any time. In either case, if you choose not to, simply contact the researcher, Don Green, at (616) 531-2811 or e-mail the researcher at dgreen7777@aol.com and inform him. If you have any questions you may contact Dr. Dave Cowden at (616) 387-3883, Don Green at (616) 531-2811, the Human Subjects Institutional Review Board (HSIRB) at (616) 387-8293, or the Vice President for Research at (616) 387-8298.

This consent document has been approved for use for one year by the Human Subjects Institutional Review Board as indicated by the stamped date and signature of the Board Chair in the upper right corner. You should sign this document if the corner does not show a stamped date and signature.

To provide consent for your participation in this study, please sign and date below.

 Signature

 Date

 Consent Obtained By

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