

**CONTINUOUS CLASSROOM ASSESSMENT:
A PARTNERSHIP IN LEARNING**

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Abstract

The primary focus of this project will try to answer the questions if Continuous Classroom Assessment based on anonymous feedback from students on a daily basis directly increases the students' level of achievement, resulting in higher achievement levels and does it influence the instructor's methodology of teaching. Classroom Assessment consists of small-scale instruments conducted in college classrooms by discipline based teachers to determine what students are learning in that class and how to improve learning by providing instructors with the kind of feedback they need to refine their instructional decisions. The longitudinal study over a period of three academic years involved 469 adult students by using Classroom Assessment Techniques in a technical writing English class in the Criminal Justice program at Lethbridge Community College. The study utilized the specific technique of students having to submit comment cards in which they would provide feedback or their assessment on their comprehension levels of the material taught during a particular unit. The assessment instruments were only used during the research paper/report writing unit. One of the Key Performance Indicators (student satisfaction) as set out by Department of Learning (Advanced Education sector), formed a significant, but a small part of the rationale for this research. To support the Mission Statement of Lethbridge Community College to be a 'learner-centered' institution also was an significant factor for implementing this study. Patricia Cross and Thomas Angelo are prolific writers in promoting their Classroom Assessment Techniques, yet the

majority of their work is focused on describing their philosophy and methodology.

Research on the influence of Continuous Classroom Assessment at the post-secondary level is limited with only a few examples documented from post-secondary institutions in the United States and fewer examples for Canadian institutions. The major research in this area has been done by the California state college system that explored the influence of Classroom Assessment Techniques (CATs) on student retention rates while this research dealt with the affects of CATs on student achievement levels and on instructor's teaching methodology. Through close observation of students in the process of learning, the collection of frequent feedback on students' learning, and the design of modest classroom assessment tools, the study illustrated an increase in students' success rate, how students responded to this particular teaching approach, and more specifically, the changes that occurred in the instructor's teaching style.

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CONTINUOUS CLASSROOM ASSESSMENT:

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Chapter 1

Introduction

The current reform movements based on performance and accountability indicators in education are not new phenomenons or trends. In many countries, through the efforts of educational researchers, teachers, administrators and politicians, an intense examination of the quality of post secondary education has occurred. Through mounting political and economic pressures to improve the quality of education in colleges and universities, terms such as assessment and evaluation have become key phrases that have been applied to a wide range of approaches to measure educational effectiveness. The Assessment Movement that started in the 1980's is conducted for the purpose of improving effectiveness at the system, campus or program level (Angelo & Cross, 1993). Government officials and institutional administrators use the results of these assessments to respond to the external reporting requirements for financial accountability, to guide curriculum development or to evaluate the effectiveness of specific programs. In California, the state-wide Accountability Indicators ensure colleges and universities measure factors such as students' success, students' retention rate, students' satisfaction level and students' final grades, all of which are linked to fiscal responsibility (Catkin & Kalina, 1993). The private sector has influenced the educational assessment process by infusing terms such as Total Quality Management (TQM), outcome-based education,

client-centered practices and cost recovery into institutions' vocabulary when they are describing their mandates or their students' achievements.

Educational theories or practices are not just contained within one nation's boundaries. In 1993, the province of Alberta introduced the Key Performance Indicators (KPI's); a series of assessment instruments to be used by the post-secondary institutions. The KPI's statistically measure seventeen factors; some of factors include student satisfaction levels, student completion rates, and student instructional costs. These performance indicators based on the four goals, accessibility, responsiveness, affordability and accountability, as set out by the Department of Learning, formerly known as the Alberta Advanced Education, have been implemented throughout the post-secondary system. Current government funding to the institutions is based on criteria that recognizes an institution's performance in providing accessibility, quality and relevancy of programs to meet the needs of the students at the lowest possible cost. Prior to this funding mechanism being implemented in 1996-97 fiscal year, representatives of the Department of Learning concerned with the Advanced Education sector consulted with the learners and the providers of learning opportunities to develop measurements as to how the expected results must be determined, how indicators of performance would be developed, and how performance data would be defined and collected. In the documents outlining these new initiatives, the department strongly urged that the institutions' faculty members must have the ability to explore, discuss and research new ideas to develop performance measures at the course or program level (New Directions for Adult

Learning in Alberta, 1994).

At the same time that the Alberta Department of Learning was restructuring the post-secondary system, Lethbridge Community College was also redefining its organizational structure with the assistance of Terry O'Banion and others to transform the previous operational structure of Lethbridge Community College into a 'learning college'. By emphasizing the concept that 'learning' was the center focus of the college's mission statement and mandate and by focusing on the learners' needs, the college moved to transform itself into a flexible and responsive institution to meet the needs of all its stakeholders. The entire college community, made up of students, faculty, administrators, support staff and board members, was encouraged to explore and experiment with ideas and concepts that would support the college's new mission and values.

The emphasis on ensuring student learning and creating positive learning environments is not a new focus of concern for educators. In fact, the sheer volume of educational research in these areas for the past several decades proves that educators have always been involved with innovation and experimentation, attempting to provide and measure these desirable learning outcomes. In 1986, in an effort to determine a means for faculty to actively explore new instructional methods, K. Patricia Cross developed an approach called Classroom Research: a systematic disciplined study of teaching and learning in the teachers' own classrooms (Angelo, 1991a). Cross envisioned Classroom Research as a way to reduce the distance between the educational researchers and theory and the practitioners and actual teaching practices. "In this action-oriented applied form

of inquiry, researcher and teacher are one and the same person, seeking answers to discipline-specific questions and to apply what they discover to improve learning in their own classrooms” (Angelo 1991b, p. 8). In conjunction with Thomas Angelo, Cross co-authored Classroom Assessment Techniques: A Handbook for College Teacher. Published in 1988, and revised in 1993, the text outlined the underlying philosophy and techniques of Classroom Assessment, enabling teachers regardless of their discipline, to incorporate the evaluation strategies into their classrooms. Both authors believed that valuable classroom research would develop through the merging of teachers’ personal theories with the formal educational research theories.

This project, based on Cross and Angelo’s research, hoped to explore that through close observation of students in the process of learning, the collection of frequent feedback on students’ learning and the design of modest classroom assessment instruments, a college instructor could learn about how her students learn and more specifically, how students respond to her particular teaching approaches.

Statement of Problem

Faculty in colleges and universities always have been interested in studying student achievement in relationship to teaching effectiveness. Katz (1987) stated the problem that many teachers face on a continual basis in terms of being effective teachers, is not a lack of wanting to be a good teacher, but one of not knowing quite how to it. In order to be more effective in the classroom, teachers need to collect and analyze students’

responses to teaching and monitor learning in way that can show how teaching can be improved.

In large college classes, it is difficult for an instructor to respond to each student's own individual concerns. There are students who feel confident enough to stop and question the instructor for clarification; however, there is always a large number of students who preferred to remain quiet in class, even though they may be experiencing difficulty with the material. Thus, the instructor may be aware of only a few students' problem areas pertaining to the course content. While the more vocal students may have queries that reflect the majority of the students' questions in that particular class, the instructor is placed in a position of answering only the questions posed to him/her.

English instructors have ample opportunities to monitor the progress of individual students by reading their papers and their revisions, but this form of instructor/student interaction may not answer the questions as to how well the individual faculty member is teaching the content or how well the individual student is learning. Even when substantial routine information is gathered on student learning through general questions, quizzes, term papers and final exams, it is often too late to readjust teaching strategies to enhance learning or to reinforce concepts. These tools of formal classroom evaluation are summative instruments, limited largely by the constraint that they are often administered at the completion of the learning period; yet, they are the most commonly used instruments to make judgments on individual student's achievement levels and to assign

students' final grades.

The term evaluation can also be understood by some individuals as student evaluation of instructor's competence and of the course content. This type of feedback is done usually at the end of the course or semester. This form of student evaluation or feedback may often be used as a determination factor for future employment possibilities, rather than being used as an instrument to enable the teacher/instructor an opportunity to modify or improve the learning environment on a timely basis. Student feedback given at the end of the semester is not useful to instructors who acting under the assumption that student learning was taking place, have no opportunity or recourse to refine or readjust the learning activity.

College students can not be described as neophytes in terms of education. As products of twelve or more years in various educational systems, they have their own perceived personal experiences from positive or negative learning environments. The profile of students entering colleges, show that they are older, they have definite ideas as to what career they wish to pursue, and they are often knowledgeable regarding the academic requirements they need to be successful. Therefore, student feedback on courses is likely to be valid data based on their experience on how well the material met their needs, on the quality of their learning environment and on the instructor's responsiveness to the students.

An questionnaire submitted each semester to all Criminal Justice students enrolled in English 175, the technical writing English class geared specifically for the law

enforcement, security or correctional professions, highlights that an overwhelming number of students are aware of the skill level in English required for their chosen career path (Buis, 1992-99b). The data collected at Lethbridge Community College is consistent with the data collected by Westmoreland County Community College where 95% of the Criminal Justice students rated writing skills as extremely important (Metzgar, 1992).

Criminal Justice students and faculty know that just having a diploma or a degree is not sufficient enough requisite to guarantee an applicant a position in his/her chosen career. Potential employers who include the majority of municipal police services, provincial policing agencies, the Royal Canadian Mounted Police (RCMP), Corrections Canada and provincial correctional agencies have, as part of their screening process, a rigorous applicants' examination testing English skills. In the spring of 1995, Calgary Police Service received over 3500 applicants from all over Canada for twenty-five new recruit positions. After the applicant's recruit exam was administered, the field of potential applicants was narrowed down to 250 individuals who then would continue with the rest of the recruiting procedures to determine the final candidates (Calgary Police Service, Interview, 1995). Currently, the Royal Canadian Mounted Police's recruit applicant examination requires an passing mark of 3.9 out of a possible 4.0 on the English portion of the exam for an individual to be considered as a potential candidate (RCMP, Interview, 1999). Other basic requirements for a career in the Criminal Justice field, such as the candidate's educational background, physical fitness, past experience and desirable personality traits, are only examined after the initial applicant's recruit examination has

been successfully passed.

In recognition of the external requirements of the law enforcement field and the stated goals of the students, and with the encouragement from the college to experiment and explore teaching methods to support the 'learning college' mandate, in the fall of 1996, while preparing to teach English 175, I decided assess the level of the students' mastery of the course content based on the effectiveness of my teaching. The project would be conducted as a longitudinal study over three academic years by using Classroom Assessment Techniques. Focusing on two of the possible fifty techniques, I incorporated Angelo and Cross's (1993) maxim "Adapt: Don't Adopt" (p. 105) by modifying the One-Minute Paper and the Muddiest Point techniques into one combined technique to have an instrument, which I called Comment Cards, that would reflect my teaching objectives, my teaching style, and the course goals.

In the winter semester of 1996, as a pilot project and as part of the course requirement for Education 5500, I initially introduced the use of Continuous Classroom Assessment Techniques (CATSs) in English 156. The feedback instruments were only used during the research paper/report writing unit. The students, males between the ages of 18-29 years, enrolled in English 156 were in the Business Administration Program (Professional Golf Management Major). The material covered in this particular unit in English 156 was identical in content to research paper/report writing unit in English 175. This particular unit was chosen as it traditionally the unit that students tend to have difficulty mastering.

The results in the project showed that when comparing the research paper/report marks, the 1996 classes obtained a median mark of 79.3 % (C+) versus the non-treated English 156 (Golf Management) class from 1995, where the median mark was 65% (D+). In terms of final grades for the course, the 1995 marks recorded 75.6 %(C+) as the median as compared to the 1996 median grade that was 82.7% (B). Sixty -five percent of the 1996 class received a grade of B (80%) or better compared to the 1995 class where only twenty-seven percent of the class received the final grade of B or better (Buis, 1996a). Thus, results suggested that the use of CATs did indeed facilitate better student learning and achievement. But this pilot project did not address whether or not, the use of CATs influenced my teaching methods or presentation style.

Also in reviewing the results of the pilot project, weaknesses in design in some of the assessment and feedback instruments were noted. The majority of the questions on the pre-test and some of the questions on the Comment Cards lead to responses pertaining to attitudes or values versus responses measuring mastery of skills or levels of understanding. While there was an increase in marks, the pilot project was not of sufficient depth to determine whether or not Continuous Classroom Assessment Techniques directly increased the students' level of learning, resulting in higher marks or directly influenced the instructor's style of teaching.

In this study, it was my intention to correct the areas of shortcoming noted in the pilot project. This four semester project over three years, involving 469 Criminal Justice students, will try to determine if through the use of Continuous Classroom Assessment

Techniques, would there be an increase in the students' levels of learning and would there be a change in the instructor's style of teaching.

Definitions of Terminology Used in Classroom Assessment Techniques

In order to understand the philosophy of Classroom Assessment, clarification of terms and definitions used by practitioners of the techniques should be made.

Education Research

Educational Research seeks to discover and validate general laws of teaching and learning, usually requiring sophisticated knowledge of research design, sampling techniques and statistical analysis (Angelo, 1991a, p. 5).

Classroom Research

The purpose of classroom research is to contribute to the professionalization of teaching through providing the knowledge, understanding and insights that will sensitize teachers to the struggles of students during the learning process. Classroom research consists of any systematic inquiry designed and conducted for the purpose of increasing insight and understanding of the relationships between teaching and learning (Cross, 1981, p. 136).

Assessment

The purpose of large-scale assessment programs is primarily to provide accountability through large scale testing programs, conducted at institutional or provincial level, usually by measurement experts to determine what students have learned in college (Angelo, 1991a, p. 6).

Classroom Assessment

Classroom Assessment consists of small-scale assessments conducted continuously in college classrooms by discipline based teachers to determine what students are learning in that class and to improve learning directly by providing teachers with the kind of feedback they need to refine their instructional decisions (Angelo, 1991a, p. 6).

Classroom Assessment Techniques (CATs)

Tools faculty use to gather limited focused feedback on student learning to quickly assess the whole class's learning in order to adjust instruction; not to evaluate the achievement of an individual student in order to assign a grade. CATs are ungraded and usually anonymous (Angelo, 1991a, p. 4).

Classroom Research Projects

Classroom Research Projects are conducted by teachers using CATs to design and

carry out systematic semester or year long comprehensive studies of student learning (Cross, 1981, p. 133).

Feedback Techniques

Cross and Angelo developed fifty different CATs to be used to assess various teaching goals. The two Classroom Assessment Techniques (CATs) referred to as the One-Minute Paper or the Muddiest Point that consist of brief written comments, questions or checklists regarding content taught which are submitted to an instructor by the students at the end of each class. Instructor designed CATs based on these two techniques will be used in this study.

Chapter 2

Survey of Literature

Teaching can be defined to include a wide range of instructional design skills, such as test construction, development of syllabus, course organization, record keeping and management. Teaching can also be defined as being composed of instructional delivery skills, knowledge of subject, enthusiasm and concern for students. A third interpretation of teaching might also include that it takes place through a series of shared experiences in which learning or growth can take place for both the facilitator and the learner.

Thiessen's Classroom-Based Teacher Development (CBTD) Model is an approach to promote the professional growth of teachers within the daily realities of classroom through adapting, studying and transforming classroom practices. Faculty development is intrinsically connected with the classroom experiences they share with students. "Students and teachers are active participants in all aspects of the sharing, teaching, and learning and in making decisions about the purposes, organization, content, approaches and the evaluation of learning" (Thiessen, 1992, p. 97). The relationship formed between an instructor as a facilitator and the adult student as the learner in a positive learning environment is that both parties have equal and collaborative responsibilities to contribute to the learning process and opportunities to learn from each other.

Teachers hold strong personal beliefs for using certain strategies in providing opportunities that will allow students to have a sense of control in their learning activities

and to make learning relevant by relating the content to the student's needs, goals, interest, values and experiences (Hootstein, 1994). Shapiro (1994) basing her findings on several previous studies on classroom environment stated that the difference between a classroom in which students achieve in and one in which they do not, is due to the amount of negative or positive interaction between the individual students, and among the class as a whole and between the student and the teacher.

At the post-secondary level of education, the constraints of large classes, the controlled lecture schedules and the limited opportunities to engage with students over long periods of time, pose unique problems that may or may not hinder the instructor/student relationship. In order for an instructor to improve upon his/her teaching skills, he/she must be fully aware of the students' perception of the learning experience. Gil (1987) suggested that student feedback needs to be one of the main techniques used in faculty development and its primary focus should be on instructional improvement.

Feedback and evaluation are related, but different processes. Student feedback can improve faculty performance while student evaluations make judgments regarding its worth. Student input is most useful when it occurs during the process of instruction and when it includes students' subjective comments which final course evaluations often do not. Instructors become aware of specific and important behaviors that affect student learning through frequently conducted surveys. "This awareness is a key to change" (Gil, 1987, p. 60). Centra (as qtd. in Gil, 1987) provided evidence that course evaluation

performed in mid-semester can bring about changes in teaching practices.

In qualitative studies done on frequency of student and faculty communication (Anthony, 1992), the findings were of the same general nature as Shapiro's research (1994) in that teachers responded in follow-up questionnaires that they themselves felt better about teaching and that their students' responses showed the students felt better about learning when there was positive interaction between the two parties. The key to positive interaction between the student and the faculty member is that the feedback instrument is perceived by both individuals as a non-threatening procedure.

The One-Minute Paper was originally developed by Wilson (1986), a physics professor at University of California, Berkeley, who asked students to respond anonymously to the following two questions at the end of each class period. "What is the most important thing you learned in class today?" and "What question remains uppermost in your mind?". By reviewing the students' responses, Wilson started to capitalize on what the students already learned and how to focus on the confusing material that was impeding further learning during a review period at the beginning of the next lecture. Mostteller (1989) a professor of Statistics at Harvard University adapted the One-Minute Paper technique by asking his students the question, "What was the muddiest point in my lecture today?"

These two educators were the precursors of the Cross/Angelo Classroom Assessment Techniques that is based on the concept that formative assessment can and will allow faculty to adjust their teaching to maximize student learning versus summative

student evaluation such as final tests where marks can not be changed nor can teaching be readjusted since evaluation occurs after the fact.

The majority of the literature in this area is written in the autobiographical style, relating narratives on how Classroom Assessment Techniques (CATs) affected the students or the faculty. Cottell (1991), Olmsted (1991), and Kort (1992) discuss their observations on the positive climate and relationships created between instructor and students in classrooms using CATs. The results that they found translated into positive student evaluations and in renewed energy or enthusiasm for teaching within the instructors themselves.

Kort (1991) found in her English college classes that her preferences for doing free writing or the clustering of ideas during the pre-writing process contradicted the students' need for more structural approaches that caused her to revised her methods of teaching this unit. After reviewing the students comment cards, she reported back to the class her new awareness of the different learning styles that were apparent in her class. As a result, she proceeded to administer Kolb's Learning Style Inventory to assist the students in understanding their preferred learning styles. Students reported that being aware of their individual learning styles not only enhanced their learning in her classes, but also enriched their learning in other courses.

Cottell (1991) used three various different CATs: Quality Control Circles, Self-Diagnostic Learning Logs and One-Minute Papers. He found that through the Quality Control Circles, an adaptation from the industrial model of Quality Control Circles used

on production lines to assess possible areas of concern between managers and workers, that the student representatives from each of his classes affirmed the students' positive reactions to the One-Minute Paper CATs. While the feedback was to be anonymous, he noticed that many of his students were signing their names, displaying the level of trust the students had in that their questions and comments were being taken seriously. Cottell in his experience, noted that instructors' reactions to all comments must reflect validity in that instructors consider even negative comments have validity and they must be taken seriously.

Olmsted (1991) using a variety of CATs tested the affect of the techniques in large chemistry classes taught in the lecture format. Through past personal experience, he recognized that his classes usually consisted by students who tended to suffer from 'chemophobia'. Students experienced failure and/or dropout rates exceeding 25 percent and students' average GPA was approximately 1.9 on the 4-point scale. While any meaningful statistical analysis of the techniques used was precluded by the absence of a suitable control group, he noted an increase in positive student evaluations of his teaching methods. Responses from student questionnaires indicated a high level of personal student satisfaction with the course material. But in his experiments, test performances did not significantly improve and student success rates in subsequent courses were yet undetermined. Olmsted personally attributed the significant improvement of students' attitudes to the use of CATs and to the student feedback instruments. Olmsted's only statistical measurement taken prior to CATs being introduced into his classes, was that

less than 10% of the students met with him to discuss problems. “In the first semester of using CATs, through a log of office hours’ visitors, over 50% of the students made at least a one hour visit” (Olmsted, 1991, p. 63). He saw the increase in student contact hours as an indicator of the increased number of students being more active in their learning and more participatory in the learning process. Other researchers have found there is a strong positive correlation between students’ learning and their evaluation of a course and its instructor. (Howard, 1984). Students tend to rate courses and instructors more highly when they believe that they have learned a lot and or when they have received high grades.

Nakaji (1991) employing CATs in his physics classes, reported that “Classroom Assessment done in frequent small, easily manageable and increments produced tangible and useful improvements in teaching, how students learn, and just as importantly, how students view themselves and the quality of their classroom experience” (p. 86).

Walker (1991) concerned about the achievement level achieved in his large lecture format classes, used a different approach with CATs. Abstracting models from concepts used in learning theories, Walker (1991) developed an model called MORE (Motivation, Organization, Rehearsal and Elaboration). In addition, he adapted two CATs that complemented his model to be used in coping with the inherent problems of teaching large classes where it was difficult to monitor individual student’s learning and understanding. He felt the two modified techniques based on the Memory Matrix and the Concept Map produced the most dramatic increases. Due to class size and time constraints, he found

data based on random samples of 25 to 50 percent of the classes to be quite reliable for assessing the whole class's level of understanding. Based on the fact that he felt the course content, texts and examinations were similar from one year to another, he compared the test performance of students taught without CATs against the performance of students taught with CATs for the years 1988-89 and 1989-90. On the average, students taught with CATs scored higher on tests at .001 level of statistical significance than did students who learned without the benefits of CATs. The total test means of these two groups were 86.3% for the treatment group and 76.5 % for the control group. "Eighteen percent of the 1988-89 students received an 'A' or 'B' grade on tests while 59% of the 1989-90 students received 'A' or 'B' test scores" (Walker, 1991, p. 74). Students taught with CATs scored higher on each of the course's five unit tests than did the previous students. "In considering the variable of student entry characteristics that could affect the test scores, a comparison showed the 1988-89 students had a cumulative GPA of 2.79 versus the 1989-90 students of 2.71" (Walker, 1991, p. 73). Another variable introduced by Walker was that the 1989-90 grouping was given the opportunity to write "recovery tests". While recognizing that familiarity and luck may have artificially inflated the final test scores, with approximately half of 9.8 % improvement attributed to the recovery quizzes, the mean difference was still statistically significant at the .05 level.

In terms of noticing the effect of CATs on his instructional methods and course design, Walker found through student feedback that one particular unit in which he assumed his expertise was the greatest, was poorly received by the students. Without

meaning to, he substantiated Feldman's research (1987) that there was no direct relationship between his research expertise in the discipline and his teaching effectiveness.

In contrast to the studies done by individuals within their own classrooms, The College of Marin, (Stetson, 1991) conducted a larger study over the period of four semesters (1988 -1991) involving 69 faculty members and 3500 students. Upon completion of the project, The College of Marin could not find support with significant evidence that there were improved class grade averages or retention rates as a result of incorporating the usage of CATs. Yet the faculty reported significant changes occurred in their classrooms. The gap between what the faculty felt or observed happening in their classes versus no noticeable improvements in student achievement levels was justified by college officials in two ways. The first observation was that CATs did not improve learning regardless of what other benefits it may offer. The other explanation was based on that several faculty members focused on CATs to promote metacognitive skills, critical thinking or self-esteem, but the content of the courses' tests did not grade these elements. To test a second hypotheses that student learning was improving regardless of any noticeable improvement on grades, the college assessed the effects of Classroom Research on Gamason and Chickering's Seven Principles for Good Practice in Undergraduate Education (1987). "The College of Marin proposed that if CAT supported one or more of the seven principles of learning based on fifty years of research on teaching and learning in higher education" (Stetson, 1991, p. 124), improved student learning was occurring. Through this internal study, the college found that by actively

involving students in learning, by offering students frequent anonymous ungraded opportunities to give feedback to instructors and by promoting more productive student-faculty contact, the college had used three examples of important and well-established principles for effective student learning and that CATs had improved student achievement.

Many two year colleges in the United States focus on students who can be described as returning adult students, adult minority students and high risk adults. Thus the emphasis on classroom environment or climate and retention as key evaluators when appraising the merit of Classroom Assessment Techniques supports the rationale as why some colleges state their experiences had positive outcomes. In Theobald-Osborne's studies about adult learners and predictor variables for success, they reported that faculty interaction was the greatest predictor of positive educational outcomes for adult students. Yet, a positive climate and relationship between faculty and students does not necessarily equate into higher achievement or mastery of skills as concise measurements of student performance (qtd. in Catlin & Kalina, 1993).

In 1992, the California Community College Chancellor's office funded a study to be conducted by eight colleges to measure statistically positive relationships between the use of CATs and student outcomes such as grades or retention, as a part of the state-wide Accountability Indicators. The first research design compared student retention for the same instructor before and after the instructor received training in and implemented CATs. In a second design, trained instructors either utilized or withheld CATs with

different sections of the same course. Pilot studies were first conducted in summer 1992, with larger studies conducted in fall 1992 and spring 1993. In the first two studies, a relationship appeared to exist between the use of anonymous and continuously feedback and positive student grades (Catkin & Kalina, 1993). Marks of 93% were given out in the treatment classes versus a median of 83% grade given out in the control classes. The number of 'A' grades assigned increased from 38% overall in the control classes to 45% in the non-treated classes. "In the final study in the spring of 1993, grades did not increase as strongly nor were they significantly higher although the number of students achieving the grade of A was consistent with 1992's 5 % increase" (Catkin & Kalina, 1993, p. 15). As in the other studies, faculty reported that faculty and students observed positive classroom environment comments. One of the limitations of the study proved to be that some instructors withdrew from the study, stating that they found it difficult to withhold CATs in control classes due to ethical concerns.

Prus and Johnson (1994) comparing thirteen Student Assessment Options found that while CATs are directly related to teaching and learning, and provide a powerful vehicle for faculty development and a genuine interest in student learning, and that they are very good for continuously specific feedback that fostered instructional improvement, the measurement was best at course level and was less useful at overall program evaluation purposes since the results are typically based on sample sizes. They felt that it was difficult to replicate and generalize results since standardization and validation of instruments and techniques are problematic. A consideration that must be taken into

account is the various instructors' applications of CATs should be seen as an independent variable with the only dependent variables being those of student grades and retention.

Classroom Assessment assumes that teachers want to know what is happening in their classes and that they will act on the feedback they receive. Practitioners of Classroom Assessment are willing to overlook the limited statistical evidence supporting the worth of CATs. They wish to utilize CATs within their own classroom scenarios to concentrate on the factors such as classroom climate, teacher development, and student satisfaction or retention levels. It's important to know individual teachers' personal theories because it is these theories, not the formal scientific theories that guide teachers' classroom practices (Clark & Peterson, 1986) and "even though the hard research of knowledgeable experts is often deemed superior to the soft practical wisdom of teachers; this may not be the case" (Hargreaves & Fullan, 1992, p. 5).

Since much of the literature concerning the introduction of CATs was based on various instructors' individual class situations, the literature describing outcomes was based on personal narratives describing the instructor's personal results. It was difficult to locate any literature on instructors willing to say that they ignored the feedback and that they found the whole experience negative. Most of the literature can not substantiate grade point difference or student outcomes. Positive outcomes seemed to be focused on student and instructor satisfaction in terms of instruction, and on the relationship developed with students and other faculty involved in the projects.

An emergent trend has been witnessed in integrating assessment and instruction for quality classroom processes and learning outcomes by involving active student feedback. This trend involves changing views of education performance indicators. Cheung (1994) presented his belief that in order that the quality of learning in higher education can be better monitored, educators are urged to pay particular attention to the inter-relationships between tasks, teachers should “deploy formative student assessment for charting learning progress and staff development programs should emphasize pedagogical and assessment expertise grounded in a sound theory of curriculum and guided by a viable multilevel conceptual model of learning” (p. 12).

The responsibilities of being a college instructor include acquiring the instructional design skills to teach and having the expertise to instruct in the area of his/her discipline. If the instructor has the orientation of being learner-centered, he/she must believe that being learner-centered involves changes on his/her part. These changes will affect the balance of power in the classroom, the balance between content and process, the role of the students in the learning process and the role of the instructor. Instructors can make their classrooms better learning environments by establishing democratic climates in his/her classroom, where positive relationships can be fostered between the facilitator and the learner. In order to support this learning environment, an instructor must be fully aware of the effectiveness of the students’ learning and the perceptions students have of his/her teaching. The instructor has the positional power to create a non-threatening atmosphere in the classroom where the evaluation process can take place. Instructors

must condition themselves to accept student evaluations as a non-threatening form of communications. They should realize that the comments will not only facilitate better personal and constructive communication, but they will also elevate the students' responsibility for their own learning. By the instructor responding to the feedback instruments sincerely and honestly, Continuous Classroom Assessment Techniques can evaluate the level of comfort students feel in the classroom. The level of comfort for both the instructor and the learner is a crucial component in the complex picture of successful teaching and learning. This project, Partnership in Learning, will explore if Continuous Classroom Assessment Techniques used by an instructor can identify areas of student concern, measure student success at learning and determine if there was an influence or change in her teaching methodology.

Chapter 3

Methodology

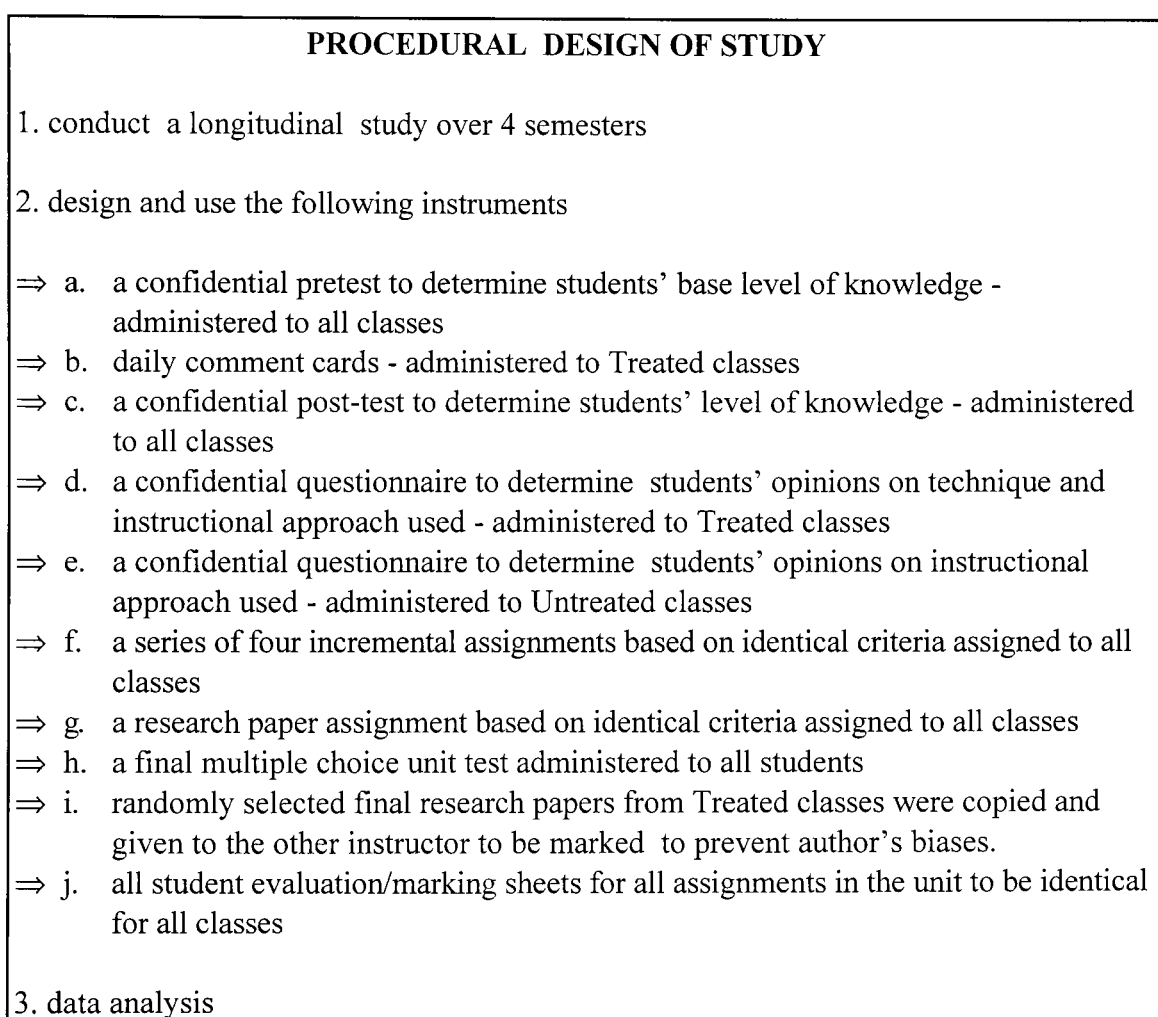
Design of Study

The Student Continuous Classroom Assessment: A Partnership in Learning Project was conducted as a longitudinal study over a period consisting of three academic years, involving 469 first year Criminal Justice students enrolled in English 175, the English technical writing course in the Criminal Justice program at Lethbridge Community College (Fall Semesters 1996, 1997, 1998, and Spring Semester 1999). (See Appendix A).

In one academic semester, there are five sections of English 175 offered; two sections are taught by a colleague and three sections are taught by the author. Over the past five years, the two instructors, in consultation, have developed the curriculum for the entire course. Prior to starting the project, the author designed identical handouts, assignments and quizzes for all sections of English 175. (See Figure 1). The classes that were to be selected as the Treated classes and the Untreated classes were determined at random. They were identified by only the section number by the instructors prior to the beginning of the semester and before the students were assigned to the various sections by the Registrar's office. Each semester, two classes taught by the other instructor and one section taught by the author were designated to be the Untreated classes in which no continuous student evaluation instruments were to be used. In each semester, the two designated Treated classes were assigned to the author in which continuous evaluation instruments would be used.

The project based on Angelo and Cross's Classroom Assessment Techniques (CATs) focused on the specific technique of students submitting Comment Cards at the end of each class session, in which they assessed their individual comprehension level of the material taught during that particular class.

Figure 1



The assessment instruments, the Comment Cards used by the students to indicate their level of understanding of the material presented, were only used during the research paper/report writing unit. This particular unit was chosen as it is the most heavily weighted segment of the course and it is the one unit that the majority of students tend to have difficulty mastering. The unit consists of approximately 12 teaching hours within the 44 hour long course.

Students in the Treated and Untreated classes were asked to grant their permission to be included in this study. (See Appendix B). In order to protect the students' right to privacy, students were asked to provide a code number based on five digits of their own choice. This confidential code number was to be used on all feedback instruments.

Permission to conduct the study was granted by the Chairman of the Criminal Justice Program and by the President of Lethbridge Community College.

Data analysis would be based on a comparison of students' final marks for their research papers and on a comparison of students' satisfaction level of the instructional approach used in the Treated classes and the Untreated classes.

Profile of Students

An English 175 class consists of approximately 10 to 35 first year students, 18 to 29 years of age. The ratio of male students to female students is approximately ten to one. Students are placed in the particular sections of English 175 at random. Each student must have completed English 30 or English 33 or the equivalent from another province or

state. During a screening process for acceptance into the Criminal Justice program, successful applicants must have achieved a rank (minimum) at the 60th percentile for reading comprehension and at a 50th percentile rank on sentence structure on a Computerized Placement Test (Educational Testing Services, New Jersey).

Instruments

Evaluative Instruments

For the purpose of this study, one instrument, the research/report assignment, was used for data analysis. Within the research/report unit itself, six evaluative instruments are used to determine the students' progress and final grades in the report unit. Marks are assigned to four incremental assignments, the final assignment and an unit quiz. Weight and value of the evaluative instruments are consistent in all sections of English 175 taught at the college. (See Figure 2). Complete copies of the major assignment and the four incremental assignments are included in the Appendix. (See Appendices C, D, E, F, & G).

Classroom Assessment Instruments

The Comment Cards, adapted from the One-Minute Paper and the Muddiest Point Classroom Assessment techniques used by Wilson and Cottell, were designed to explicit daily anonymous feedback from the students in the Treated classes in which they assessed their comprehension level of the material taught in that particular class. (See

INCREMENTAL ASSIGNMENTS**Assignment #1**

- draft outline of report
 - working Thesis Statement
 - possible factors,
 - format of paper
- (mark value 30 - weight 3%)

Assignment #2

- group work
- (mark value 100 - weight 1%)

Assignment #3

- outline of report illustrating
 - thesis statement
 - headings
 - documentation
 - use of quotes - APA format
 - reference page - APA format
 - recommendations
- (mark value 84 - weight 3%)

Assignment #4

- questionnaire
- (mark value 48 - weight 3%)

Final Report

- completed product
- (mark value 150 - weight 20%)

Unit Quiz

(mark value 100 - weight 3%)

Figure 3). The 4x4 inch Comment Cards were produced on various shades of brightly coloured paper. Care was taken to ensure that different coloured cards were used for each class session. In the cases where a particular style of Comment Card was used in a subsequent class period, the Comment Card was reproduced on a different colour than the original card and was used after a suitable period of time had elapsed from the first exposure the students had to that particular Comment Card.

Feedback Instruments

Three instruments, which were not assigned grades, were used to gain feedback from all students in Treated and Untreated classes. The Pretest, answered anonymously through the use of five digit code numbers based on the students' own choice, was used to determine the students' prior knowledge on writing research papers. (See Appendix H). Designed as a short quiz with 20 questions, using True and False and Multiple Choice formatted questions, students were not aware that they would be tested prior to beginning the unit. Questions #1 to #19 were designed to measure specific prior knowledge. (See Figure 4). Question # 20 asked for students' personal feelings regarding how they perceived they did on the pretest.

The second feedback instrument was a post-test, administered to all classes at the end of the unit. The Post-test allowed the students the opportunity to judge their comprehension level of the material after the unit had been taught. (See Appendix I). The questions were identical in content and sequence as presented in the pretest except in

Figure 3

SAMPLE COMMENT CARDS

I understand this concept.

Totally Lost Completely

1 2 3 4 5 6 7 8 9 10

I got lost when _____
about _____

_____The material taught today
was as clear as.....

Mud Crystal Clear

1 2 3 4 5 6 7 8 9 10

I'm unclear _____

I know how to do this

No Yes

1 2 3 4 5

except _____

Wow this is.....

Hard Easy

1 2 3 4 5

except _____
_____I know exactly where
I'm going on my paper

No Yes

1 2 3 4 5

except _____

instances where the wording was changed to be more appropriate for the post-test. (See Figure 5).

The final feedback instrument used was a questionnaire administered to all classes. The Untreated sections of English 175 received a questionnaire consisting of 12 questions developed to gather the students' opinions anonymously on the pretest, the post-test, the instructors' handouts and on their individual participation level in the classroom. (See Appendix J).

Figure 4

SAMPLE QUESTIONS ON PRETEST
Pretest for Report Writing Unit

This is a pretest. Marks will NOT be recorded as part of your course marks. If you don't know the correct response, guess! At the end of this unit, you will have the opportunity to rewrite this test. Use the last Five Digits of your parents' phone number as your name or code.

True or False (Mark A or B on Scantron Sheet)

1. A thesis statement can be formed as a question.

Multiple Choice (Mark Your Answers on the Scantron)

10. Academic papers are written usually in:
- a. the direct format
 - b. the indirect format
 - c. the persuasive format
 - d. all of the above
 - e. none of the above
11. Which heading below is an example of a topic heading is:
- a. Where Did All the Officers Go?
 - b. Decrease in Alberta's Crime Rate
 - c. Advantages
 - d. Factors Can Build a Report
 - e. none of the above
- d. Writing Reports Can Be Easy, J.L. Buis, 1996, Macmillan Publishers, Toronto, p. 11.
- e. all are correct entries depending on the length of the paper
20. How confident are you that you knew the answers on this quiz?
- a. not at all confident
 - b. knew some of the answers but not enough to pass it
 - c. knew half of the answers, but still confused about what is meant by some of the questions
 - d. pretty good, miss one or two of the questions
 - e. knew the answers perfectly
-

Figure 5

SAMPLE QUESTIONS ON POST-TESTPost-test for Report Writing Unit

This is the post-test for the Report Writing Unit. Marks will NOT be recorded as part of your course marks. Use the last Five Digits of your parents' phone number as your name or code. Some of you will be using your birth date.

True or False (Mark A or B on Scantron Sheet)

3. In the direct format report, recommendations are placed at the beginning of the report.
7. For the convenience of the reader, all the graphics in a report are placed compactly together in the appendix.

Multiple Choice

13. Which graphs are best received by the reader:
- a. line graphs
 - b. numerical graphs
 - c. bar graphs
 - d. pictographs
 - e. all of the above
15. Mark the best choice of factors to be used in a report based on the initiation of two community policing programs being developed in Maple Creek, SK and Leduc, AB.
- a. time
 - b. place
 - c. quantity
 - d. all of the above
 - e. none of the above
19. Which following entry for a direct quote is written correctly in the APA format:
- a. "....blah...blah...blah....." (Buis, 11).
 - b. "....blah...blah...blah....." . (Buis, 1996, p. 11).
 - c.blah...blah...blah.... (Buis, 1996).
 - d. "....blah...blah...blah....." (Buis, 1996, p.11).
 - e.blah...blah...blah..... (Buis, 1996, 11).
20. How confident are you that you knew the answers on this quiz?
- a. not at all confident
 - b. knew some of the answers but not enough to pass it
 - c. knew half of the answers, but still confused about what is meant by some of the questions
 - d. pretty good, miss one or two of the questions
 - e. knew the answers perfectly
-

Questions such as #1, asked for their opinions regarding the pretest and the post-test. Questions #5, #6, and #7 were to gauge their classroom participation or their level of interaction with the instructor. Responses to questions such as #10 or #12 provided an opportunity for the instructors to obtain insight into the students' level of involvement with the course content or to obtain feedback on materials given out in class. (See Figure 6).

The students in the Treated classes received the identical questionnaire, but the questionnaire was expanded to include nine additional questions to elicit the students' opinions on the Comments Cards. (See Appendix K). Questions #4, #12, #16, #20 and #21 asked for their opinions regarding the Comments Cards and for their opinions how useful the cards may have been to the students individually. Questions similar to #6 were designed to collect the students' opinions on whether or not the Cards influenced the instructor's style of teaching or the presentation of the material. (See Figure 7).

Procedures

Classroom Procedure

In English 175 classes taught by the author, a routine is established usually by the second or third class period. Students, as they enter the classroom, come to expect and are expected to pick up handouts or assignments that are usually placed on the first desk

Figure 6

SAMPLE QUESTIONS FROM THE FINAL QUESTIONNAIRE (UNTREATED CLASSES)
Final Questionnaire on the Report Writing Unit

The Report Writing Unit has a lot of material and new concepts in it. As you are aware, the material is covered very quickly in this unit. Often instructors are not fully aware of problems individual students may be having understanding the material that is presented in each of the classes during this unit.

While teaching this unit, I was concerned about these major questions:

1. how well are the students learning the material?
2. do the students feel that they have an opportunity to ask questions?

THERE ARE NO RIGHT OR WRONG ANSWERS. I am interested in your opinion. Your participation is voluntary.

PLEASE ANSWER THE FOLLOWING QUESTIONS ON SCANTRON SHEET.

PLEASE DO NOT PUT YOUR NAME ON THE QUESTIONNAIRE OR ON THE SCANTRON. YOUR RESPONSES ARE TO BE CONFIDENTIAL.

1. Do you feel that the pretest helped you to identify what new material would be introduced in the report writing unit? .
 - a. yes
 - b. no

 5. I asked a lot of questions because:
 - a. I was very comfortable asking questions in class
 - b. I asked questions but I could have asked more questions if time permitted
 - c. my questions were answered somewhat
 - d. my questions were answered fully

 6. I didn't ask a lot of questions because:
 - a. I prefer not to ask questions in case the questions sound dumb
 - b. I prefer to ask another student versus ask the instructor
 - c. I like to talk to the instructor privately
 - d. the instructor never had time to respond to all my questions
 - e. the class was so rushed, there was never any time to ask questions
 - f. I thought I understood the material taught

 7. Did you approach the instructor for individual help?
 - a. yes
 - b. no

 10. Did you read the appropriate textbook chapters pertaining to the material being presented in class on a regular basis?
 - a. yes: I read the material prior to the class
 - b. yes: I read the material covered in class shortly after the class
 - c. no: I never read the textbook chapters due to workload or personal life
 - d. no: I never read the chapters until I started studying for the quiz
 - e. somewhat: I looked at key headings and illustrations either before class or after class
 - f. I read the textbook when I started writing my report
 - g. read all of textbook until the last two weeks

 12. My opinion on the handouts is that:
 - a. they were useful because I could listen fully and not have to take notes during the lectures
 - b. I used them more than I used the textbook
 - c. I found them useful because it was easy to make my notes right on them
 - d. I never looked at them
 - e. I only used the handouts to assist in completing assignments
-

Figure 7

**SAMPLE QUESTIONS FROM FINAL QUESTIONNAIRE
(TREATED CLASSES)**

Final Questionnaire on the Report Writing Unit

The Report Writing Unit has a lot of material and new concepts in it. As you are aware, the material is covered very quickly in this unit. Often instructors are not fully aware of problems individual students may be having understanding the material that is presented in each of the classes during this unit.

While teaching this unit, I was concerned about these major questions:

1. how well are the students learning the material?
2. do the students feel that they have an opportunity to ask questions?
3. did the students have the opportunity to provide feedback to the instructor?
4. how did the students respond to this particular teaching approach?

I am interested in how you felt about the daily comment sheets that were used in the Report Writing Unit. **THERE ARE NO RIGHT OR WRONG ANSWERS.** I am interested in your opinion. Your participation is voluntary.

PLEASE ANSWER THE FOLLOWING QUESTIONS ON SCANTRON SHEET. PLEASE DO NOT PUT YOUR NAME ON THE QUESTIONNAIRE OR ON THE SCANTRON. YOUR RESPONSES ARE TO BE CONFIDENTIAL.

4. Did you respond every day that you were present in class on the appropriate comment sheet?
 - a. never
 - b. hardly ever
 - c. sometimes
 - d. most of the time
 - e. all of the time

 6. Do you think the daily comment cards influenced how the previous class material was reviewed in the next class?
 - a. never
 - b. hardly ever
 - c. sometimes
 - d. most of the time
 - e. all of the time

 12. Was it easier for you to add your personal comments on the comment sheets than ask a question in class?
 - a. yes
 - b. no

 16. By responding to the comment cards, were you able to focus on the concepts you needed to work on or to get help with?
 - a. never
 - b. sometimes
 - c. always

 20. Did you like using the comment sheets as a form of feedback?
 - a. yes
 - b. no

 21. Overall, my personal opinion on the daily comment sheets is:
 - a. I really saw no point to them
 - b. I liked the opportunity to give my personal feedback or to ask my own specific questions
 - c. I think using comment cards is an interesting concept but I don't know how valuable it was to me personally
-

closest to the classroom's door. Students leave assignments that are to be handed in on the same desk, either at the beginning or at the end of the class period.

Using a routine that the students were familiar with, the daily Comment Cards were placed on the appropriate desk for the students to pick up as they entered the classroom. At the end of each class, students were given a few moments to record their responses on the Comment Cards by marking the Likert Scale and/or providing personal written comments. As the students left the class, they deposited their Comment Cards on the appropriate desk. Names were not to be written on the Comment Cards.

Following each class, when it was feasible, the Comment Cards would be reviewed, and notes would be taken of any questions that students may have asked. If the Comment Cards revealed that any student was having difficulty with a concept discussed during that particular class, additional material would be prepared to be used as further examples in a review session.

At the beginning of the next class meeting, in front of the entire class, the anonymous questions were responded to. If necessary, a review would be conducted at the beginning of the class before new material or concepts would be introduced.

Data Analysis Procedure

At the beginning of each week during the semester, all English 175 (Treated and Untreated) students' marks were updated and posted on the instructors' offices' doors.

Marks were recorded using the Micrograde Version 3.08 software program by Chariot Software Group. The program computed raw scores achieved by each student for graded assignments such as Document One and the Final Report (See Appendix C & D) into weighted percentage scores to show the students the marks they had achieved for every completed assignment and their current overall mark. While the Micrograde program offers the option that students can be identified by name or by an identification number, students' marks for graded assignments posted on the instructors' doors were recorded by the students' LCC student identification numbers. For specified assignments that were to be used for data analysis, such as the feedback instruments, the pretest, and the post-test, and the final report assignment, students' results were identified by a unique student identifier number based on the year, section and code as an identification number. (See Appendix L & M).

The appropriate data from the Micrograde program was transferred to Microsoft Excel software program to appear initially in a spreadsheet format which allowed data from the pretest, post-test and final research paper marks to be presented in table or graph formats and allowed the data to be analyzed. Results from the questionnaires (Treated and Untreated) were entered directly into the Excel spreadsheet format for tabulation. (See Appendix N).

The software program, Crystal Ball Version 4.0 by Decisioneering, Inc., was used for forecasting statistical simulations to determine probable results of Continuous Classroom Assessment being employed in future English 175 classes.

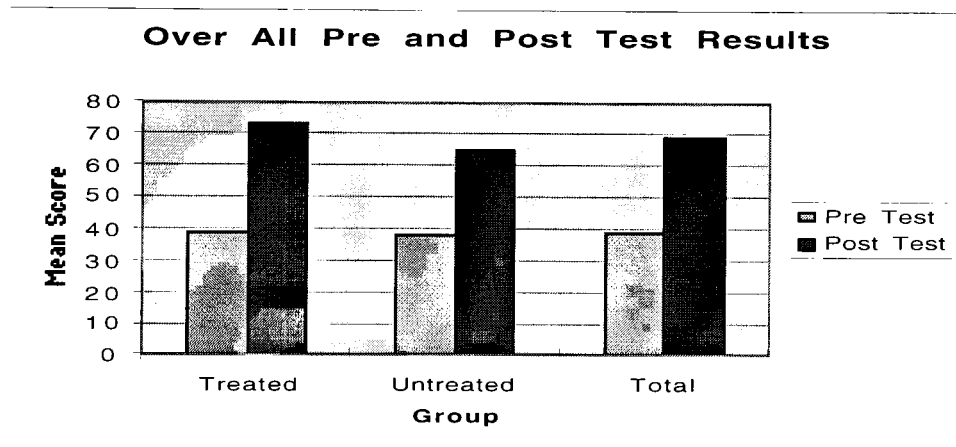
CHAPTER 4

Analysis

Data Analysis on Students

As shown in Figure 8, students' scores in the Treated and Untreated classes on the unit's Pretest illustrates the uniformity of the students' base knowledge prior to beginning the unit. The pre/post tests' results analysis demonstrated the validity of study that one group of students was not more likely to be advantaged towards achieving higher marks than any other group of students.

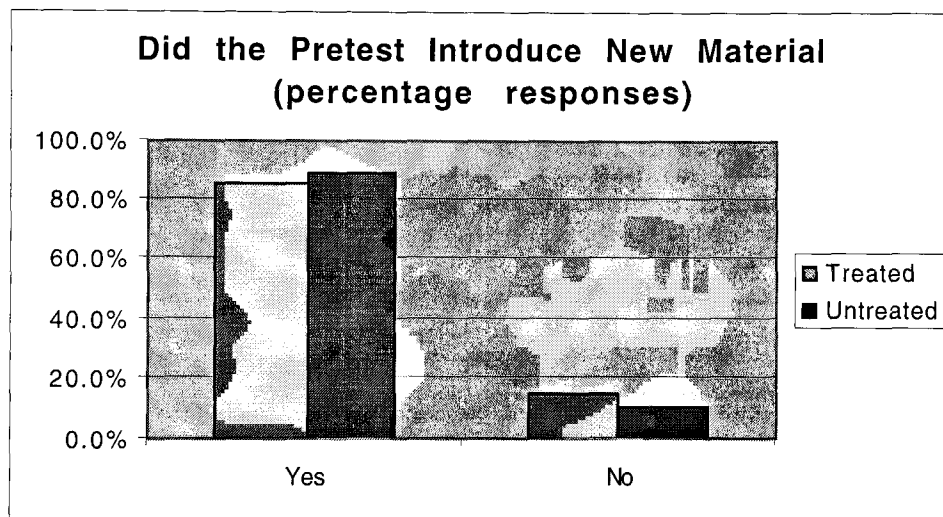
Figure 8



| Group | Number | Group Average | | Variance |
|-----------|--------|---------------|-----------|----------|
| | | Pre Test | Post Test | |
| Treated | 194 | 39.2 | 73.5 | 34.3 |
| Untreated | 270 | 38.6 | 65.1 | 26.5 |
| Total | 464 | 38.8 | 68.7 | 29.9 |

The students' own responses to Question #2 on the Final Questionnaires as portrayed in Figure 9 reinforced that the students in the Treated classes and in the Untreated classes were at similar levels of prior knowledge, with 86% of the Treated classes and 89% of the Untreated classes reporting that the Pretest introduced new concepts to them. (See Appendix N).

Figure 9



Number of Students Responding

| Group | Yes | No | Total |
|-----------|-----|----|-------|
| Treated | 166 | 29 | 195 |
| Untreated | 245 | 29 | 274 |

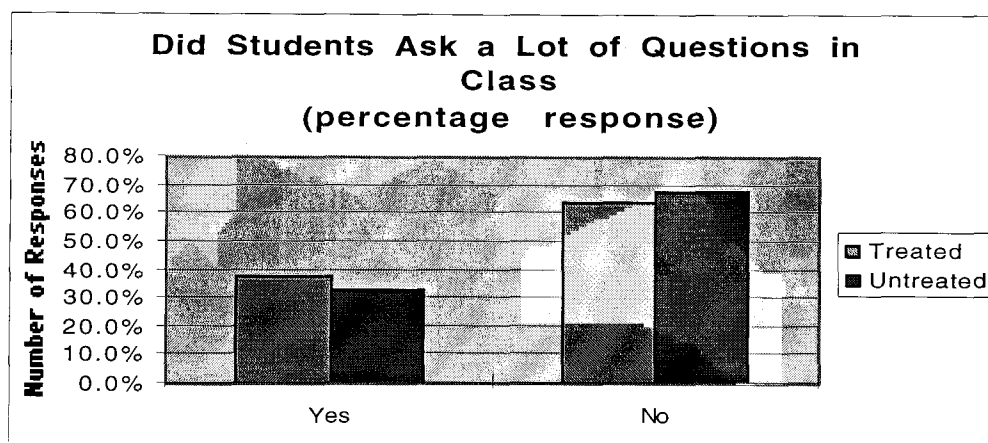
As demonstrated by the pretest scores of 39.2 and 38.6 respectively, the group average for the Treated and the Untreated classes was derived by taking the mean score of all the participants in each respective group. Figure 9 displays how the various English 175 sections performed on the Pretest. The data shows no evidence of apparent instructor's biases towards any particular class since the overall sections average of 73.2% approximated the group average of 73.5%.

Figure 10

| Pre and Post Test Scores Summarized by Section Between Treated and Untreated Sections | | | | | | |
|--|-------------|-------------|---------------------------|----------------------------|-----------------|--|
| Section | Year | Code | Pre-Test Score | Post Test Score | Variance | |
| A | 1 | T | 41.0 | 70.6 | 29.6 | |
| B | 1 | T | 34.1 | 76.2 | 42.1 | |
| F | 2 | T | 40.4 | 72.6 | 32.2 | |
| G | 2 | T | 34.3 | 72.2 | 37.9 | |
| H | 2 | T | 39.0 | 63.5 | 24.5 | |
| K | 3 | T | 39.0 | 71.0 | 32.0 | |
| L | 3 | T | 38.2 | 71.5 | 33.3 | |
| P | 4 | T | 45.9 | 82.0 | 36.1 | |
| Q | 4 | T | 42.1 | 78.9 | 36.8 | |
| Treated Sections | | | 39.3 | 73.2 | 33.8 | |
| C | 1 | U | 41.9 | 63.0 | 21.1 | |
| D | 1 | U | 38.8 | 64.7 | 25.9 | |
| E | 1 | U | 34.1 | 63.4 | 29.3 | |
| I | 2 | U | 36.6 | 63.2 | 26.6 | |
| J | 2 | U | 35.8 | 68.0 | 32.2 | |
| M | 3 | U | 37.7 | 63.7 | 26.0 | |
| N | 3 | U | 36.0 | 64.0 | 28.0 | |
| O | 3 | U | 39.7 | 65.0 | 25.3 | |
| R | 4 | U | 47.4 | 75.4 | 28.0 | |
| S | 4 | U | 38.6 | 70.7 | 32.1 | |
| T | 4 | U | 40.8 | 65.3 | 24.5 | |
| Untreated Sections | | | 38.9 | 66.0 | 27.2 | |

While Criminal Justice students were randomly assigned to the various sections of English 175 by the Registrar's office, every student had an equal and independent chance of being selected as a Treated or an Untreated subject. Data from the questionnaires (See Appendix N), revealed that students in Treated and Untreated sections shared similar personality characteristics and individual levels of participation in classes. In response to the questions # 4 (Untreated) and #9 (Treated), "Did you ask a lot of questions in class?", as illustrated in Figure 11, 67% of students in Untreated classes gave the response 'no' while 63% of the students in Treated classes also replied 'no'. Only 36.9% (Treated) and 32.8% (Untreated) subjects said that they did ask a lot of questions in class.

Figure 11

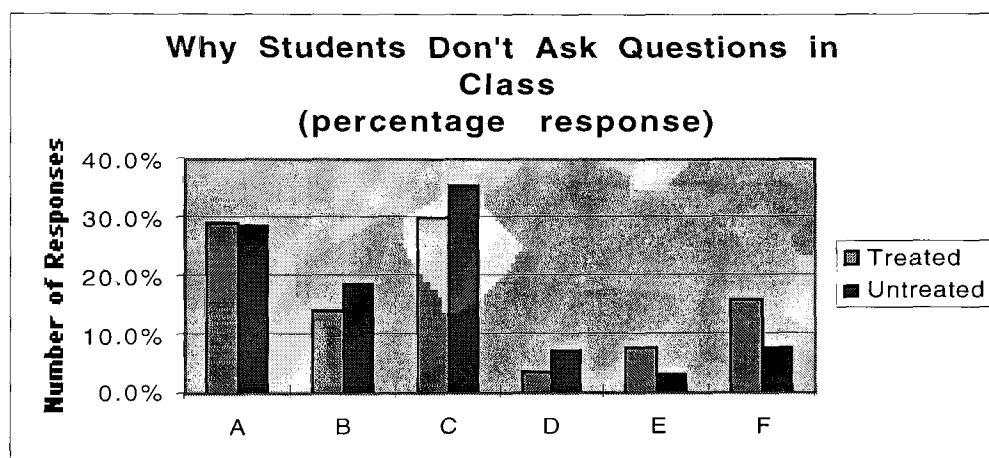


Did Students Ask a Lot of Questions in Class

| Group | Yes | No | Total |
|-----------|-----|-----|-------|
| Treated | 72 | 123 | 195 |
| Untreated | 90 | 184 | 274 |

In comparing as to why students may not wish to ask questions in class, students picked similar reasons regardless of being in a Treated class versus being in an Untreated class by indicating that 30% (Treated) and 36% (Untreated) shared a preference for meeting with the instructor privately for assistance or shared the concern that their questions may sound 'dumb' to other students in the class. As shown in Figure 12, 29 % of students in the Treated classes and 28 % of the students in the Untreated classes preferred not to appear to be foolish in front of their classmates.

Figure 12



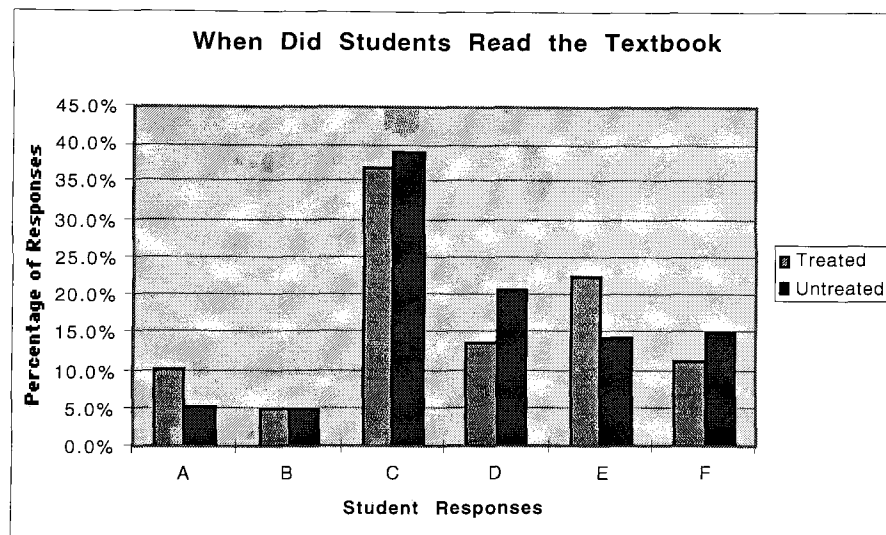
Number of Students Responding to Question

| Group | A | B | C | D | E | F | Total |
|-----------|----|----|----|----|---|----|-------|
| Treated | 36 | 17 | 37 | 4 | 9 | 20 | 123 |
| Untreated | 53 | 34 | 65 | 13 | 5 | 14 | 184 |

- Legend:
- A. The Questions May Sound Dumb
 - B. Prefer to Ask Another Student For Help
 - C. Like To Talk To The Instructor Privately
 - D. Instructor Never Had Time To Respond To All My Questions
 - E. There Was Never Any Time To Ask Questions
 - F. Confident That The Material Was Understood

Another similarity amongst all students was their level of individual preparation or preparedness for class lectures. Responses from Question # 17 (Treated) and Question # 10 (Untreated) (See Appendix N) as to whether or not, one group of students may have been advantaged over another group of students in terms of being familiar with the new material being taught in upcoming lectures or being able to review the material independently after the class, strengthen the validity of the project. Similar study habits or demands from their personal lives that may influenced their awareness of the course material was apparent for both groups.

Figure 13



Student Responses to Question

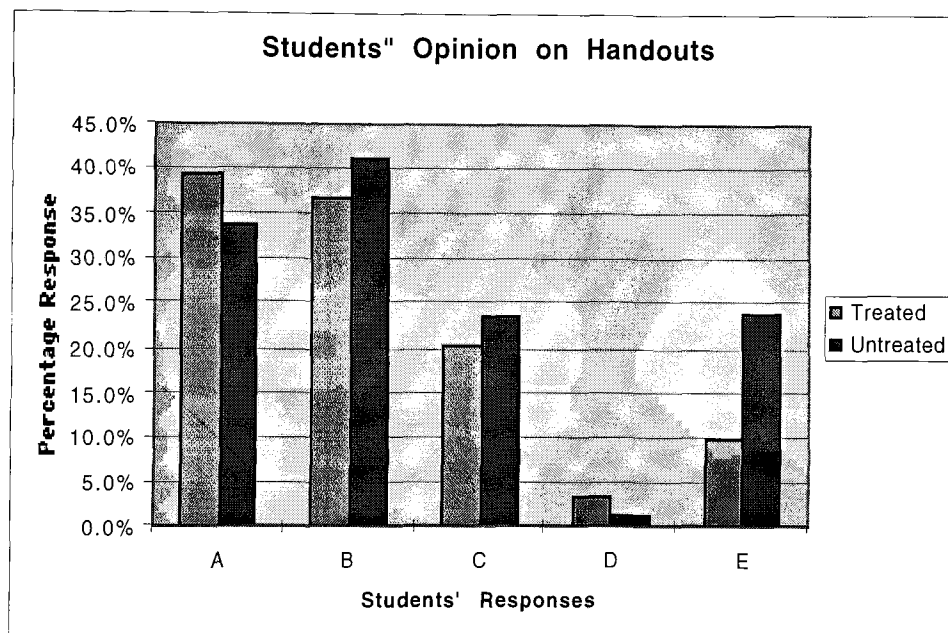
| Group | A | B | C | D | E | F | Total |
|-----------|----|----|-----|----|----|----|-------|
| Treated | 20 | 10 | 72 | 27 | 44 | 22 | 195 |
| Untreated | 15 | 14 | 107 | 57 | 40 | 41 | 274 |

Legend:

- A. Yes: Prior To Class
- B. Yes: Shortly After Class
- C. No: No Time Due To Workload Or Personal Life
- D. No: Not Until Preparing For Unit Quiz
- E. Somewhat: Looked At Headings and Illustrations Prior To Or After Class
- F. Yes: When Started To Write Report

As shown in Figure 13, over 35% of students in both groupings responded that they did not prepare for or did not supplement class lectures by reading the textbook chapters for content or assistance. In addition, all students reported that they relied on handouts provided to them to assist them in supplementing lecture notes. (See Figure 14). As the course handouts were identical for all classes, Treated or Untreated, no unfair advantage in terms of supplementary material or assistance was experienced by either grouping.

Figure 14



Number of Students Responding to Question

| Group | A | B | C | D | E | Total |
|-----------|----|----|----|---|----|-------|
| Treated | 70 | 65 | 36 | 6 | 18 | 177 |
| Untreated | 75 | 91 | 52 | 3 | 53 | 221 |

Legend:

- A. Useful: Could Listen Fully And Not Have To Take Notes
- B. Used The Handouts More Than The Textbook
- C. Useful: Easy To Make Notes On The Handouts
- D. Never Used The Handouts
- E. Only Used The Handouts When Completing Assignment

L

Analysis of Research Paper Results

As shown in Figure #15, the students' marks for their final research papers were calculated to summarize the results for each class and to perform a comparison between the Treated and Untreated sections. For all twenty classes, the average grade for the report assignment and the standard deviation for each class was determined. The results of the eight Treated classes, showed that the average mark for all sections combined was 76.2%, while the average mark obtained for the twelve Untreated classes was 62.7%. The results illustrated that the class average for a Treated section versus an Untreated section was approximately 14 percentage points higher. Only two of the Untreated sections (Year #4 R and Year #4 T) did as well or better than the lowest performing Treated section (Year #3 L).

Class averages in Treated sections were uniformly distributed. Class averages for Untreated sections displayed a more random pattern with wider variances or a standard deviation. This could be interpreted to illustrate that students who have the opportunity to provide continuous feedback to their instructor have a greater chance of success. The introduction of continuous feedback with the Comment Cards may be responsible for the higher and the consistent students' grades than the grades obtained by those students in the Untreated classes. The use of Comment Cards also demonstrated the Treated students' performance consistently from section to section.

Figure 15

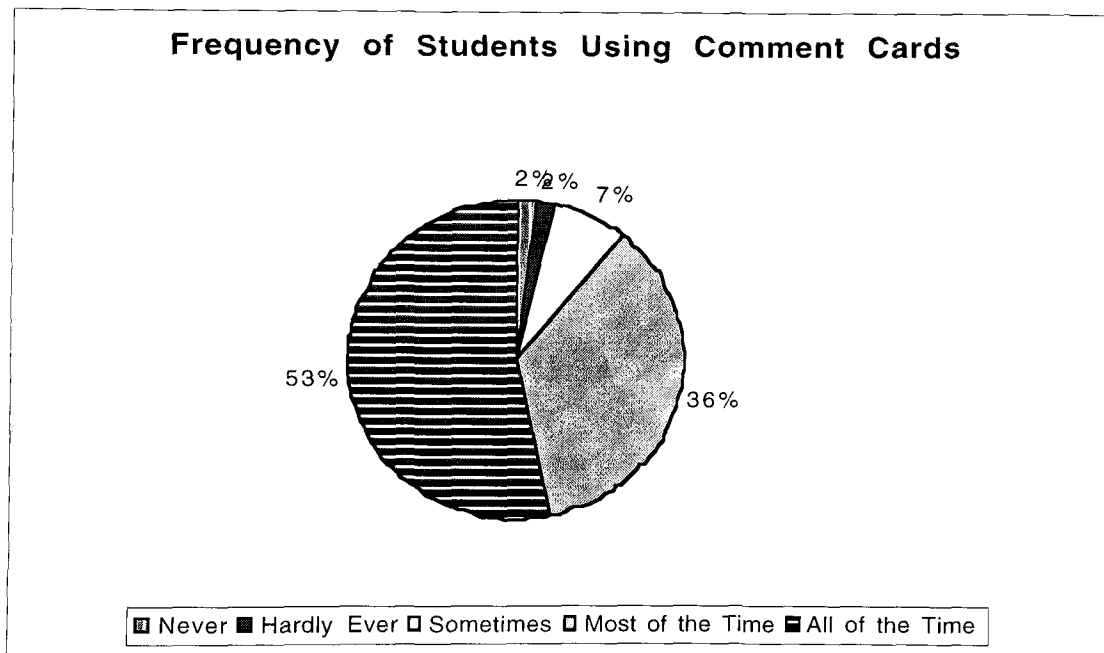
**Research Paper Results
Summarized by Section
Between Treated and Untreated Sections**

| Section | Year | Code | Mean | |
|---|------|------|---------------|----------------|
| | | | Section Score | Std. Deviation |
| A | 1 | T | 78.9 | 13.4 |
| B | 1 | T | 80.2 | 22.5 |
| F | 2 | T | 79.1 | 9.6 |
| G | 2 | T | 70.1 | 24.4 |
| K | 3 | T | 76.9 | 15.2 |
| L | 3 | T | 71.9 | 28.1 |
| P | 4 | T | 72.8 | 12.1 |
| Q | 4 | T | 79.7 | 11.4 |
| Overall average and standard deviation | | | 76.2 | 17.1 |
| C | 1 | U | 66.4 | 16.2 |
| D | 1 | U | 66.4 | 24.5 |
| E | 1 | U | 62.4 | 26.3 |
| H | 2 | U | 60.3 | 35.1 |
| I | 2 | U | 61.2 | 28.3 |
| J | 2 | U | 57.1 | 34.7 |
| M | 3 | U | 49.3 | 35.1 |
| N | 3 | U | 65.4 | 24.8 |
| O | 3 | U | 51.7 | 40.7 |
| R | 4 | U | 74.3 | 14.8 |
| S | 4 | U | 65.6 | 23.1 |
| T | 4 | U | 72.4 | 20.6 |
| Overall average and standard deviation | | | 62.7 | 27.0 |

Analysis on Students' Opinions of the Comment Cards

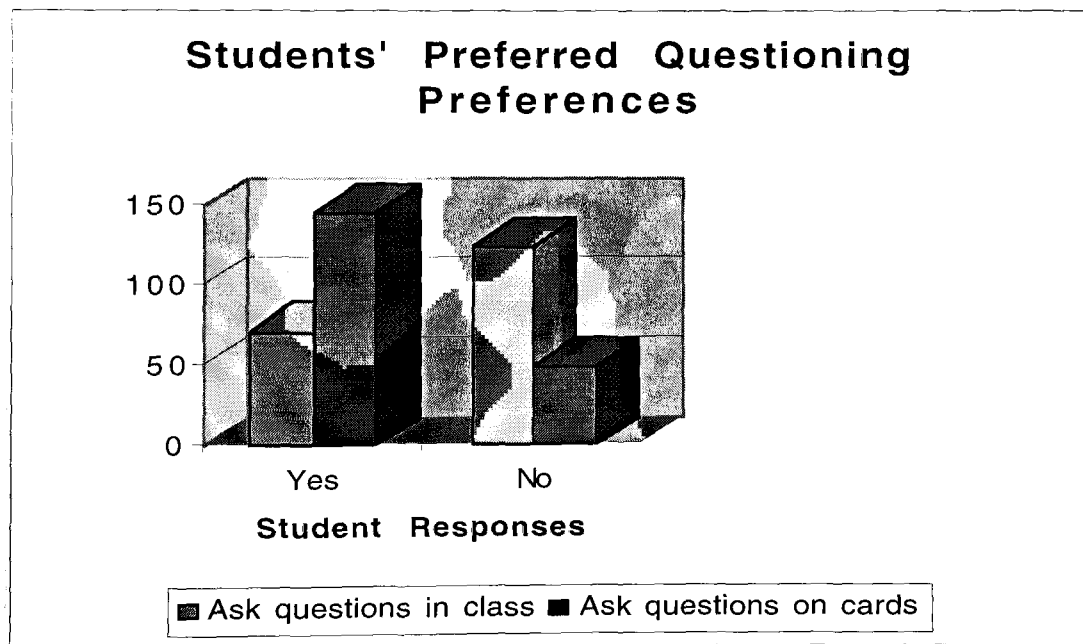
By analyzing the frequency of the students in the Treated sections using the Comment Cards, over 53% of all the students responded that they submitted the feedback instruments in every class. (See Figure 16). In addition, 36% of the students responded that they responded most of the time. Combined responses indicate that 89% of the students participated in providing daily continuous feedback to the instructor. The level of participation demonstrated that students found some value in the use of the Comment Cards.

Figure 16



In questioning as to why students preferred not to ask questions in class, (See Appendix N) 30 % of the students stated that they had a preference to meet with the instructor privately for assistance or that they had concerns that their questions may sound 'dumb' to other students in the class. In Figure 17, 74.8% percent of the students preferred to use the Comment Cards to ask for clarification rather than to ask for assistance in class.

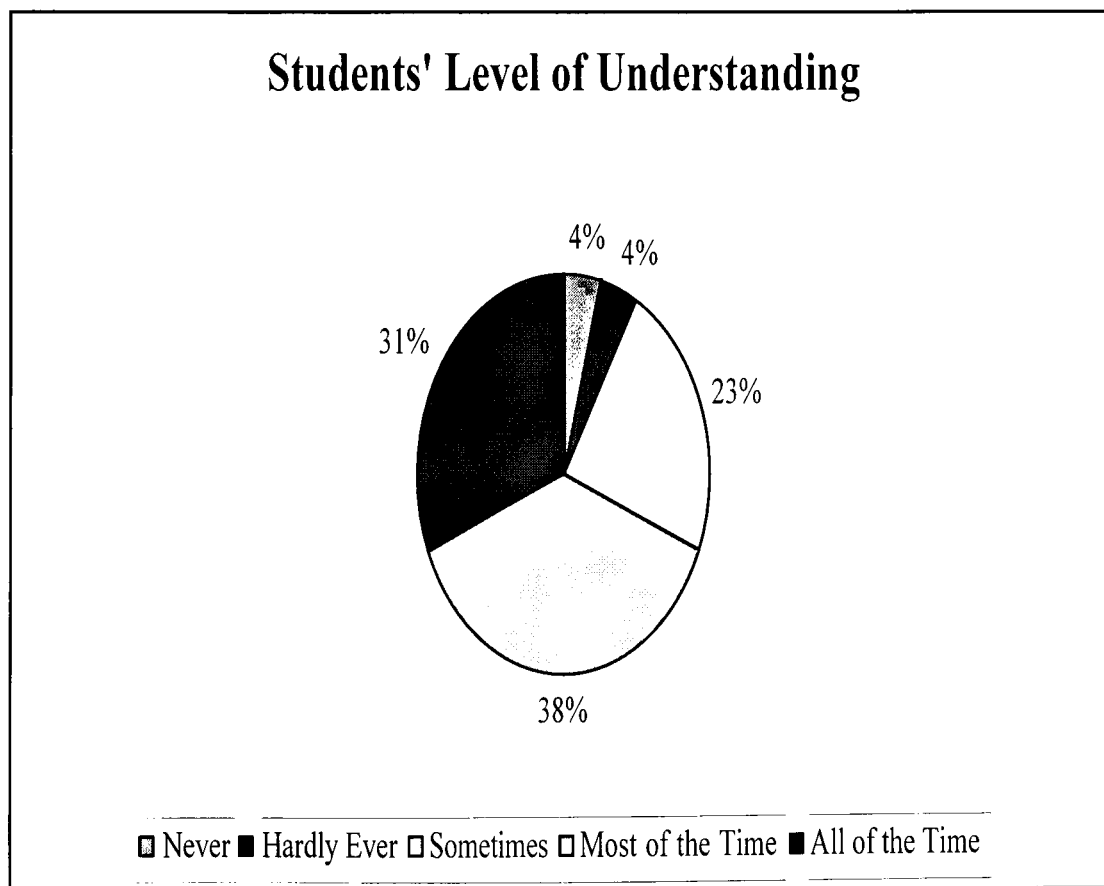
Figure 17



At first the students responded just using the Likert Scale on the Comment Cards to indicate their level of understanding. Sixty-nine percent of the students indicated that they used the Comment Cards to signal their level of understanding of the material that had been presented in that particular class in most of the time or all of the time.

Figure 18 depicts that only 8% of all students never or hardly ever used the Comment Cards.

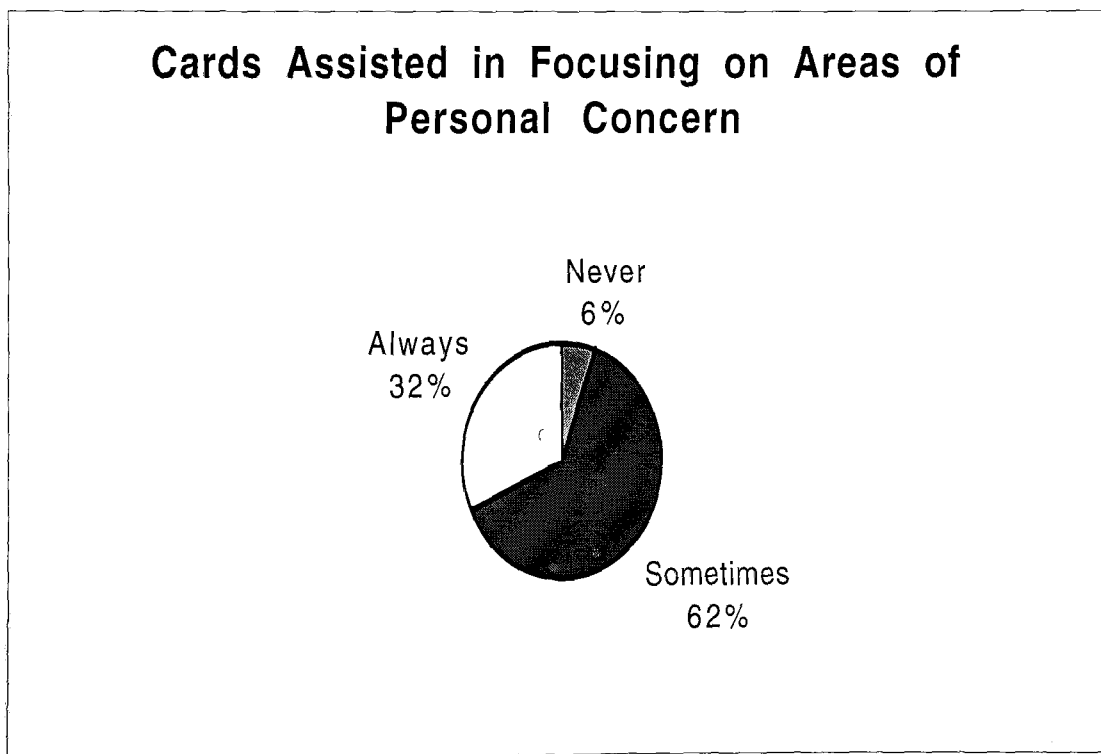
Figure 18



It was noticed that while the students used the Likert Scale as a measurement to show the level of their comprehension, by the fourth to the sixth class period in the unit, individual concerns or questions such as “Why can’t a thesis statement be a question?” started to appear on to the cards.

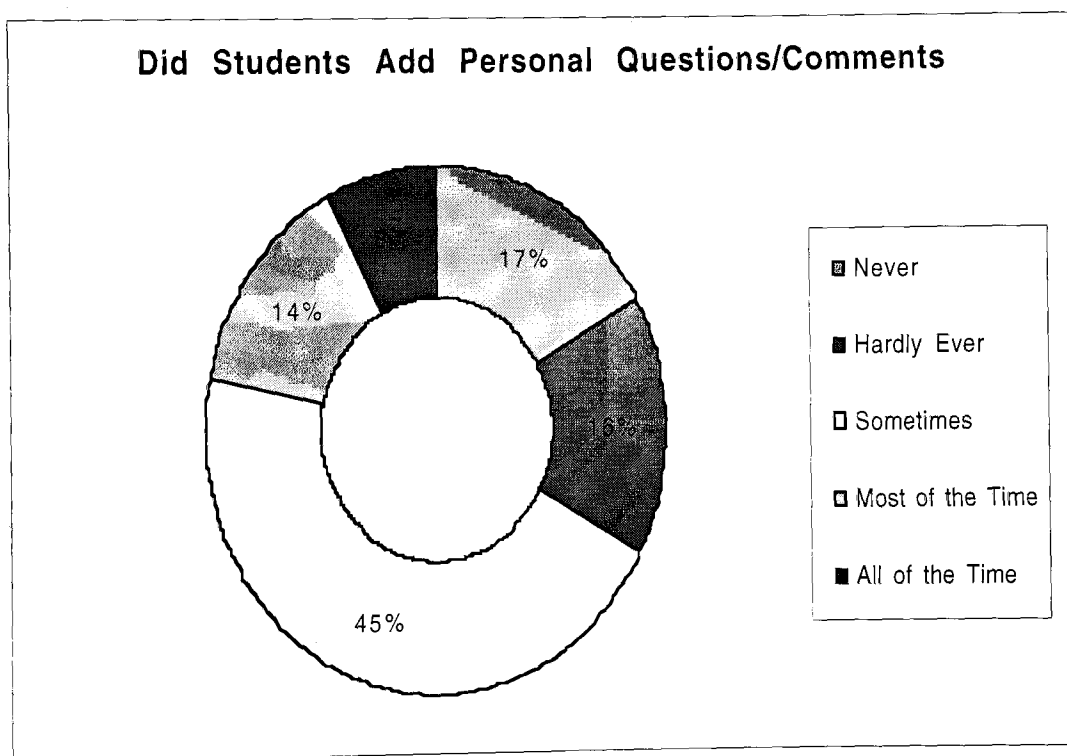
Overall, 94% of all the students testified as shown in Figure 19, that they used the feedback mechanism to assist them in focusing on areas or concepts of personal concern.

Figure 19



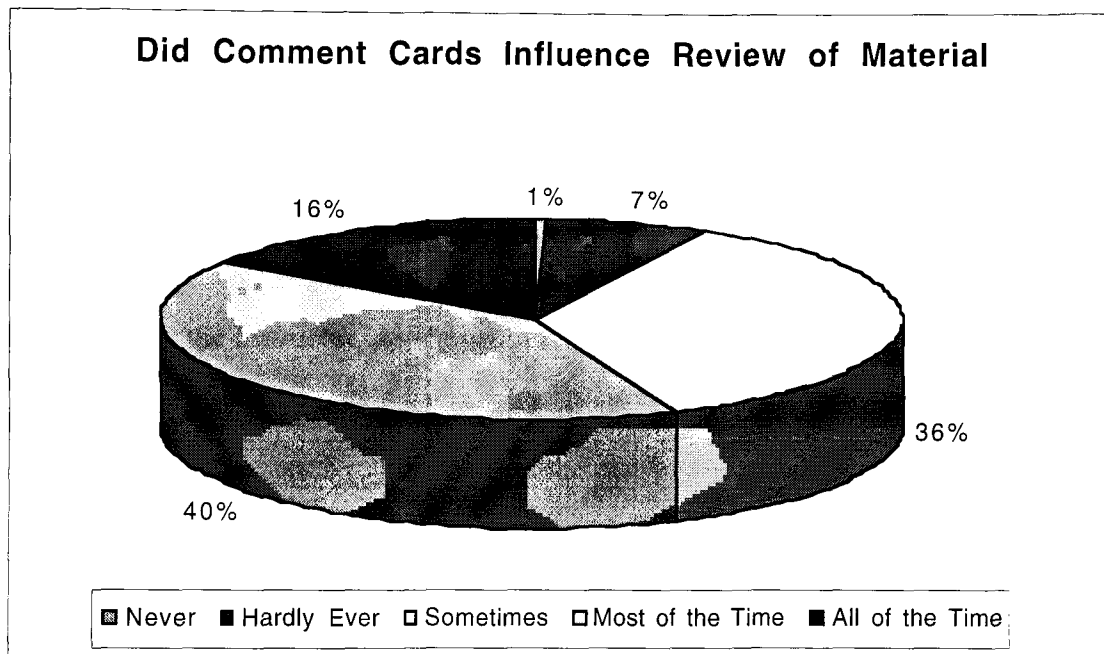
By the sixth class of the unit, not only were questions on content being asked, but more personal comments were being made directed towards the instructor's behaviour in class. "You didn't laugh today... are you alright (sic)?" Sixty-seven percent of the students recorded that they used the Comment Cards to add personal concerns or comments on a frequency of all the time to some of the time. (See Figure 20).

Figure 20



While 56 % of the students felt strongly that their comments on the Comment Cards directly influenced the direction that the next class session would take, 99% of the students, at some point, felt that they had an influence on the presentation of the course material as shown in Figure 21.

Figure 21

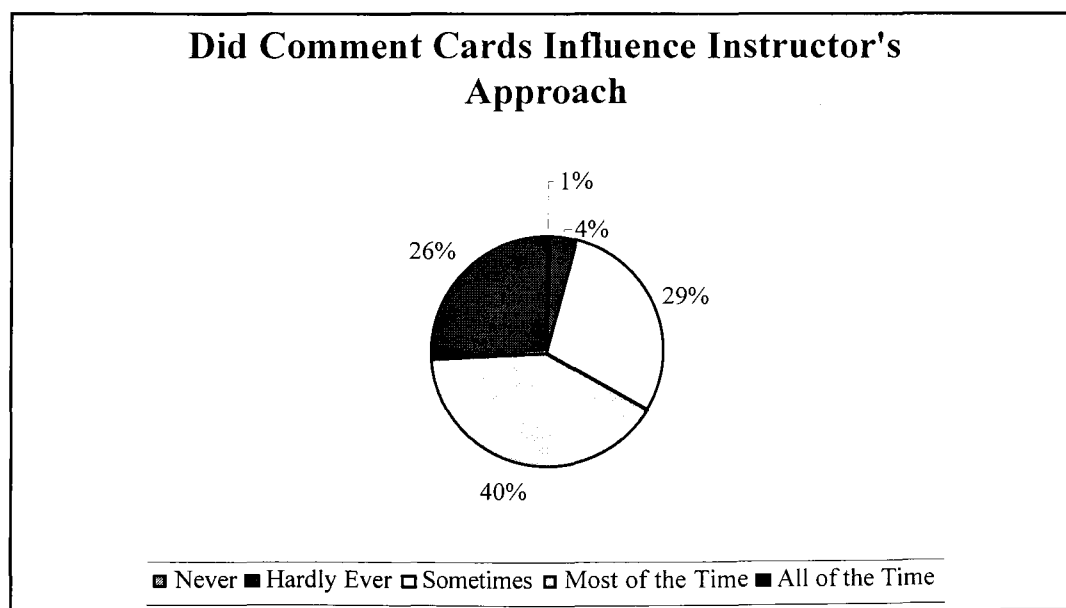


By their responses on the Comments Cards and on the questionnaires, students showed that they were confident that their input directly influenced the instructor to ensure a review of the previously taught material would take place to clarify any problems prior to new content being introduced in the next class.

With the introduction of the Comment Cards as continuous classroom assessment tools, the instructor was aware of any misconceptions students held or was aware of the

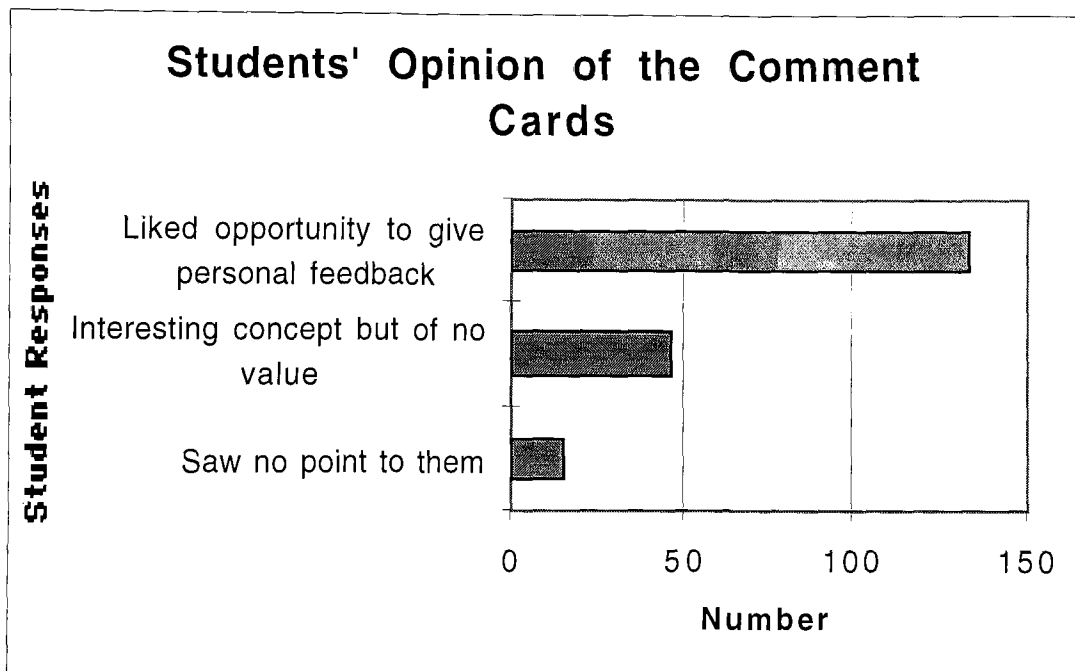
level of confusion students in each section were experiencing on a timely basis. Thus, the Comment Cards had an immense influence in the outcome of the next class. Not every class period required a lengthy amount of time in reviewing previously taught material. In fact, there were classes based on the previous comments, that no review was required since the students had indicated that they were comfortable with their level of understanding. In those classes, where the comments indicated that several students were generally 'lost', more time was spent on review by presenting the previous material in a different fashion to ensure all students had a mastery of the skills. In each Treated class, different areas of concern were apparent; thus often each class was approached differently by the instructor. As shown in Figure 22, 66% of all students believed their feedback influenced the instructor's approach or behaviour in their subsequent class period.

Figure 22



In conclusion, based on the frequency and on the number of the submitted Comment Cards and based on their opinions of the usage of CATs in their classes, the students overwhelmingly liked the opportunity to provide daily feedback to the instructor. (See Figure 23).

Figure 23



Analysis of Future Outcomes

Based on the sample size of the 469 students in this study, a statistical simulation was applied to determine probable future distribution of results or observations about the mean could be generated by applying a Monty Carlo Simulation.

The process is a feature of the computer software program, Crystal Ball, that employs a system which uses random numbers to measure the effects of uncertainty in a spreadsheet model. Crystal Ball displays results in a forecast chart that shows the entire range of possible outcomes and the likelihood of achieving each of them.

Results of this analysis shows that the mean (average) mark, were if this analysis was conducted on other students who were enrolled in future English 175 classes where CATs (Treated) were used, would be 76.4% and a standard deviation of 0.6% . (See Figure 24). Figure 25 portrays a mean (average) mark of 61.8% and standard deviation of 0.4% would be achieved by students not engaged in continuous feedback (Untreated) activities.

Figure 24

Crystal Ball Forecast: Treated Frequency Chart
Summary:

Display Range is from 74.5% to 78.0%

Entire Range is from 74.4% to 78.1%

After 1,000 Trials, the Std. Error of the Mean is 0.0%

| Statistics: | Value |
|-----------------------|-------|
| Trials | 1000 |
| Mean | 76.4% |
| Median | 76.5% |
| Mode | - - - |
| Standard Deviation | 0.6% |
| Variance | 0.0% |
| Skewness | -0.03 |
| Kurtosis | 3.02 |
| Coeff. of Variability | 0.01 |
| Range Minimum | 74.4% |
| Range Maximum | 78.1% |
| Range Width | 3.7% |
| Mean Std. Error | 0.02% |

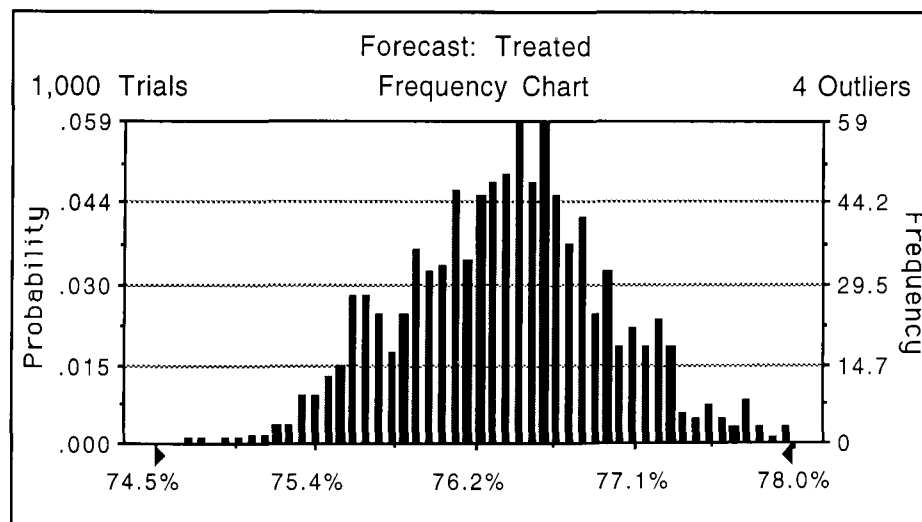


Figure 25

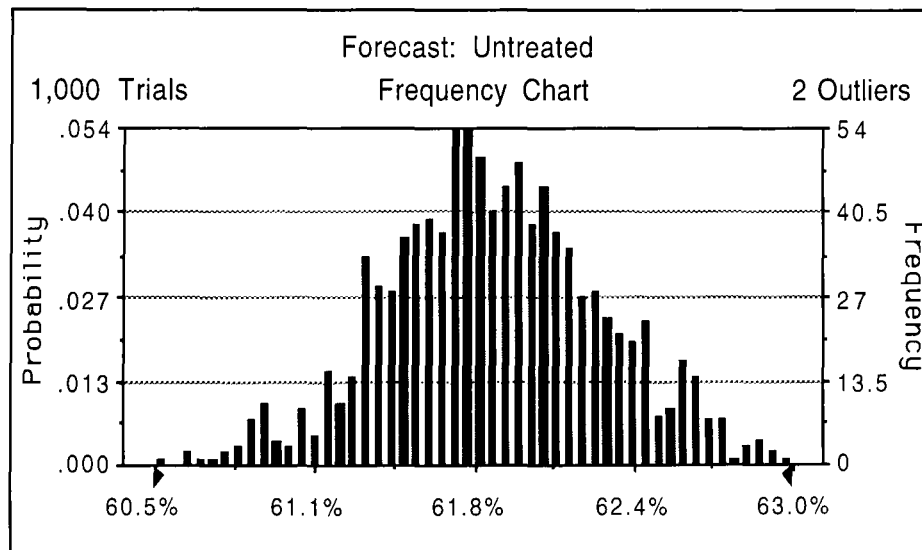
Summary:

Display Range is from 60.5% to 63.0%

Entire Range is from 60.4% to 63.0%

After 1,000 Trials, the Std. Error of the Mean is 0.0%

| Statistics: | Value |
|-----------------------|-------|
| Trials | 1000 |
| Mean | 61.8% |
| Median | 61.8% |
| Mode | - - - |
| Standard Deviation | 0.4% |
| Variance | 0.0% |
| Skewness | -0.04 |
| Kurtosis | 3.02 |
| Coeff. of Variability | 0.01 |
| Range Minimum | 60.4% |
| Range Maximum | 63.0% |
| Range Width | 2.6% |
| Mean Std. Error | 0.01% |



Chapter 5

Conclusions

At the beginning of this project, I hoped that my study would answer four basic questions: how effective was the students' learning experience and would the opportunity to provide continuous feedback directly increase the students' level of achievement; how effectively did I teach the material and would there be a change in my methodology of teaching. It was my hope that through careful observation of the students in the process of learning, the collection of frequent feedback (CATs) from the students and the design of modest continuous classroom assessment tools, I would be able to determine how the students were learning and, more specifically, I would see how and if my teaching methodology would be influenced.

Did the Usage of CATs Directly Affect Students' Level of Achievement

There is a widely held perception amongst Criminal Justice students that there is a significant grade drop between high school and college English (Buis, 1999b). Perhaps this occurs because the course requirements may vary from those at the high school level or perhaps it is because of the individual student's own interest in the subject matter. Many Criminal Justice students report that they did not look forward to taking English 175. Based on their knowledge of previous students' grades in English 175, the majority of students enrolled in the program did not believe that they could achieve a high level of success in the class.

Data from the three Feedback Instruments clearly showed that students enrolled in the Untreated classes and the Treated classes shared similar personality characteristics and similar prior knowledge levels before commencing English 175. For the twenty classes that were engaged in this study, the average grade of 76.2% achieved by those students in the Treated classes was approximately 14 percentage points higher than the average marks of 62.7% achieved by students in the Untreated classes. There appears to be indication that through the use of CATs, students were able to achieve higher levels of achievement.

Did the Usage of CATs Directly Affect the Instructor's Teaching Style

As in many post-secondary education courses, the research paper is the final accumulation of all the content taught over the semester. All the tools and skills come together to form one cohesive understanding of the course. The unit on the research paper has always been one of my favorite units to teach. Prior to using Classroom Assessment Techniques, I was under the impression that I had developed an excellent unit. Previously submitted Student/ Faculty Evaluations conducted at the end of each course appeared to support my beliefs that I was proficient in my teaching skills. In addition, the optional portion of the evaluation form where the students may include personal written comments also indicated a high level of student satisfaction with my teaching approach and content. While the students may have evaluated me as an instructor quite highly in the past, I was aware that very few of the students enjoyed the course content and very

few students experienced a high level of achievement in English 175 in comparison to their other courses in the Criminal Justice program. Through the experimentation of Continuous Classroom Assessment, I hoped that I could determine a different and an effective method of teaching to increase successful learning for my students.

Using the CATs, the learners could quickly identify what they did not understand and they had the opportunity to articulate those ‘muddy points’. The Comment Cards gave me a snapshot diagnosis on a daily basis of what the students found to be difficult to learn and enabled me to see the material through the students’ eyes. The process continually reinforced to me the range of intellectual and perceptual diversity in the classroom. By knowing the level of the students’ understanding, I was made cognizant if I should spend more time reviewing in the next class or if I should present the course material in a different fashion so that there would be mastery of the skills.

In order to address the students’ concerns about their individual problems, I found that I was abandoning my traditional lecture style of teaching and was experimenting with different delivery modes. I started use more group activities that gave the students while working in small groups, an opportunity to discuss, share and support each other. Probably one of the most significant changes that I started to incorporate into my classes was the review or the debriefing session that now started the beginning of each new class section. Upon reflection, I started to notice that I had probably been lax in the past ensuring that each class did start with a review of the previous class. Now the review session had become an integral part of my lesson plan.

In the past, there was material that I believed was interesting and relevant to the lecture on a particular subject, but I found that I had to ‘cull’ or revise the material to focus on what the students found to be important or difficult concepts. Due to the time restraints of the lecture period, other material that I had found interesting and had thought should be given emphasis in the class time was cut to allow sufficient time for review to take place at the beginning of each class. This process was invaluable as it forced me to examine what material was truly germane to the course objectives. The students were ranking their learning and understanding against those course objectives that I had predetermined. I started to use the Comment Cards as an outline for class preparation. Decisions had to be made regarding if some content was important enough to keep in the unit, and if I kept the material, should changes be made to it in order to make it more concise or concrete in meaning. I found throughout the project that I was continuously revising my presentation style and course objectives to respond to the input provided by the students.

Being now aware of what students found to be the least clear or most confusing about a particular lesson or topic, I used their feedback to guide my teaching decisions about which topics to emphasize in review in the next class. The daily evaluations based on material taught in each class certainly assisted me in being to respond to problems on an immediate basis by being able to review or to give the class the opportunity to clarify the previous class material at the beginning of the next class. As a result of the Comment Cards, I found myself totally redesigning the unit almost on a daily basis to meet the

students' needs. My assumptions or preconceived preferences on how the unit should be presented were challenged on a daily basis. Over the course of the project, I found that I frequently had to modify the unit for the different classes within the same time period or semester. Each of the Treated classes signaled their own areas of concern that often varied from the other Treated class. Guided by the students' evaluation, I found that I had to cover material or concepts that I had assumed that they had mastered in previous English classes. In previous years, I may have only spent a short period of time on a certain concept. On the basis of the students' questions and comments, it was not usual for a whole class period being devoted to explaining that particular topic, while other topics occupied only a short period of class time.

At the beginning of the project, I noticed the students started to record lower stress and anxiety about the course content, but I started to experience higher levels of anxiety and stress. I got extremely concerned about being able to cover all the required material at the present pace that we were moving at. I was exhausted from having to virtually rewrite the unit's curriculum prior to every class. After one class in particular, I knew that my personality and mannerisms during the class had not promoted a positive learning environment. My behaviour was not only obvious to me. On the Comment Cards for that particular lecture, personal comments directed towards me such as "Are you alright (sic)?" or "Chill out!" illustrated to me that I had to get my stress level under control. It was at this stage that I started to recognize that the students and I had assumed a shared ownership in this class.

At the beginning of the next class, I shared with that particular class, the possible causes of my apparent behaviour in the last class. As a group, we discussed how we could cover all the material. By unanimous consensus, we arranged an opportunity for two extra meetings in order give us more time to work on the unit. After sharing my frustrations with the usage of CATs and my increased stress level and workload with all the Treated classes, the students started to provide the occasional comments such as “Today was a good class!” which encouraged me to believe that regardless of the challenges this project was presenting to me as a teacher, the students saw the direction the class was taking as meaningful and positive. As the project progressed from semester to semester, I found myself more experienced in knowing what to expect the responses might be. An unexpected learning that was taking place was that I was learning to work in groups and learning to release control of every aspect of the class.

General Outcomes from the Use of CATs in a College Classroom

The most obvious benefits of using CATS was that in a very simple way and in a very efficient way, all students had a equal chance to be heard. I, as an instructor, got immediate feedback if they did comprehend what I had wanted them to learn. If the comments showed that there was a breakdown in communication or understanding, I had immediate opportunity to fix or correct the misconceptions. This was really quite interesting since the different class sections in each semester or from semester to semester showed their individuality by identifying different areas of concern. In the past, after

having taught the same content on some days to five different classes, I usually assumed that I had presented the content in an equal and fair manner in all sections. Through the use of Comment cards, I found out more than once that the students learned or took something in an entirely different fashion than I had meant it to be portrayed. Even though I thought I had emphasized or taught material in a consistent manner from one class to another, the students' questions or comments revealed inconsistencies. I found throughout the project that the timelines or the emphasis I planned on to present specific content varied from class to class. Student comments would either imply more time or less time should be spent on the material.

The review sessions were probably the most beneficial outcome of the project as they provided a link from one class session to next class session. In one semester, there was a three day period between class meetings, where the review session was invaluable in maintaining a continuous flow in the classes.

The Comment Cards appeared to measure participation or learning activeness. One particular student recorded one day after the review session and after perhaps I had responded to his/her own concern "Well, everyone else got it, Maybe I'll listen more carefully". The Comment Cards encouraged a sense of dialogue between the students and myself. The students appeared to enjoy the opportunity to communicate on a different level than in the usual fashion. The cards gave the quiet students an equal opportunity to voice their concerns. The cards provided the class with a sense of empowerment and reminded the students that I was genuinely interested in what they had to say. Students

were cognizant of the fact that the cards were to be submitted anonymously, but on several occasions, the students supplied their names on their questions. I noticed an increase in the number in the frequency of student visits to my office. As shown on the questionnaire, the students' perceived levels of satisfaction with the outcome of the office meetings were different between the Treated and Untreated students. The treated students appeared to know what concepts they didn't really understand, which they could quickly articulate, whereas the untreated students often didn't even know where to begin to ask for help, which resulted in unproductive office visits. My officemate and I started to notice that while the majority of the conversations with members of the Treated classes were on course related topics, the visits often included discussion on personal interests or concerns. In the second year of the project, one Treated class made comments that they would miss the collegiality that was presented in the classroom. An outcome of these comments was that I started the tradition of taking a class picture for each class to post in my office. The relationships that were started in the Treated classes continued after the course was completed. Students continued to stop by my office to share personal news and concerns. There was a sense of closeness developed between us that manifested itself as being asked to be a reference on a resume, getting an invitation to a wedding or receiving a graduation picture with the student in his/her formal uniform.

The not-so obvious benefits of the CATs also started to appear. I noticed that the task of having to record comments was showing the students that there were learning objectives for the content being taught, and that the material was not just 'fluff' that I had

created to 'fill in a hour's worth of time'. Through the use of the cards, I noticed I could easily draw the students' attention to the important learning points and I could model the kind of learning that I expected to take place. Students obviously felt that they were being heard and that I valued their opinions by my reactions to their questions to their questions in the daily debriefing sessions. Students came to realize that I was human and many times, I was certainly not 'perfect' in my teaching or examples. As I was very careful to model the appropriate response to some of the criticism stated in the cards, I found students were responding far more positively in their reactions to returned marked assignments. Comments would appear on the CATs such as "Wow... I goofed on that one"... "Next time..Jay, it will be better"... "I understand now".

There were some possible drawbacks to CATS. I noticed at times because of the need for the immediate response at the end of the class, many times there was very little reflection on students' part and in their responses. In the short time allotted to fill out the cards, their anonymously comments on the 4x4 cards appeared to emphasize spontaneity and casualness. More than once, I would start to address a question during the review session, but two or three students would quickly state that they no longer had a problem with that concept now that they had time to digest it. While at the beginning of each semester, several students in the Treated classes showed an element of distrust or uneasiness with the Comments Cards, the majority of the students became extremely comfortable in using the cards by the fourth or fifth class. In each class, there were always a few students who remained uneasy with the procedure and recorded frustration that I

was not the 'leader' of the classroom. The students' responses on the final questionnaire showed that most of the students enjoyed using the cards and submitted the cards on a daily basis.

In a small college, and particularly in a cohesive faculty, I found myself having to respond to the Untreated classes as to why they were not receiving those cards their friends were getting in my other classes. To the best of my ability, I tried to maintain the traditional lecture mode in the Untreated classes, but as time went on, I noticed that I was spending more time in reviewing in the Untreated classes by using questions raised in the Treated classes as a basis for the review. This may explain as to why in Year Four, the Untreated classes R and T did as well or better than the lowest performing Treated class within the same time frame.

My primary goal for the future is to continue to use CATs in all my classes. Since all my courses' content is not the same, I will explore using different techniques in my various courses. The technique of Flash Cards, where students show immediate level of understanding by 'flashing' a positive or negative sign at any time during a lecture, will probably be very easy to adapt for my classes that have enrollments over fifty students.

My second goal is to continue with incorporating new delivery modes into my teaching style. I will develop more activities that will use more active group discussions where the students can take on the responsibility for teaching and learning upon themselves. "How can I teach this differently?" is a new challenge I can set for myself.

I think that my study answered the four basic questions as to how successful was the students' learning experience and would the opportunity to provide continuous feedback directly increase the students' level of achievement. Classroom Assessment Techniques proved to be remarkably efficient since they provided a vast amount of information in return for a very low investment of time and energy. The students were experiencing learning in a successful way. The grades increased over those grades from the Untreated classes. Students started to display responsibility for their own learning. They responded on the Comment Cards with personal questions or indicated a level of understanding of the material. They became aware that they could come to see me if they required more assistance.

The study also illustrated the transformation of my teaching style. The students and I became actively involved in planning and carrying out the learning activities. I was being challenged and I was learning new ideas.. As the initial architect, I had designed the initial course outline. As a result of the Comment Cards, the students also became the architects in determining the course content. As adults, we all were active partners in planning the learning process. If people think they have input into the course design or direction, they will take ownership in how that the material is presented in a fashion that is best for their learning styles. Through our joint experiences, we were forming a relationship built in a comfortable and positive learning environment. I was abandoning the traditional ministerial manner of teaching "Tell what you going to tell them, tell them, and then tell them what you told them" into a more collaborative style of teaching that

truly reflected being learner centered. Through close observation of students in the process of learning, the collection of frequent feedback on students' learning and the design of modest classroom assessment instruments, I believe I did and that I can continue to learn to promote successfulness in students' learning and more specifically, to explore and experiment with new effective teaching approaches.

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Appendix

Appendix A

Index of Classes and Codes

| Code Name | Class/Year | Number of Students |
|---------------------|-------------------|--------------------|
| Year #1 A Treated | English 175 07/96 | 34 |
| Year #1 B Treated | English 175 01/96 | 23 |
| Year #1 C Untreated | English 175 05/96 | 31 |
| Year #1 D Untreated | English 175 06/96 | 22 |
| Year #1 E Untreated | English 175 04/96 | 23 |
| Year #2 F Treated | English 175 07/97 | 30 |
| Year #2 G Treated | English 175 02/97 | 21 |
| Year #2 H Untreated | English 175 05/97 | 27 |
| Year #2 I Untreated | English 175 06/97 | 22 |
| Year #2 J Untreated | English 175 03/97 | 26 |
| Year #3 K Treated | English 175 03/98 | 32 |
| Year #3 L Treated | English 175 04/98 | 24 |
| Year #3 M Untreated | English 175 02/98 | 29 |
| Year #3 N Untreated | English 175 01/98 | 26 |
| Year #3 O Untreated | English 175 05/98 | 24 |
| Year #4 P Treated | English 175 04/99 | 19 |
| Year #4 Q Treated | English 175 07/99 | 12 |
| Year #4 R Untreated | English 175 05/99 | 15 |
| Year #4 S Untreated | English 175 06/99 | 09 |
| Year #4 T Untreated | English 175 02/99 | 20 |

Appendix B

Educational Research Permission Form

Through close observation of students in the process of learning, the collection of frequent feedback on students' learning, and the design of modest classroom experiments, instructors can learn how students learn, and more specifically, how students respond to particular teaching approaches.

I am correlating students' final results in classes where I used daily monitoring devices for feedback versus control classes where I do not use any form of daily feed-back instruments except responding to questions raised by individual students.

My research is trying to determine the answers to three fundamental questions:

1. How well did the students learn?
2. How effectively did I teach the material?
3. Did continuous input from students directly increase the students' level of achievement, resulting in higher final marks?

I would appreciate it if you would give me permission to use the results that were obtained from this class for educational research purposes.

Confidentiality of individuals will be protected. For research purposes, only the course description (i.e. English 175), the semester, the number of students in class, the evaluation instruments for the specific unit and the final grades will be used. Students will be identified only by code numbers. Upon completion of the research, all data will be destroyed. Participation in this study is voluntary and your responses will remain anonymous. You may withdraw from the study at any time.

If you are willing to allow me to use the data from your class, please fill out the information and sign the form in the spaces provided below.

I agree to participate in this research project.

Please circle your response.

Yes

No

Course: English 175 03C

Location : LCC

Format of class: 44 hours

3 hours a week

Instructor: J. L. Buis

Semester: Fall 96

Number of Students: 17

Student's I.D.# _____

Student's Code # _____

Student's Permission/Signature:

Date:

(please read the information on the reverse side)

I would be more than willing to share the results of my research with you. The results might be of interest to those of you who in your future careers, may be teaching, coaching, presenting workshops or acting as facilitators for organizations.

If you wish more information regarding this study and its outcomes, please contact:

Dr. Richard Butt
Supervisor of Project
Faculty of Education
University of Lethbridge
Lethbridge, Alberta
403 - 329-2434

or

Dr. Robert Runte
Chairman, Faculty of Education Human Subjects Research Committee
Faculty of Education
University of Lethbridge
Lethbridge, Alberta
403 - 329-2454

**UNIT FOR REPORT/PROPOSAL WRITING
ENGLISH 176 CRIMINAL JUSTICE**

To assist you in mastering the skills in writing academic research papers and professional proposals, each of the following assignments provides an opportunity for you to practice the writing techniques required.

Assignments:

- | | | |
|----|---------------------------|---------------------|
| 1. | Outlining Doc. #1 | - based on proposal |
| 2. | Small Group Presentations | - based on proposal |
| 3. | Documentation Assignment | - based on proposal |
| 4. | Outlining Doc. #2 | - based on proposal |
| 5. | Questionnaire | - based on proposal |
| 6. | Final Proposal | |

Due dates for assignments #1- 4 will be announced in class.

- Outlining Assignments are worth 10% of your final mark
- The Short Report/Proposal is worth 20% of your final mark

Research Paper Outline Documents 1 & 2 must be handed in before final proposal/ report will be accepted for marking.

DATE FOR THE FINAL PROPOSAL WILL BE ANNOUNCED IN CLASS.

TEXTBOOK REFERENCES:

Chapters 9-10 - A Guide to Police Writing
 Chapters 22-26 - The Bare Essentials
 Research Paper APA Format (1997) Package

Class Handouts:

- | | |
|---|----------------------------|
| - How to Write a Research Paper for English 175 | |
| - Plagiarism | - Short Report Checklist |
| - Assignment Outlines | - Writing a Research Paper |

ENGLISH 175 RESEARCH PAPER A PROPOSAL

Organization of Proposal

Write a short research proposal based on the theme you have chosen.

Your scenario presents problems which you should be able to address within 1300 words (typed double-spaced). In addition, a Formal Cover Page, an Appendix Page, a Reference Page and copies of questionnaires (on separate pages) should accompany the report. The main portion of your proposal text will be approximately 6-7 pages in length.

Organize your report to convey the required information clearly and concisely. You will be writing in the **DIRECT ORDER** format. Be consistent in time viewpoint. Use accepted format and style for short proposals. Type the body of your proposal double-spaced, indent paragraphs five spaces and double space after headings, and triple space before major headings. Use headings and subheadings to subdivide your report into logical sections.

Handouts given in class and marking sheets will also provide assistance.

Format

- minimum 1300 words
- report approximately 6-7 pages long (excluding Cover Page, Appendix Page, Reference Page and copies of questionnaires)
- cover page (including all identifying information in 3 point format)
- double spaced
- indent 5 spaces to indicate paragraphs
- number pages and provide running heads top left corner of each page
- margins at least 1" left, right, top and bottom
- surname top right corner of each page
- minimum of 1 graph - 1/2 page size
- minimum 3 sources with at least 3 citations
- APA style citations/documentation only
- Reference page

Graphs

Use at least one appropriate graphic aid of your own invention to illustrate your findings. Graphics do not need to be machine-produced, but should be neatly drawn and labeled in black ink. **They must be original.** If you use more than one graphic, the length of your report must go up accordingly. Only one graphic is included in the minimum 6-7 page length. Assigned length allows for a graphic of reasonable size, suggested to be no more than half-page in size.

Research

You must use a **minimum of 3 sources** that are clearly relevant to your topic. You may use your questionnaire's data as sources. At least one source must be from a current journal article.

Do not quote extensively; although you may wish to use occasional brief quotations to illustrate your points. **Remember: The position you take in the report is your own, and the points you develop to support or illustrate that position must be your own as well.** Use the sources **ONLY** to back up or illustrate the points you yourself are making. Documentation and References entries are explained and shown in **APA Format (1997) Package**. Additional handouts were made available in class. **Note: You will use the APA method to cite your sources.** Use at least **three different entries/citations** to indicate a reasonable amount of research.

Note: Give credit where credit is due! Be sure to list all the print/nonprint resources you use in your report on a References Page at the end of your report. **DO NOT PLAGIARIZE** from the journal articles.

Proofread carefully. The assignment is worth 20% of your final course grade. The report's total mark is out of 150.

Due Date: TO BE ANNOUNCED

Research Paper Outline Documents 1 & 2 must be handed in and evaluated by due dates before final proposal will be accepted for marking.

* **Document 1** must be handed in with **Document 2**.

* **Document 2** must be handed in with your **final paper**.

* A copy of the questionnaire and a copy of the questionnaire showing data results will be submitted in the final report in the Appendix portion of your proposal.

Appendix D

**ENGLISH 175 - CRIMINAL JUSTICE
RESEARCH PAPER: A PROPOSAL**

ASSIGNMENT #1**Research Paper Outline Working Document #1**

The purpose of this assignment is to give practice in the skills involved in writing **RESEARCH AND/OR PROPOSALS**. You will be submitting a research paper in a Proposal format. This report is the style of report that you will be routinely presenting to your superiors. While the proposal format is different from research papers you may be submitting in present or future college or university courses, there are several similar skills involved in writing research papers, reports or proposals.

THIS DRAFT DOCUMENT IS TO BE HANDED IN FOR INSTRUCTOR APPROVAL OF YOUR TOPIC FOR YOUR PROPOSAL. THIS ASSIGNMENT IS TO BE TYPED DOUBLE-SPACED. BE SURE TO INCLUDE EACH OF THE FOLLOWING STEPS.

STEPS

- | | |
|------------------------------------|--|
| 1. BREAK IT DOWN | Pick an approach to take on your theme. Give a summary of the content or purpose of the paper in one or two sentences. |
| 2. BRAINSTORM | List three to five key points you think you may discuss. Provide examples. |
| 3. CHOOSE RESOURCES (THREE) | Choose material you think you could use to provide research for this paper. Give the titles of the books, articles in periodicals, and the titles of the periodicals. (Resources must be current periodicals; retrievable electronic data; one entry from the vertical files may be used.) Your other sources will include your response letter and your questionnaire. |
| 4. PHOTOCOPY | From a periodical, copy one article that you could use as a reference. It should be no more than three pages in length. ATTACH TO DOCUMENT #1 TO BE HANDED IN. |
| 5. WRITE | Complete a “working” or tentative thesis statement. |
| 6. DRAFT | Prepare a rough outline of your paper. Plot your paper into the appropriate sections. |

PLEASE HAND IN EVALUATION SHEET WITH THIS ASSIGNMENT

Appendix E

**ENGLISH 175 - RESEARCH PAPER
A PROPOSAL**

ASSIGNMENT #2**Oral Small Group Presentations**

This activity is to assist each student with his/her proposal. Working in small groups (3-4 students), each student will outline the topic or the approach of his/her proposal to the group. Use your returned and marked Document #1 for assistance.

You will want to give a clear and concise thesis statement which will identify the major three factors that you are going to discuss in your report. You will explain how you are going to develop each major factor by outlining at least two sub-factors for each one of the major factors. In reports discussing only two major factors, there should be at least three sub-factors for each one of the major factors. You will discuss the target group and the approach of the questions for your questionnaire.

Be prepared. Know your topic.

Your presentation should be approximately ten minutes in length. Allow for approximately fifteen minutes for general discussion regarding each proposal. Be prepared to answer questions from your classmates about your topic. All students are expected to offer constructive suggestions to the presenter. Inappropriate remarks will be considered negative participation.

Handouts will be provided to help guide the discussion in your groups.

Each presenter will:

- summarize his/her approach to the report.
- outline a clear and concise thesis statement which identifies the major three factors to be discussed.
- outline and identify at least two sub-factors for each one of the major factors.
- present first and second level headings in a parallel form.
- present the target group and the approach of the questionnaire.

ENGLISH 175
GUIDELINES FOR SMALL GROUP PRESENTATIONS

- PARTICIPATE
- LISTEN
- DISCUSS
- SUGGEST

You are listening for:

- **FORMAT**
 - Appropriate Length of Presentation
 - Concept of Report Summarized Clearly
- **CONTENT**
 - Approach Clearly Given
 - Clear Concise Thesis Statement
 - First Major Factor clearly identified
Sub-factor presented in a parallel format
Sub-factor presented in a parallel format
 - Second Major Factor clearly identified
Sub-factor presented in a parallel format
Sub-factor presented in a parallel format
 - Third Major Factor clearly identified
Sub-factor presented in a parallel format
Sub-factor presented in a parallel format
- **QUESTIONNAIRE**
 - Appropriate Target Group
 - Clear and Suitable Questions

You are discussing and offering suggestions to each group member so he/she can improve or develop his/her report.

Appendix F

**ENGLISH 175 - CRIMINAL JUSTICE
RESEARCH PAPER: A PROPOSAL**

ASSIGNMENT #3**Research Paper Outline Document #2****PROCEDURE:****PART A**

Using the scenario you chose in outlining Assignment #1, prepare the outline or blueprint for:

1. The correct sequence or format of report for a Short Report/Proposal written in the DIRECT APPROACH.
2. For each factor that will be discussed in the body of the report, give a possible First Level Heading and at least two captions or headings at the second level. At least three factors or bases for division should be shown.
3. You may identify your captions or heading by either conventional method.

PART B

1. Prepare the Recommendations portion of your paper as if you were writing the entire paper. You should include at least three and not more than six recommendations in this section.
2. Write a thesis statement in a sentence or two that would be included in the Introduction portion of your paper.
3. Using your article from Working Document #1, take a valid quote from it, and use the quote in one or two sentences. APA style of documenting must be used.
4. Prepare a Reference Page, using at least three sources. Use APA style of documentation.

PLEASE HAND IN DOCUMENT #1 WITH THIS ASSIGNMENT.

ENGLISH 175 - CRIMINAL JUSTICE
Research Paper - A Proposal

ASSIGNMENT #5**Questionnaires**

Questionnaires are often useful for gathering information for reports and research papers. Of the many primary research techniques, the most frequently used are probably questionnaires, experiments, interviews, personal observation and organization files. Properly developed questionnaires can provide an enormous amount of useful data for your report. Improperly developed, however, questionnaires can give you misleading and often misinterpreted information.

If you are asked to write questions for a questionnaire, you need to make sure that the questions will elicit the information that you are looking for. The way you phrase the questions will determine if your data are a true reflection of what people are thinking.

Create a questionnaire with a **minimum of six appropriate questions** pertaining to your topic. Your questions may be presented in the format of your choice except do **not** use the open-ended questions pattern, since the responses elicited from this style of questioning are very difficult to tabulate and analyze.

For the purpose of this assignment, you will be providing the questions and the answers gained from the survey. The questionnaire and its results will provide a source of the research component for your paper and will provide data to assist you with your graph. In your final submission, the questionnaire and the tabulation of the responses will be included in the Appendix portion of your paper.

Please remember questionnaires use the following criteria:

- appropriate questions
- instructions
- you approach
- eye appeal (title, etc.)

PLEASE HAND IN EVALUATION SHEET WITH ASSIGNMENT

Appendix H

Pretest for Report Writing Unit

This is a pretest. Marks will NOT be recorded as part of your course marks. If you don't know the correct response, guess! At the end of this unit, you will have the opportunity to rewrite this test.

Use the last Five Digits of your parents' phone number as your name or code.

True or False (mark A or B on Scantron Sheet)

1. A thesis statement can be formed as a question.
2. When you are writing a report to your superiors, it is wise to use pronouns within the body of the report.
3. In the direct format report, recommendations are placed at the beginning of the report.
4. A report written in the APA format is characterized by the author and the page number being inserted at the top of each page of the report.
5. When time is used as a basic plan of organization, the sequence may be past to present or present to past.
6. Recommendations are the same as conclusions.
7. For the convenience of the reader, all the graphics in a report are placed compactly together in the appendix.
8. Headings at the same level do not have to be of the same grammatical form.
9. Criminal Justice students would probably find the Reader's Digest Guide to Periodicals as the best index guide for a report on fraud practices.

Multiple Choice

10. Academic papers are written usually in:
 - a. the direct format
 - b. the indirect format
 - c. the persuasive format
 - d. all of the above
 - e. none of the above
11. Which heading below is an example of a topic heading is:
 - a. Where Did All the Officers Go?
 - b. Decrease in Alberta's Crime Rate
 - c. Advantages
 - d. Factors Can Build a Report
 - e. none of the above
12. One of these headings is grammatically correct. Mark it.
 - a. District A leads in Community Policing incentives
 - b. District B Ranks Above Its Competitors
 - c. District C Suffers From lack of Morale and Motivation amongst the twenty - three agencies Compared to the control Group
 - d. all of the above are correct
 - e. none of the above are correct

13. Which graphs are best received by the reader:
- line graphs
 - numerical graphs
 - bar graphs
 - pictograms
 - all of the above
14. Mark the answer that most appropriately determines the makeup of a report; that is whether it will be long or short , letter of transmittal, title page etc.
- writing style
 - formality and length
 - style of font
 - reader and writer's relationship
 - writer's own preference
15. Mark the best choice of factors to be used in a report based on the initiation of two community policing programs being developed in Maple Creek, SK. and Leduc, AB.
- time
 - place
 - quantity
 - all of the above
 - none of the above
16. Using APA style of documentation, the following can not be documented.
- lyrics to songs
 - T.V. Shows
 - telephone conversations
 - all these examples can be documented
 - all these examples can not be documented
17. The following is a correct entry of APA documentation style
- Buis, Jay L., *Writing Reports Can Be Easy*. 1996 p.11
Macmillan Publishers Ltd. Lethbridge AB.
 - Buis, J.L. (1996). Writing reports can be easy.
Lethbridge: Macmillan: pp.11.
 - Writing Reports Can Be Easy, J.L. Buis, 1996, Macmillan
Publishers, Toronto, p. 11.
 - Writing Reports Can Be Easy, J.L. Buis, 1996, Macmillan
Publishers, Toronto, p. 11.
 - all are correct entries depending on the length of the paper
18. Primary Sources for a report would include
- up-to-date text books
 - reference books
 - published proceedings from a conference
 - all of the above
 - none of the above
19. Which following entry for a direct quote is written correctly in the APA format
- "blah...blah...blah....." (Buis, 11).
 - "blah...blah...blah....." . (Buis, 1996, p. 11).
 -blah...blah...blah.... (Buis, 1996).
 - "blah...blah...blah....." (Buis, 1996, p.11).
 -blah...blah...blah..... (Buis, 1996, 11).
20. How confident are you that you knew the answers to this quiz?
- not at all confident
 - knew some of the answers but not enough to pass it
 - knew half of the answers, but still confused about what is meant by some of the questions
 - pretty good, miss one or two of the question
 - knew the answers perfectly

Appendix I

Post-test for Report Writing Unit

This is the post-test for the Report Writing Unit. Marks will **NOT** be recorded as part of your course marks. Use the last Five Digits of your parents' phone number as your name or code. Some of you will be using your birth date.

True or False (mark A or B on Scantron Sheet)

1. A thesis statement can be formed as a question.
2. When you are writing a report to your superiors, it is wise to use pronouns within the body of the report.
3. In the direct format report, recommendations are placed at the beginning of the report.
4. A report written in the APA format is characterized by the author and the page number being inserted at the top of each page of the report.
5. When time is used as a basic plan of organization, the sequence may be past to present or present to past.
6. Recommendations are the same as conclusions.
7. For the convenience of the reader, all the graphics in a report are placed compactly together in the appendix.
8. Headings at the same level do not have to be of the same grammatical form.
9. Criminal Justice students would probably find the Reader's Digest Guide to Periodicals as the best index guide for a report on fraud practices.

Multiple Choice

10. Academic papers are written usually in:
 - a. the direct format
 - b. the indirect format
 - c. the persuasive format
 - d. all of the above
 - e. none of the above
11. Which heading below is an example of a topic heading is:
 - a. Where Did All the Officers Go?
 - b. Decrease in Alberta's Crime Rate
 - c. Advantages
 - d. Factors Can Build a Report
 - e. none of the above
12. One of these headings is grammatically correct. Mark it.
 - a. District A leads in Community Policing incentives
 - b. District B Ranks Above Its Competitors
 - c. District C Suffers From lack of Morale and Motivation amongst the twenty - three agencies Compared to the control Group
 - d. all of the above are correct
 - e. none of the above are correct

13. Which graphs are best received by the reader:
- line graphs
 - numerical graphs
 - bar graphs
 - pictograms
 - all of the above
14. Mark the answer that most appropriately determines the makeup of a report; that is whether it will be long or short , letter of transmittal, title page etc.
- writing style
 - formality and length
 - style of font
 - reader and writer's relationship
 - writer's own preference
15. Mark the best choice of factors to be used in a report based on the initiation of two community policing programs being developed in Maple Creek, SK. and Leduc, AB.
- time
 - place
 - quantity
 - all of the above
 - none of the above
16. Using APA style of documentation, the following can not be documented.
- lyrics to songs
 - T.V. Shows
 - telephone conversations
 - all these examples can be documented
 - all these examples can not be documented
17. The following is a correct entry of APA documentation style
- Buis, Jay L., *Writing Reports Can Be Easy*. 1996 p.11
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Lethbridge: Macmillan: pp.11.
 - Writing Reports Can Be Easy*, J.L. Buis, 1996, Macmillan
Publishers, Toronto, p. 11.
 - Writing Reports Can Be Easy, J.L. Buis, 1996, Macmillan
Publishers, Toronto, p. 11.
 - all are correct entries depending on the length of the paper
18. Primary Sources for a report would include
- up-to-date text books
 - reference books
 - published proceedings from a conference
 - all of the above
 - none of the above
19. Which following entry for a direct quote is written correctly in the APA format
- "blah...blah...blah....." (Buis, 11).
 - "blah...blah...blah....." . (Buis, 1996, p. 11).
 -blah...blah...blah.... (Buis, 1996).
 - "blah...blah...blah....." (Buis, 1996, p.11).
 -blah...blah...blah..... (Buis, 1996, 11).
20. How confident are you that you knew the answers to this quiz?
- not at all confident
 - knew some of the answers but not enough to pass it
 - knew half of the answers, but still confused about what is meant by some of the questions
 - pretty good, miss one or two of the question
 - knew the answers perfectly

Appendix J

FINAL QUESTIONNAIRE FOR UNTREATED CLASSES

Final Questionnaire on the Report Writing Unit

The Report Writing Unit has a lot of material and new concepts in it. As you are aware, the material is covered very quickly in this unit. Often instructors are not fully aware of problems individual students may be having understanding the material that is presented in each of the classes during this unit.

While teaching this unit, I was concerned about these major questions:

1. how well are the students learning the material?
2. do the students feel that they have an opportunity to ask questions?

THERE ARE NO RIGHT OR WRONG ANSWERS. I am interested in your opinion. Your participation is voluntary.

PLEASE ANSWER THE FOLLOWING QUESTIONS ON SCANTRON SHEET.

PLEASE DO NOT PUT YOUR NAME ON THE QUESTIONNAIRE OR ON THE SCANTRON. YOUR RESPONSES ARE TO BE CONFIDENTIAL.

1. Do you feel that the pretest helped you to identify what new material would be introduced in the report writing unit? .
 - a. yes
 - b. no
2. Did the pretest introduce concepts that were new to you?
 - a. yes
 - b. no
3. When answering the post-test, how confident were you that you knew how to write a proposal in the direct format?
 - a. not at all confident
 - b. understood some of concepts but not enough to master them
 - c. understood half of the concepts but still confused about report writing
 - d. understood pretty well
 - d. understood perfectly
4. Did you ask a lot of questions in class?
 - a. yes (If your response was Yes, please answer question # 5.)
 - b. no (If your response was No, please answer question # 6.)
5. I asked a lot of questions because:
 - a. I was very comfortable asking questions in class
 - b. I asked questions but I could have asked more questions if time permitted
 - c. my questions were answered somewhat
 - d. my questions were answered fully
6. I didn't ask a lot of questions because:
 - a. I prefer not to ask questions in case the questions sound dumb
 - b. I prefer to ask another student versus ask the instructor
 - c. I like to talk to the instructor privately
 - d. the instructor never had time to respond to all my questions
 - e. the class was so rushed, there was never any time to ask questions
 - f. I thought I understood the material taught

(see over)

7. Did you approach the instructor for individual help?_
- a. yes (If your response was Yes, please answer questions # 8 and #9)
 - b. no (If your response was No, please proceed to question #10)
8. I met with the instructor.
- a. in the classroom before or after class
 - b. in the hallway after class
 - c. in the instructor's office
9. When I met with the instructor, my questions were answered.
- a. not to my satisfaction
 - b. somewhat
 - c. completely
10. Did you read the appropriate textbook chapters pertaining to the material being presented in class on a regular basis?
- a. yes: I read the material prior to the class
 - b. yes: I read the material covered in class shortly after the class
 - c. no: I never read the textbook chapters due to workload or personal life
 - d. no: I never read the chapters until I started studying for the quiz
 - e. somewhat: I looked at key headings and illustrations either before class or after class
 - f. I read the textbook when I started writing my report
 - g. read all of textbook until the last two weeks
11. Did you find the handouts helpful in class?
- a. yes
 - b. no
12. My opinion on the handouts is that:
- a. they were useful because I could listen fully and not have to take notes during the lectures
 - b. I used them more than I used the textbook
 - c. I found them useful because it was easy to make my notes right on them
 - d. I never looked at them
 - e. I only used the handouts to assist in completing assignments

THANK YOU FOR YOUR COMMENTS

Additional Comments:

Appendix K

FINAL QUESTIONNAIRE FOR TREATED CLASSES

Final Questionnaire on the Report Writing Unit

The Report Writing Unit has a lot of material and new concepts in it. As you are aware, the material is covered very quickly in this unit. Often instructors are not fully aware of problems individual students may be having understanding the material that is presented in each of the classes during this unit.

While teaching this unit, I was concerned about these major questions:

1. how well are the students learning the material?
2. do the students feel that they have an opportunity to ask questions?
3. did the students have the opportunity for provide feedback to the instructor?
4. how did the students respond to this particular teaching approach?

I am interested in how you felt about the daily comment sheets that were used in the Report Writing Unit. **THERE ARE NO RIGHT OR WRONG ANSWERS.** I am interested in your opinion. Your participation is voluntary.

PLEASE ANSWER THE FOLLOWING QUESTIONS ON SCANTRON SHEET.
PLEASE DO NOT PUT YOUR NAME ON THE QUESTIONNAIRE OR ON THE SCANTRON.
YOUR RESPONSES ARE TO BE CONFIDENTIAL.

1. Do you feel that the pretest helped you to identify what new material would be introduced in the report writing unit? .
 - a. yes
 - b. no
2. Did the pretest introduce concepts that were new to you?
 - a. yes
 - b. no
3. When answering the post-test, how confident were you that you knew how to write a proposal in the direct format?
 - a. not at all confident
 - b. understood some of concepts but not enough to master them
 - c. understood half of the concepts but still confused about report writing
 - d. understood pretty well
 - e. understood perfectly
4. Did you respond every day that you were present in class on the appropriate comment sheet?
 - a. never
 - b. hardly ever
 - c. sometimes
 - d. most of the time
 - e. all of the time
5. Did you use the space provided to add personal comments or questions?
 - a. never
 - b. hardly ever
 - c. sometimes
 - d. most of the time
 - e. all of the time

(continue on next page)

6. Do you think the daily comment cards influenced how the previous class material was reviewed in the next class?
 - a. never
 - b. hardly ever
 - c. sometimes
 - d. most of the time
 - e. all of the time

7. Did you use the comment cards to signal to the instructor the level of understanding you had of the material presented in that particular class?
 - a. never
 - b. hardly ever
 - c. sometimes
 - d. most of the time
 - e. all of the time

8. Do you think the daily comment cards influenced the instructor's approach in the next class?
 - a. never
 - b. hardly ever
 - c. sometimes
 - d. most of the time
 - e. all of the time

9. Did you ask a lot of questions in class?
 - a. yes (If your response was Yes, please answer question # 10.)
 - b. no (If your response was No, please answer question # 11.)

10. I asked a lot of questions because:
 - a. I was very comfortable asking questions in class
 - b. I asked questions but I could have asked more questions if time permitted
 - c. my questions were answered somewhat
 - d. my questions were answered fully

11. I didn't ask a lot of questions because:
 - a. I prefer not to ask questions in case the questions sound dumb
 - b. I prefer to ask another student versus ask the instructor
 - c. I like to talk to the instructor privately
 - d. the instructor never had time to respond to all my questions
 - e. the class was so rushed, there was never any time to ask questions
 - f. I thought I understood the material taught

12. Was it easier for you to add your personal comments on the comment sheets than ask a question in class?
 - a. yes
 - b. no

13. Did you approach the instructor for individual help?
 - a. yes (If your response was Yes, please answer questions # 14 and #15)
 - b. no (If your response was No, please proceed to question #16)

(continue on next page)

14. I met with the instructor.
 - a. in the classroom before or after class
 - b. in the hallway after class
 - c. in the instructor's office

15. When I met with the instructor, my questions were answered.
 - a. not to my satisfaction
 - b. somewhat
 - c. completely

16. By responding to the comment cards, were you able to focus on the concepts you needed to work on or to get help with?
 - a. never
 - b. sometimes
 - c. always

17. Did you read the appropriate textbook chapters pertaining to the material being presented in class on a regular basis?
 - a. yes: I read the material prior to the class
 - b. yes: I read the material covered in class shortly after the class
 - c. no: I never read the textbook chapters due to workload or personal life
 - d. no: I never read the chapters until I started studying for the quiz
 - e. somewhat: I looked at key headings and illustrations either before class or after class
 - f. I read the textbook when I started writing my report
 - g. read all of textbook until the last two weeks

18. Did you find the handouts helpful in class?
 - a. yes
 - b. no

19. My opinion on the handouts is that:
 - a. they were useful because I could listen fully and not have to take notes during the lectures
 - b. I used them more than I used the textbook
 - c. I found them useful because it was easy to make my notes right on them
 - d. I never looked at them
 - e. I only used the handouts to assist in completing assignments

20. Did you like using the comment sheets as a form of feedback?
 - a. yes
 - b. no

21. Overall, my personal opinion on the daily comment sheets is:
 - a. I really saw no point to them
 - b. I liked the opportunity to give my personal feedback or to ask my own specific questions
 - c. I think using comment cards is an interesting concept but I don't know how valuable it was to me personally

THANK YOU FOR YOUR COMMENTS

Additional Comments:

Appendix L

**Pre and Post Test Results
For Treated and Untreated Sections**

| Year | Section | Code | Student ID | Pre-test | Post-test |
|-------------|----------------|-------------|-------------------|-----------------|------------------|
| 1 | A | T | 30662 | 47.4 | 57.9 |
| 1 | A | T | 8946 | 52.6 | 84.2 |
| 1 | A | T | 38870 | 42.1 | 47.4 |
| 1 | A | T | 60116 | 36.8 | 26.3 |
| 1 | A | T | 50116 | 63.2 | 89.5 |
| 1 | A | T | 7449 | 26.3 | 26.3 |
| 1 | A | T | 7203 | 26.3 | 47.4 |
| 1 | A | T | 7864 | 52.6 | 63.2 |
| 1 | A | T | 98515 | 57.9 | 73.7 |
| 1 | A | T | 17146 | 57.9 | 78.9 |
| 1 | A | T | 71172 | 42.1 | 63.2 |
| 1 | A | T | 80923 | 47.4 | 78.9 |
| 1 | A | T | 9879 | 36.8 | 78.9 |
| 1 | A | T | 82179 | 36.8 | 73.7 |
| 1 | A | T | 73966 | 47.4 | 73.7 |
| 1 | A | T | 26658 | 47.4 | 68.4 |
| 1 | A | T | 72263 | 42.1 | 52.6 |
| 1 | A | T | 72337 | 21.1 | 68.4 |
| 1 | A | T | 25913 | 36.8 | 84.2 |
| 1 | A | T | 79399 | 52.6 | 73.7 |
| 1 | A | T | 53973 | 42.1 | 78.9 |
| 1 | A | T | 96989 | 36.8 | 68.4 |
| 1 | A | T | 51078 | 52.6 | 84.2 |
| 1 | A | T | 32948 | 47.4 | 73.7 |
| 1 | A | T | 23973 | 42.1 | 89.5 |
| 1 | A | T | 34851 | 31.6 | 68.4 |
| 1 | A | T | 96850 | 21.1 | 78.9 |
| 1 | A | T | 34560 | 52.6 | 89.5 |
| 1 | A | T | 2035 | 26.3 | 63.2 |
| 1 | A | T | 16842 | 31.6 | 84.2 |
| 1 | A | T | 42365 | 15.8 | 73.7 |
| 1 | A | T | 23625 | 36.8 | 84.2 |
| 1 | A | T | 302 | 42.1 | 63.2 |
| 1 | A | T | 26835 | 42.1 | 89.5 |
| 1 | B | T | 23294 | 26.3 | 68.4 |
| 1 | B | T | 3018 | 47.4 | 78.9 |
| 1 | B | T | 80484 | 26.3 | 73.7 |
| 1 | B | T | 80712 | 52.6 | 84.2 |
| 1 | B | T | 31404 | 31.6 | 68.4 |
| 1 | B | T | 54677 | 15.8 | 78.9 |

**Pre and Post Test Results
For Treated and Untreated Sections**

| Year | Section | Code | Student ID | Pre-test | Post-test |
|-------------|----------------|-------------|-------------------|-----------------|------------------|
| 1 | B | T | 45738 | 31.6 | 52.6 |
| 1 | B | T | 82163 | 15.8 | 63.2 |
| 1 | B | T | 98897 | 31.6 | 89.5 |
| 1 | B | T | 80583 | 31.6 | 84.2 |
| 1 | B | T | 86314 | 42.1 | 84.2 |
| 1 | B | T | 12744 | 36.8 | 73.7 |
| 1 | B | T | 83165 | 57.9 | 89.5 |
| 1 | B | T | 377 | 26.3 | 73.7 |
| 1 | B | T | 33764 | 31.6 | 57.9 |
| 1 | B | T | 23893 | 31.6 | 78.9 |
| 1 | B | T | 25910 | 31.6 | 68.4 |
| 1 | B | T | 71997 | 36.8 | 89.5 |
| 1 | B | T | 43155 | 52.6 | 89.5 |
| 1 | B | T | 74329 | 31.6 | 84.2 |
| 1 | B | T | 90624 | 31.6 | 78.9 |
| 1 | B | T | 60731 | 31.6 | 84.2 |
| 1 | B | T | 22234 | 31.6 | 57.9 |
| 2 | F | T | 44286 | 42.1 | 68.4 |
| 2 | F | T | 10699 | 47.4 | 78.9 |
| 2 | F | T | 12345 | 26.3 | 57.9 |
| 2 | F | T | 8289 | 26.3 | 78.9 |
| 2 | F | T | 42792 | 42.1 | 73.7 |
| 2 | F | T | 70939 | 42.1 | 84.2 |
| 2 | F | T | 40539 | 47.4 | 84.2 |
| 2 | F | T | 55555 | 36.8 | 89.5 |
| 2 | F | T | 49785 | 57.9 | 94.7 |
| 2 | F | T | 16949 | 47.4 | 78.9 |
| 2 | F | T | 42026 | 42.1 | 78.9 |
| 2 | F | T | 6478 | 42.1 | 73.7 |
| 2 | F | T | 53189 | 31.6 | 68.4 |
| 2 | F | T | 11654 | 52.6 | 89.5 |
| 2 | F | T | 10650 | 31.6 | 47.4 |
| 2 | F | T | 82267 | 31.6 | 52.6 |
| 2 | F | T | 78986 | 31.6 | 73.7 |
| 2 | F | T | 2922 | 42.1 | 63.2 |
| 2 | F | T | 18651 | 36.8 | 73.7 |
| 2 | F | T | 42926 | 52.6 | 63.2 |
| 2 | F | T | 34432 | 52.6 | 84.2 |
| 2 | F | T | 2473 | 31.6 | 57.9 |
| 2 | F | T | 54010 | 47.4 | 68.4 |

**Pre and Post Test Results
For Treated and Untreated Sections**

| Year | Section | Code | Student ID | Pre-test | Post-test |
|-------------|----------------|-------------|-------------------|-----------------|------------------|
| 2 | F | T | 31859 | 47.4 | 73.7 |
| 2 | F | T | 44910 | 47.4 | 63.2 |
| 2 | F | T | 19014 | 36.8 | 63.2 |
| 2 | F | T | 76794 | 31.6 | 73.7 |
| 2 | F | T | 32267 | 47.4 | 78.9 |
| 2 | F | T | 19841 | 21.1 | 78.9 |
| 2 | F | T | 89728 | 36.8 | 63.2 |
| 2 | G | T | 65429 | 31.6 | 52.6 |
| 2 | G | T | 35985 | 57.9 | 84.2 |
| 2 | G | T | 86179 | 42.1 | 78.9 |
| 2 | G | T | 24634 | 15.8 | 47.4 |
| 2 | G | T | 0 | 42.1 | 63.2 |
| 2 | G | T | 9999 | 26.3 | 84.2 |
| 2 | G | T | 72661 | 31.6 | 89.5 |
| 2 | G | T | 74280 | 31.6 | 68.4 |
| 2 | G | T | 38829 | 31.6 | 52.6 |
| 2 | G | T | 73444 | 21.1 | 36.8 |
| 2 | G | T | 96123 | 42.1 | 78.9 |
| 2 | G | T | 30184 | 26.3 | 73.7 |
| 2 | G | T | 90652 | 15.8 | 73.7 |
| 2 | G | T | 93247 | 26.3 | 73.7 |
| 2 | G | T | 41885 | 47.4 | 78.9 |
| 2 | G | T | 2023 | 52.6 | 84.2 |
| 2 | G | T | 82482 | 31.6 | 89.5 |
| 2 | G | T | 22452 | 47.4 | 73.7 |
| 2 | G | T | 72840 | 21.1 | 68.4 |
| 2 | G | T | 21183 | 36.8 | 78.9 |
| 2 | G | T | 81918 | 42.1 | 84.2 |
| 3 | K | T | 84506 | 36.8 | 63.2 |
| 3 | K | T | 12941 | 36.8 | 68.4 |
| 3 | K | T | 82712 | 36.8 | 63.2 |
| 3 | K | T | 7799 | 42.1 | 63.2 |
| 3 | K | T | 3477 | 47.4 | 78.9 |
| 3 | K | T | 17577 | 57.9 | 89.5 |
| 3 | K | T | 73005 | 26.3 | 68.4 |
| 3 | K | T | 53542 | 21.1 | 73.7 |
| 3 | K | T | 21741 | 15.8 | 63.2 |
| 3 | K | T | 35751 | 42.1 | 47.4 |
| 3 | K | T | 71890 | 52.6 | 78.9 |
| 3 | K | T | 16008 | 52.6 | 84.2 |

**Pre and Post Test Results
For Treated and Untreated Sections**

| Year | Section | Code | Student ID | Pre-test | Post-test |
|-------------|----------------|-------------|-------------------|-----------------|------------------|
| 3 | K | T | 62688 | 63.2 | 73.7 |
| 3 | K | T | 63117 | 47.4 | 73.7 |
| 3 | K | T | 14851 | 36.8 | 78.9 |
| 3 | K | T | 42363 | 26.3 | 78.9 |
| 3 | K | T | 32650 | 31.6 | 78.9 |
| 3 | K | T | 61058 | 36.8 | 78.9 |
| 3 | K | T | 58241 | 57.9 | 84.2 |
| 3 | K | T | 52 | 36.8 | 68.4 |
| 3 | K | T | 12456 | 52.6 | 73.7 |
| 3 | K | T | 8773 | 42.1 | 78.9 |
| 3 | K | T | 24420 | 31.6 | ? |
| 3 | K | T | 52425 | 47.4 | 78.9 |
| 3 | K | T | 75044 | 15.8 | 78.9 |
| 3 | K | T | 93997 | 10.5 | 31.6 |
| 3 | K | T | 52530 | 31.6 | 57.9 |
| 3 | K | T | 44445 | 57.9 | 57.9 |
| 3 | K | T | 1110 | 42.1 | 78.9 |
| 3 | K | T | 85323 | 52.6 | 68.4 |
| 3 | K | T | 17862 | 31.6 | 73.7 |
| 3 | K | T | 9222 | 26.3 | 63.2 |
| 3 | L | T | 50372 | 42.1 | 78.9 |
| 3 | L | T | 72773 | 47.4 | 78.9 |
| 3 | L | T | 95757 | 36.8 | 63.2 |
| 3 | L | T | 84513 | 47.4 | 73.7 |
| 3 | L | T | 82272 | 36.8 | 78.9 |
| 3 | L | T | 93895 | 26.3 | 63.2 |
| 3 | L | T | 72823 | 26.3 | 57.9 |
| 3 | L | T | 88888 | 21.1 | 42.1 |
| 3 | L | T | 84698 | 57.9 | 84.2 |
| 3 | L | T | 78378 | 31.6 | 73.7 |
| 3 | L | T | 12345 | 47.4 | 68.4 |
| 3 | L | T | 52502 | 47.4 | 68.4 |
| 3 | L | T | 23265 | 31.6 | 68.4 |
| 3 | L | T | 2079 | 42.1 | 68.4 |
| 3 | L | T | 9660 | 57.9 | 68.4 |
| 3 | L | T | 40653 | 15.8 | 68.4 |
| 3 | L | T | 5136 | 52.6 | 89.5 |
| 3 | L | T | 10845 | 47.4 | 94.7 |
| 3 | L | T | 81392 | 21.1 | 100 |
| 3 | L | T | 42765 | 36.8 | 84.2 |

**Pre and Post Test Results
For Treated and Untreated Sections**

| Year | Section | Code | Student ID | Pre-test | Post-test |
|---|----------------|-------------|-------------------|-----------------|------------------|
| 3 | L | T | 64074 | 36.8 | 47.4 |
| 3 | L | T | 95316 | 36.8 | 52.6 |
| 3 | L | T | 42375 | 31.6 | 73.7 |
| 3 | L | T | 85326 | 36.8 | 68.4 |
| 4 | P | T | 28933 | 36.8 | 57.9 |
| 4 | P | T | 24425 | 57.9 | 89.5 |
| 4 | P | T | 35869 | 42.1 | 84.2 |
| 4 | P | T | 72235 | 52.6 | 89.5 |
| 4 | P | T | 30413 | 52.6 | 100 |
| 4 | P | T | 70812 | 52.6 | 94.7 |
| 4 | P | T | 37600 | 26.3 | 63.2 |
| 4 | P | T | 42393 | 42.1 | 63.2 |
| 4 | P | T | 86975 | 57.9 | 78.9 |
| 4 | P | T | 93182 | 36.8 | 73.7 |
| 4 | P | T | 4188 | 31.6 | 73.7 |
| 4 | P | T | 2005 | 42.1 | 78.9 |
| 4 | P | T | 62375 | 47.4 | 89.5 |
| 4 | P | T | 13258 | 52.6 | 94.7 |
| 4 | P | T | 72033 | 47.4 | 84.2 |
| 4 | P | T | 52462 | 47.4 | 84.2 |
| 4 | P | T | 56915 | 47.4 | 94.7 |
| 4 | P | T | 79626 | 52.6 | 100 |
| 4 | P | T | 16161 | ? | 63.2 |
| 4 | Q | T | 87109 | 52.6 | 84.2 |
| 4 | Q | T | 92768 | 31.6 | 68.4 |
| 4 | Q | T | 12523 | 26.3 | 42.1 |
| 4 | Q | T | 6248728 | 36.8 | 78.9 |
| 4 | Q | T | 94231 | 47.4 | 89.5 |
| 4 | Q | T | 24452 | 52.6 | 100 |
| 4 | Q | T | 24156 | 36.8 | 63.2 |
| 4 | Q | T | 924947 | 36.8 | 89.5 |
| 4 | Q | T | 29642 | 42.1 | 78.9 |
| 4 | Q | T | 72193 | 47.4 | 84.2 |
| 4 | Q | T | 80208 | 52.6 | 89.5 |
| 4 | Q | T | 11638 | 42.1 | 78.9 |
| Overall Mean (average) Score of Treated Students | | | | 39.2 | 73.5 |
| 1 | C | U | 92137 | 57.9 | 73.7 |
| 1 | C | U | 82558 | 42.1 | 63.2 |
| 1 | C | U | 70296 | 42.1 | 63.2 |

**Pre and Post Test Results
For Treated and Untreated Sections**

| Year | Section | Code | Student ID | Pre-test | Post-test |
|-------------|----------------|-------------|-------------------|-----------------|------------------|
| 1 | C | U | 52297 | 31.6 | 63.2 |
| 1 | C | U | 76647 | 36.8 | 47.4 |
| 1 | C | U | 78654 | 42.1 | 68.4 |
| 1 | C | U | 31627 | 52.6 | 73.7 |
| 1 | C | U | 86112 | 47.4 | 73.7 |
| 1 | C | U | 16109 | 42.1 | 31.6 |
| 1 | C | U | 71967 | 52.6 | 47.4 |
| 1 | C | U | 18222 | 52.6 | 73.7 |
| 1 | C | U | 13852 | 26.3 | 63.2 |
| 1 | C | U | 7474 | 57.9 | 73.7 |
| 1 | C | U | 16008 | 31.6 | 52.6 |
| 1 | C | U | 85792 | 57.9 | 57.9 |
| 1 | C | U | 40641 | 47.4 | 68.4 |
| 1 | C | U | 33616 | 57.9 | 73.7 |
| 1 | C | U | 81174 | 26.3 | 47.4 |
| 1 | C | U | 883 | 47.4 | 57.9 |
| 1 | C | U | 24667 | 36.8 | 63.2 |
| 1 | C | U | 23698 | 31.6 | 68.4 |
| 1 | C | U | 8422 | 31.6 | 52.6 |
| 1 | C | U | 96577 | 31.6 | 68.4 |
| 1 | C | U | 13402 | 42.1 | 57.9 |
| 1 | C | U | 564 | 47.4 | 78.9 |
| 1 | C | U | 24606 | 31.6 | 52.6 |
| 1 | C | U | 62441 | 36.8 | 63.2 |
| 1 | C | U | 6719 | 31.6 | 57.9 |
| 1 | C | U | 13976 | 42.1 | 78.9 |
| 1 | C | U | 98483 | 26.3 | 47.4 |
| 1 | C | U | 86156 | 57.9 | 89.5 |
| 1 | D | U | 78638 | 26.3 | 47.4 |
| 1 | D | U | 1440 | 21.1 | 57.9 |
| 1 | D | U | 62508 | 36.8 | 63.2 |
| 1 | D | U | 85713 | 47.4 | 57.9 |
| 1 | D | U | 92309 | 36.8 | 57.9 |
| 1 | D | U | 70526 | 26.3 | 68.4 |
| 1 | D | U | 58072 | 26.3 | 42.1 |
| 1 | D | U | 52078 | 36.8 | 68.4 |
| 1 | D | U | 24893 | 63.2 | 84.2 |
| 1 | D | U | 89245 | 26.3 | 57.9 |
| 1 | D | U | 72224 | 42.1 | 63.2 |
| 1 | D | U | 73207 | 52.6 | 78.9 |

**Pre and Post Test Results
For Treated and Untreated Sections**

| Year | Section | Code | Student ID | Pre-test | Post-test |
|-------------|----------------|-------------|-------------------|-----------------|------------------|
| 1 | D | U | 84444 | 42.1 | 68.4 |
| 1 | D | U | 9516 | 36.8 | 63.2 |
| 1 | D | U | 48815 | 47.4 | - |
| 1 | D | U | 51026 | 26.3 | 63.2 |
| 1 | D | U | 20409 | 47.4 | 63.2 |
| 1 | D | U | 25800 | 36.8 | 73.7 |
| 1 | D | U | 60105 | 47.4 | 78.9 |
| 1 | D | U | 50725 | 47.4 | 89.5 |
| 1 | D | U | 32155 | 42.1 | 52.6 |
| 1 | D | U | 90105 | 36.8 | 57.9 |
| 1 | E | U | 52163 | 15.8 | 36.8 |
| 1 | E | U | 34903 | 47.4 | 63.2 |
| 1 | E | U | 63733 | 36.8 | 63.2 |
| 1 | E | U | 38329 | 42.1 | 78.9 |
| 1 | E | U | 83856 | 36.8 | 68.4 |
| 1 | E | U | 82890 | 47.4 | 63.2 |
| 1 | E | U | 42079 | 26.3 | 57.9 |
| 1 | E | U | 52137 | 42.1 | 68.4 |
| 1 | E | U | 34338 | 21.1 | 52.6 |
| 1 | E | U | 36032 | 31.6 | 84.2 |
| 1 | E | U | 27001 | 36.8 | 57.9 |
| 1 | E | U | 56659 | 36.8 | 52.6 |
| 1 | E | U | 80901 | 52.6 | 68.4 |
| 1 | E | U | 91818 | 47.4 | 84.2 |
| 1 | E | U | 90618 | 15.8 | 63.2 |
| 1 | E | U | 87210 | 52.6 | 73.7 |
| 1 | E | U | 4716 | 21.1 | 57.9 |
| 1 | E | U | 30837 | 42.1 | 68.4 |
| 1 | E | U | 55068 | 26.3 | 47.4 |
| 1 | E | U | 72225 | 31.6 | 57.9 |
| 1 | E | U | 17019 | 10.5 | 52.6 |
| 1 | E | U | 8682 | 26.3 | 68.4 |
| 1 | E | U | 65166 | 36.8 | 68.4 |
| 2 | H | U | 48720 | 47.4 | 57.9 |
| 2 | H | U | 86603 | 31.6 | 57.9 |
| 2 | H | U | 43674 | 21.1 | 42.1 |
| 2 | H | U | 87193 | 36.8 | 63.2 |
| 2 | H | U | 17695 | 36.8 | 68.4 |
| 2 | H | U | 73992 | 10.5 | 52.6 |
| 2 | H | U | 61888 | 42.1 | 47.4 |

**Pre and Post Test Results
For Treated and Untreated Sections**

| Year | Section | Code | Student ID | Pre-test | Post-test |
|-------------|----------------|-------------|-------------------|-----------------|------------------|
| 2 | H | U | 73751 | 57.9 | 78.9 |
| 2 | H | U | 38182 | 26.3 | 47.4 |
| 2 | H | U | 36173 | 47.4 | 68.4 |
| 2 | H | U | 2610 | 57.9 | 89.5 |
| 2 | H | U | 94800 | 21.1 | 57.9 |
| 2 | H | U | 80161 | 52.6 | 73.7 |
| 2 | H | U | 43554 | 47.4 | 73.7 |
| 2 | H | U | 24942 | 26.3 | 57.9 |
| 2 | H | U | 4444 | 21.1 | 47.4 |
| 2 | H | U | 4633 | 36.8 | 52.6 |
| 2 | H | U | 75199 | 52.6 | 73.7 |
| 2 | H | U | 52231 | 15.8 | 78.9 |
| 2 | H | U | 95067 | 57.9 | 78.9 |
| 2 | H | U | 4065 | 57.9 | 63.2 |
| 2 | H | U | 59958 | 31.6 | 57.9 |
| 2 | H | U | 84303 | 36.8 | 63.2 |
| 2 | H | U | 89868 | 52.6 | 68.4 |
| 2 | H | U | 41292 | 52.6 | 73.7 |
| 2 | H | U | 42654 | 26.3 | 52.6 |
| 2 | H | U | 61521 | 47.4 | 68.4 |
| 2 | I | U | 77062 | 26.3 | 52.6 |
| 2 | I | U | 10315 | 26.3 | 47.4 |
| 2 | I | U | 85657 | 36.8 | 73.7 |
| 2 | I | U | 6559 | 57.9 | 68.4 |
| 2 | I | U | 79625 | 36.8 | 84.2 |
| 2 | I | U | 94351 | 36.8 | 63.2 |
| 2 | I | U | 12607 | 26.3 | 63.2 |
| 2 | I | U | 1207 | 52.6 | 84.2 |
| 2 | I | U | 57867 | 26.3 | 63.2 |
| 2 | I | U | 54989 | 31.6 | 57.9 |
| 2 | I | U | 89336 | 52.6 | 78.9 |
| 2 | I | U | 79174 | 36.8 | 63.2 |
| 2 | I | U | 54407 | 42.1 | 73.7 |
| 2 | I | U | 94915 | 47.4 | 68.4 |
| 2 | I | U | 73431 | 15.8 | 57.9 |
| 2 | I | U | 82409 | 31.6 | 57.9 |
| 2 | I | U | 70227 | 36.8 | 52.6 |
| 2 | I | U | 11731 | 36.8 | 47.4 |
| 2 | I | U | 39519 | 36.8 | 63.2 |
| 2 | I | U | 96297 | 42.1 | 52.6 |

**Pre and Post Test Results
For Treated and Untreated Sections**

| Year | Section | Code | Student ID | Pre-test | Post-test |
|-------------|----------------|-------------|-------------------|-----------------|------------------|
| 2 | I | U | 31611 | 31.6 | 57.9 |
| 2 | I | U | 85680 | 36.8 | 57.9 |
| 2 | J | U | 99077 | 36.8 | 78.9 |
| 2 | J | U | 72135 | 26.3 | 47.4 |
| 2 | J | U | 19092 | 42.1 | 68.4 |
| 2 | J | U | 10754 | 47.4 | 68.4 |
| 2 | J | U | 46222 | 42.1 | 68.4 |
| 2 | J | U | 73796 | 42.1 | 73.7 |
| 2 | J | U | 46067 | 36.8 | 68.4 |
| 2 | J | U | 38553 | 31.6 | 63.2 |
| 2 | J | U | 18578 | 42.1 | 57.9 |
| 2 | J | U | 32780 | 31.6 | 57.9 |
| 2 | J | U | 57652 | 31.6 | 68.4 |
| 2 | J | U | 22275 | 36.8 | 68.4 |
| 2 | J | U | 1801 | 36.8 | 78.9 |
| 2 | J | U | 90407 | 42.1 | 68.4 |
| 2 | J | U | 40096 | 42.1 | 73.7 |
| 2 | J | U | 72118 | 26.3 | 63.2 |
| 2 | J | U | 42209 | 31.6 | 68.4 |
| 2 | J | U | 84395 | 21.1 | 26.3 |
| 2 | J | U | 44988 | 36.8 | 89.5 |
| 2 | J | U | 10608 | 26.3 | 84.2 |
| 2 | J | U | 35841 | 52.6 | ? |
| 2 | J | U | 16554 | 47.4 | 78.9 |
| 2 | J | U | 9000 | 47.4 | 84.2 |
| 2 | J | U | 91476 | 15.8 | 68.4 |
| 2 | J | U | 9240 | 26.3 | 57.9 |
| 2 | J | U | 60462 | 31.6 | 68.4 |
| 3 | M | U | 65358 | 42.1 | 63.2 |
| 3 | M | U | 35631 | 47.4 | 84.2 |
| 3 | M | U | 15252 | 21.1 | ? |
| 3 | M | U | 65205 | 31.6 | 42.1 |
| 3 | M | U | 35697 | 36.8 | 42.1 |
| 3 | M | U | 51993 | 26.3 | 52.6 |
| 3 | M | U | 78201 | 47.4 | 57.9 |
| 3 | M | U | 20034 | 26.3 | 57.9 |
| 3 | M | U | 73758 | 52.6 | 84.2 |
| 3 | M | U | 27321 | 31.6 | 78.9 |
| 3 | M | U | 65853 | 15.8 | 42.1 |
| 3 | M | U | 82956 | 31.6 | 57.9 |

**Pre and Post Test Results
For Treated and Untreated Sections**

| Year | Section | Code | Student ID | Pre-test | Post-test |
|-------------|----------------|-------------|-------------------|-----------------|------------------|
| 3 | M | U | 44064 | 31.6 | 68.4 |
| 3 | M | U | 43656 | 42.1 | 63.2 |
| 3 | M | U | 11238 | 57.9 | 73.7 |
| 3 | M | U | 89268 | 26.3 | 47.4 |
| 3 | M | U | 6804 | 31.6 | 63.2 |
| 3 | M | U | 83610 | 36.8 | 73.7 |
| 3 | M | U | 77841 | 52.6 | 68.4 |
| 3 | M | U | 46470 | 47.4 | 68.4 |
| 3 | M | U | 78594 | 52.6 | 63.2 |
| 3 | M | U | 67884 | 42.1 | 78.9 |
| 3 | M | U | 30777 | 36.8 | 73.7 |
| 3 | M | U | 34572 | 63.2 | 84.2 |
| 3 | M | U | 92652 | 26.3 | 57.9 |
| 3 | M | U | 24792 | 26.3 | 47.4 |
| 3 | M | U | 29643 | 52.6 | 57.9 |
| 3 | M | U | 402 | 31.6 | 63.2 |
| 3 | M | U | 50016 | 26.3 | 68.4 |
| 3 | N | U | 27675 | 26.3 | 73.7 |
| 3 | N | U | 12900 | 21.1 | 42.1 |
| 3 | N | U | 56532 | 36.8 | 73.7 |
| 3 | N | U | 30363 | 26.3 | 73.7 |
| 3 | N | U | 86520 | 36.8 | 68.4 |
| 3 | N | U | 1722 | 63.2 | 52.6 |
| 3 | N | U | 89109 | 52.6 | 63.2 |
| 3 | N | U | 96234 | 42.1 | 57.9 |
| 3 | N | U | 59304 | 36.8 | 57.9 |
| 3 | N | U | 90429 | 47.4 | 57.9 |
| 3 | N | U | 33057 | 47.4 | 68.4 |
| 3 | N | U | 43308 | 36.8 | 78.9 |
| 3 | N | U | 47928 | 47.4 | 84.2 |
| 3 | N | U | 35799 | 47.4 | 52.6 |
| 3 | N | U | 87888 | 26.3 | 36.8 |
| 3 | N | U | 25635 | 26.3 | 63.2 |
| 3 | N | U | 81477 | 15.8 | 57.9 |
| 3 | N | U | 8094 | 47.4 | 73.7 |
| 3 | N | U | 54678 | 36.8 | 78.9 |
| 3 | N | U | 32385 | 47.4 | 84.2 |
| 3 | N | U | 94965 | 5.3 | 68.4 |
| 3 | N | U | 3453 | 36.8 | 68.4 |
| 3 | N | U | 12246 | 36.8 | 68.4 |

**Pre and Post Test Results
For Treated and Untreated Sections**

| Year | Section | Code | Student ID | Pre-test | Post-test |
|-------------|----------------|-------------|-------------------|-----------------|------------------|
| 3 | N | U | 37962 | 21.1 | 57.9 |
| 3 | N | U | 50505 | 42.1 | 52.6 |
| 3 | N | U | 67950 | 26.3 | 47.4 |
| 3 | O | U | 71661 | 42.1 | 52.6 |
| 3 | O | U | 11562 | 31.6 | 57.9 |
| 3 | O | U | 40005 | 57.9 | 63.2 |
| 3 | O | U | 47775 | 31.6 | 47.4 |
| 3 | O | U | 51099 | 21.1 | 63.2 |
| 3 | O | U | 69345 | 57.9 | 68.4 |
| 3 | O | U | 27147 | 42.1 | 68.4 |
| 3 | O | U | 62214 | 31.6 | 73.7 |
| 3 | O | U | 56817 | 21.1 | 47.4 |
| 3 | O | U | 2730 | 26.3 | 52.6 |
| 3 | O | U | 83073 | 26.3 | 52.6 |
| 3 | O | U | 88074 | 47.4 | 63.2 |
| 3 | O | U | 49623 | 31.6 | 52.6 |
| 3 | O | U | 3870 | 42.1 | 73.7 |
| 3 | O | U | 30489 | 47.4 | 78.9 |
| 3 | O | U | 53157 | 36.8 | 84.2 |
| 3 | O | U | 24321 | 42.1 | 84.2 |
| 3 | O | U | 36384 | 52.6 | 78.9 |
| 3 | O | U | 72288 | 47.4 | 68.4 |
| 3 | O | U | 64026 | 52.6 | ? |
| 3 | O | U | 180 | 26.3 | 57.9 |
| 3 | O | U | 89841 | 52.6 | 57.9 |
| 3 | O | U | 57024 | 57.9 | 68.4 |
| 3 | O | U | 13203 | 26.3 | 78.9 |
| 4 | R | U | 52180 | ? | 68.4 |
| 4 | R | U | 32413 | 42.1 | 84.2 |
| 4 | R | U | 27920 | 42.1 | 63.2 |
| 4 | R | U | 2350 | 63.2 | 89.5 |
| 4 | R | U | 72625 | 57.9 | 84.2 |
| 4 | R | U | 63202 | 57.9 | 100 |
| 4 | R | U | 24989 | 42.1 | 73.7 |
| 4 | R | U | 34726 | 52.6 | 84.2 |
| 4 | R | U | 79329 | 57.9 | 94.7 |
| 4 | R | U | 84384 | 47.4 | 84.2 |
| 4 | R | U | 35100 | 36.8 | 63.2 |
| 4 | R | U | 72335 | 47.4 | 63.2 |
| 4 | R | U | 34378 | 36.8 | 63.2 |

**Pre and Post Test Results
For Treated and Untreated Sections**

| Year | Section | Code | Student ID | Pre-test | Post-test |
|---|----------------|-------------|-------------------|-----------------|------------------|
| 4 | R | U | 23542 | 42.1 | 68.4 |
| 4 | R | U | 34274 | 36.8 | 47.4 |
| 4 | S | U | 730104 | 0 | 26.3 |
| 4 | S | U | 263463 | 42.1 | 73.7 |
| 4 | S | U | 72127 | 57.9 | 84.2 |
| 4 | S | U | 86643 | 36.8 | 78.9 |
| 4 | S | U | 48263 | 47.4 | 78.9 |
| 4 | S | U | 43678 | 36.8 | 78.9 |
| 4 | S | U | 34052 | 31.6 | 68.4 |
| 4 | S | U | 93109 | 47.4 | 84.2 |
| 4 | S | U | 44081 | 47.4 | 63.2 |
| 4 | T | U | 46889 | 47.4 | 84.2 |
| 4 | T | U | 338027 | 36.8 | 78.9 |
| 4 | T | U | 347911 | 42.1 | 78.9 |
| 4 | T | U | 616498 | 31.6 | 47.4 |
| 4 | T | U | 268752 | 26.3 | 36.8 |
| 4 | T | U | 409184 | 36.8 | 52.6 |
| 4 | T | U | 271228 | 36.8 | 52.6 |
| 4 | T | U | 348083 | 36.8 | 78.9 |
| 4 | T | U | 189552 | 36.8 | 84.2 |
| 4 | T | U | 345279 | 52.6 | 89.5 |
| 4 | T | U | 801964 | 21.1 | 36.8 |
| 4 | T | U | 340304 | 31.6 | 63.2 |
| 4 | T | U | 447618 | 42.1 | 84.2 |
| 4 | T | U | 345311 | 26.3 | 31.6 |
| 4 | T | U | 268076 | 47.5 | 78.9 |
| 4 | T | U | 18562 | 57.9 | 47.4 |
| 4 | T | U | 345840 | 57.9 | 78.9 |
| 4 | T | U | 797363 | 63.2 | 63.2 |
| 4 | T | U | 594457 | 15.8 | 47.4 |
| 4 | T | U | 105575 | 68.4 | 89.5 |
| Overall Mean (average) Test Score for Untreated Students | | | | 38.6 | 65.1 |
| Overall Mean Mean Test Scores for all Students | | | | 38.8 | 68.7 |

Appendix M

Research Paper Results
Sorted by Year and Section
Detailed Listing by Unique Student Identifier

| Year | Section | Code | Student ID | Raw Score | Percent Score |
|-------------|----------------|-------------|-------------------|------------------|----------------------|
| 1 | A | T | 760508 | 124 | 82.7% |
| 1 | A | T | 721111 | 81 | 54.0% |
| 1 | A | T | 760905 | 120 | 80.0% |
| 1 | A | T | 740413 | 126 | 84.0% |
| 1 | A | T | 730707 | 78 | 52.0% |
| 1 | A | T | 760514 | 111 | 74.0% |
| 1 | A | T | 740624 | 137 | 91.3% |
| 1 | A | T | 770206 | 133 | 88.7% |
| 1 | A | T | 550419 | 142 | 94.7% |
| 1 | A | T | 770919 | 110 | 73.3% |
| 1 | A | T | 770720 | 121 | 80.7% |
| 1 | A | T | 730816 | 112 | 74.7% |
| 1 | A | T | 761115 | 147 | 98.0% |
| 1 | A | T | 730831 | 146 | 97.3% |
| 1 | A | T | 770928 | 120 | 80.0% |
| 1 | A | T | 771012 | 107 | 71.3% |
| 1 | A | T | 751015 | 113 | 75.3% |
| 1 | A | T | 770327 | 118 | 78.7% |
| 1 | A | T | 770716 | 130 | 86.7% |
| 1 | A | T | 730809 | 147 | 98.0% |
| 1 | A | T | 750322 | 150 | 100.0% |
| 1 | A | T | 740321 | 94 | 62.7% |
| 1 | A | T | 751201 | 144 | 96.0% |
| 1 | A | T | 770721 | 68 | 45.3% |
| 1 | A | T | 760520 | 99 | 66.0% |
| 1 | A | T | 720613 | 113 | 75.3% |
| 1 | A | T | 670301 | 98 | 65.3% |
| 1 | A | T | 760924 | 132 | 88.0% |
| 1 | A | T | 760730 | 117 | 78.0% |
| 1 | A | T | 721130 | 133 | 88.7% |
| 1 | A | T | 741004 | 117 | 78.0% |
| 1 | A | T | 740224 | 130 | 86.7% |
| 1 | A | T | 771026 | 96 | 64.0% |
| 1 | A | T | 770216 | 112 | 74.7% |
| 1 | B | T | 90285 | 0 | 0.0% |
| 1 | B | T | 10866 | 84 | 93.3% |
| 1 | B | T | 18618 | 82 | 91.1% |
| 1 | B | T | 45120 | 90 | 100.0% |
| 1 | B | T | 6738 | 84 | 93.3% |

Research Paper Results
Sorted by Year and Section
Detailed Listing by Unique Student Identifier

| Year | Section | Code | Student ID | Raw Score | Percent Score |
|-------------|----------------|-------------|-------------------|------------------|----------------------|
| 1 | B | T | 20610 | 76 | 84.4% |
| 1 | B | T | 30942 | 36 | 40.0% |
| 1 | B | T | 738 | 76 | 84.4% |
| 1 | B | T | 90006 | 79 | 87.8% |
| 1 | B | T | 32715 | 50 | 55.6% |
| 1 | B | T | 57438 | 88 | 97.8% |
| 1 | B | T | 7428 | 75 | 83.3% |
| 1 | B | T | 52230 | 49 | 54.4% |
| 1 | B | T | 12126 | 69 | 76.7% |
| 1 | B | T | 86814 | 87 | 96.7% |
| 1 | B | T | 50127 | 85 | 94.4% |
| 1 | B | T | 15417 | 71 | 78.9% |
| 1 | B | T | 25392 | 85 | 94.4% |
| 1 | B | T | 61152 | 75 | 83.3% |
| 1 | B | T | 65571 | 83 | 92.2% |
| 1 | B | T | 13974 | 84 | 93.3% |
| 1 | B | T | 76998 | 80 | 88.9% |
| 1 | B | T | 8463 | 73 | 81.1% |
| 1 | C | U | 16355 | 33 | 33.0% |
| 1 | C | U | 760127 | 41 | 41.0% |
| 1 | C | U | 731105 | 43 | 43.0% |
| 1 | C | U | 760219 | 44 | 44.0% |
| 1 | C | U | 751103 | 44 | 44.0% |
| 1 | C | U | 761111 | 52 | 52.0% |
| 1 | C | U | 750401 | 54 | 54.0% |
| 1 | C | U | 710609 | 54 | 54.0% |
| 1 | C | U | 751002 | 56 | 56.0% |
| 1 | C | U | 740805 | 56 | 56.0% |
| 1 | C | U | 720827 | 58 | 58.0% |
| 1 | C | U | 760427 | 60 | 60.0% |
| 1 | C | U | 750113 | 61 | 61.0% |
| 1 | C | U | 731027 | 64 | 64.0% |
| 1 | C | U | 610204 | 65 | 65.0% |
| 1 | C | U | 720315 | 65 | 65.0% |
| 1 | C | U | 750918 | 65 | 65.0% |
| 1 | C | U | 760802 | 69 | 69.0% |
| 1 | C | U | 750325 | 70 | 70.0% |
| 1 | C | U | 750411 | 75 | 75.0% |
| 1 | C | U | 760112 | 77 | 77.0% |

Research Paper Results
Sorted by Year and Section
Detailed Listing by Unique Student Identifier

| Year | Section | Code | Student ID | Raw Score | Percent Score |
|-------------|----------------|-------------|-------------------|------------------|----------------------|
| 1 | C | U | 740915 | 78 | 78.0% |
| 1 | C | U | 750131 | 80 | 80.0% |
| 1 | C | U | 750107 | 80 | 80.0% |
| 1 | C | U | 760506 | 81 | 81.0% |
| 1 | C | U | 730225 | 85 | 85.0% |
| 1 | C | U | 730429 | 87 | 87.0% |
| 1 | C | U | 730329 | 87 | 87.0% |
| 1 | C | U | 591231 | 88 | 88.0% |
| 1 | C | U | 740909 | 92 | 92.0% |
| 1 | C | U | 610608 | 93 | 93.0% |
| 1 | D | U | 222214 | 106 | 70.7% |
| 1 | D | U | 223344 | 91 | 60.7% |
| 1 | D | U | 790909 | 97 | 64.7% |
| 1 | D | U | 771107 | 96 | 64.0% |
| 1 | D | U | 778899 | 129 | 86.0% |
| 1 | D | U | 760105 | 133 | 88.7% |
| 1 | D | U | 720608 | 123 | 82.0% |
| 1 | D | U | 761203 | 81 | 54.0% |
| 1 | D | U | 770526 | 0 | 0.0% |
| 1 | D | U | 771115 | 128 | 85.3% |
| 1 | D | U | 780228 | 102 | 68.0% |
| 1 | D | U | 580000 | 127 | 84.7% |
| 1 | D | U | 720409 | 122 | 81.3% |
| 1 | D | U | 426383 | 121 | 80.7% |
| 1 | D | U | 152502 | 113 | 75.3% |
| 1 | D | U | 40926 | 103 | 68.7% |
| 1 | D | U | 770221 | 132 | 88.0% |
| 1 | D | U | 751026 | 94 | 62.7% |
| 1 | D | U | 740913 | 135 | 90.0% |
| 1 | D | U | 750725 | 58 | 38.7% |
| 1 | D | U | 720722 | 99 | 66.0% |
| 1 | D | U | 630614 | 0 | 0.0% |
| 1 | E | U | 3615 | 66 | 66.0% |
| 1 | E | U | 152713 | 61 | 61.0% |
| 1 | E | U | 760810 | 0 | 0.0% |
| 1 | E | U | 58755 | 67 | 67.0% |
| 1 | E | U | 29264 | 87 | 87.0% |
| 1 | E | U | 621204 | 78 | 78.0% |
| 1 | E | U | 17688 | 73 | 73.0% |

Research Paper Results
Sorted by Year and Section
Detailed Listing by Unique Student Identifier

| Year | Section | Code | Student ID | Raw Score | Percent Score |
|-------------|----------------|-------------|-------------------|------------------|----------------------|
| 1 | E | U | 740225 | 77 | 77.0% |
| 1 | E | U | 3952761 | 68 | 68.0% |
| 1 | E | U | 731219 | 85 | 85.0% |
| 1 | E | U | 760812 | 66 | 66.0% |
| 1 | E | U | 700324 | 67 | 67.0% |
| 1 | E | U | 710819 | 82 | 82.0% |
| 1 | E | U | 751107 | 75 | 75.0% |
| 1 | E | U | 131313 | 84 | 84.0% |
| 1 | E | U | 70077 | 74 | 74.0% |
| 1 | E | U | 89270 | 41 | 41.0% |
| 1 | E | U | 102995 | 0 | 0.0% |
| 1 | E | U | 750526 | 61 | 61.0% |
| 1 | E | U | 750405 | 88 | 88.0% |
| 1 | E | U | 251900 | 0 | 0.0% |
| 1 | E | U | 730307 | 60 | 60.0% |
| 1 | E | U | 751021 | 75 | 75.0% |
| 2 | F | T | 87714 | 36 | 78.3% |
| 2 | F | T | 52803 | 31 | 67.4% |
| 2 | F | T | 8829 | 42 | 91.3% |
| 2 | F | T | 54480 | 36 | 78.3% |
| 2 | F | T | 54909 | 40 | 87.0% |
| 2 | F | T | 15999 | 35 | 76.1% |
| 2 | F | T | 54702 | 35 | 76.1% |
| 2 | F | T | 2982 | 39 | 84.8% |
| 2 | F | T | 42177 | 33 | 71.7% |
| 2 | F | T | 55524 | 36 | 78.3% |
| 2 | F | T | 66909 | 36 | 78.3% |
| 2 | F | T | 88938 | 36 | 78.3% |
| 2 | F | T | 17907 | 42 | 91.3% |
| 2 | F | T | 59910 | 37 | 80.4% |
| 2 | F | T | 92103 | 43 | 93.5% |
| 2 | F | T | 83757 | 36 | 78.3% |
| 2 | F | T | 41412 | 23 | 50.0% |
| 2 | F | T | 9687 | 36 | 78.3% |
| 2 | F | T | 28107 | 44 | 95.7% |
| 2 | F | T | 36300 | 29 | 63.0% |
| 2 | F | T | 54429 | 35 | 76.1% |
| 2 | F | T | 11979 | 42 | 91.3% |
| 2 | F | T | 43746 | 36 | 78.3% |

Research Paper Results
Sorted by Year and Section
Detailed Listing by Unique Student Identifier

| Year | Section | Code | Student ID | Raw Score | Percent Score |
|-------------|----------------|-------------|-------------------|------------------|----------------------|
| 2 | F | T | 54444 | 40 | 87.0% |
| 2 | F | T | 9903 | 30 | 65.2% |
| 2 | F | T | 49188 | 36 | 78.3% |
| 2 | F | T | 1602 | 42 | 91.3% |
| 2 | F | T | 53733 | 36 | 78.3% |
| 2 | F | T | 24135 | 34 | 73.9% |
| 2 | F | T | 12681 | 36 | 78.3% |
| 2 | G | T | 760312 | 87 | 87.0% |
| 2 | G | T | 720219 | 76 | 76.0% |
| 2 | G | T | 751109 | 87 | 87.0% |
| 2 | G | T | 700512 | 0 | 0.0% |
| 2 | G | T | 760614 | 84 | 84.0% |
| 2 | G | T | 750306 | 79 | 79.0% |
| 2 | G | T | 750723 | 87 | 87.0% |
| 2 | G | T | 750121 | 72 | 72.0% |
| 2 | G | T | 740430 | 79 | 79.0% |
| 2 | G | T | 740223 | 74 | 74.0% |
| 2 | G | T | 740503 | 57 | 57.0% |
| 2 | G | T | 760210 | 82 | 82.0% |
| 2 | G | T | 760820 | 68 | 68.0% |
| 2 | G | T | 690201 | 90 | 90.0% |
| 2 | G | T | 730509 | 57 | 57.0% |
| 2 | G | T | 721127 | 84 | 84.0% |
| 2 | G | T | 661006 | 69 | 69.0% |
| 2 | G | T | 770228 | 78 | 78.0% |
| 2 | G | T | 680216 | 80 | 80.0% |
| 2 | G | T | 730221 | 83 | 83.0% |
| 2 | G | T | 740814 | 0 | 0.0% |
| 2 | H | U | 600225 | 66 | 44.0% |
| 2 | H | U | 610608 | 0 | 0.0% |
| 2 | H | U | 761210 | 0 | 0.0% |
| 2 | H | U | 780901 | 60 | 40.0% |
| 2 | H | U | 780315 | 129 | 86.0% |
| 2 | H | U | 123456 | 137 | 91.3% |
| 2 | H | U | 780514 | 125 | 83.3% |
| 2 | H | U | 781103 | 0 | 0.0% |
| 2 | H | U | 761025 | 61 | 40.7% |
| 2 | H | U | 761223 | 82 | 54.7% |
| 2 | H | U | 761215 | 111 | 74.0% |

Research Paper Results
Sorted by Year and Section
Detailed Listing by Unique Student Identifier

| Year | Section | Code | Student ID | Raw Score | Percent Score |
|-------------|----------------|-------------|-------------------|------------------|----------------------|
| 2 | H | U | 781206 | 141 | 94.0% |
| 2 | H | U | 780112 | 22 | 14.7% |
| 2 | H | U | 721222 | 145 | 96.7% |
| 2 | H | U | 750320 | 140 | 93.3% |
| 2 | H | U | 780608 | 139 | 92.7% |
| 2 | H | U | 780122 | 84 | 56.0% |
| 2 | H | U | 79896 | 125 | 83.3% |
| 2 | H | U | 780427 | 128 | 85.3% |
| 2 | H | U | 770728 | 102 | 68.0% |
| 2 | H | U | 781226 | 146 | 97.3% |
| 2 | H | U | 760418 | 0 | 0.0% |
| 2 | H | U | 780726 | 144 | 96.0% |
| 2 | H | U | 780702 | 118 | 78.7% |
| 2 | H | U | 780302 | 0 | 0.0% |
| 2 | H | U | 760811 | 106 | 70.7% |
| 2 | H | U | 780301 | 131 | 87.3% |
| 2 | I | U | 760702 | 130 | 86.7% |
| 2 | I | U | 770315 | 90 | 60.0% |
| 2 | I | U | 977294 | 79 | 52.7% |
| 2 | I | U | 750616 | 0 | 0.0% |
| 2 | I | U | 594862 | 85 | 56.7% |
| 2 | I | U | 90909 | 0 | 0.0% |
| 2 | I | U | 241074 | 119 | 79.3% |
| 2 | I | U | 753177 | 103 | 68.7% |
| 2 | I | U | 790824 | 121 | 80.7% |
| 2 | I | U | 682409 | 59 | 39.3% |
| 2 | I | U | 51579 | 108 | 72.0% |
| 2 | I | U | 847343 | 123 | 82.0% |
| 2 | I | U | 413323 | 111 | 74.0% |
| 2 | I | U | 770329 | 106 | 70.7% |
| 2 | I | U | 780625 | 106 | 70.7% |
| 2 | I | U | 780716 | 52 | 34.7% |
| 2 | I | U | 679070 | 128 | 85.3% |
| 2 | I | U | 680316 | 139 | 92.7% |
| 2 | I | U | 651121 | 131 | 87.3% |
| 2 | I | U | 710527 | 126 | 84.0% |
| 2 | I | U | 413718 | 0 | 0.0% |
| 2 | I | U | 727841 | 105 | 70.0% |
| 2 | J | U | 760314 | 77 | 77.0% |

Research Paper Results
Sorted by Year and Section
Detailed Listing by Unique Student Identifier

| Year | Section | Code | Student ID | Raw Score | Percent Score |
|-------------|----------------|-------------|-------------------|------------------|----------------------|
| 2 | J | U | 710905 | 76 | 76.0% |
| 2 | J | U | 760429 | 93 | 93.0% |
| 2 | J | U | 741224 | 0 | 0.0% |
| 2 | J | U | 730419 | 0 | 0.0% |
| 2 | J | U | 740103 | 90 | 90.0% |
| 2 | J | U | 880621 | 62 | 62.0% |
| 2 | J | U | 631014 | 82 | 82.0% |
| 2 | J | U | 671128 | 0 | 0.0% |
| 2 | J | U | 631023 | 95 | 95.0% |
| 2 | J | U | 761119 | 49 | 49.0% |
| 2 | J | U | 740730 | 61 | 61.0% |
| 2 | J | U | 710706 | 80 | 80.0% |
| 2 | J | U | 750702 | 0 | 0.0% |
| 2 | J | U | 750701 | 92 | 92.0% |
| 2 | J | U | 730228 | 87 | 87.0% |
| 2 | J | U | 740217 | 21 | 21.0% |
| 2 | J | U | 750212 | 89 | 89.0% |
| 2 | J | U | 760405 | 72 | 72.0% |
| 2 | J | U | 750707 | 76 | 76.0% |
| 2 | J | U | 680606 | 66 | 66.0% |
| 2 | J | U | 730626 | 0 | 0.0% |
| 2 | J | U | 760810 | 67 | 67.0% |
| 2 | J | U | 329870 | 0 | 0.0% |
| 2 | J | U | 760708 | 69 | 69.0% |
| 2 | J | U | 760828 | 81 | 81.0% |
| 3 | K | T | 750531 | 56 | 66.7% |
| 3 | K | T | 740121 | 54 | 64.3% |
| 3 | K | T | 720705 | 72 | 85.7% |
| 3 | K | T | 730228 | 72 | 85.7% |
| 3 | K | T | 731117 | 66 | 78.6% |
| 3 | K | T | 730614 | 66 | 78.6% |
| 3 | K | T | 730705 | 68 | 81.0% |
| 3 | K | T | 711214 | 74 | 88.1% |
| 3 | K | T | 661220 | 76 | 90.5% |
| 3 | K | T | 741010 | 68 | 81.0% |
| 3 | K | T | 750804 | 58 | 69.0% |
| 3 | K | T | 730918 | 76 | 90.5% |
| 3 | K | T | 651124 | 72 | 85.7% |
| 3 | K | T | 740131 | 64 | 76.2% |

Research Paper Results
Sorted by Year and Section
Detailed Listing by Unique Student Identifier

| Year | Section | Code | Student ID | Raw Score | Percent Score |
|-------------|----------------|-------------|-------------------|------------------|----------------------|
| 3 | K | T | 720307 | 64 | 76.2% |
| 3 | K | T | 730207 | 82 | 97.6% |
| 3 | K | T | 720610 | 74 | 88.1% |
| 3 | K | T | 721230 | 62 | 73.8% |
| 3 | K | T | 700613 | 68 | 81.0% |
| 3 | K | T | 731015 | 74 | 88.1% |
| 3 | K | T | 740803 | 64 | 76.2% |
| 3 | K | T | 651211 | 52 | 61.9% |
| 3 | K | T | 751111 | 26 | 31.0% |
| 3 | K | T | 750402 | 66 | 78.6% |
| 3 | K | T | 730130 | 80 | 95.2% |
| 3 | K | T | 640328 | 36 | 42.9% |
| 3 | K | T | 741113 | 72 | 85.7% |
| 3 | K | T | 711213 | 68 | 81.0% |
| 3 | K | T | 750226 | 56 | 66.7% |
| 3 | K | T | 730309 | 70 | 83.3% |
| 3 | K | T | 730711 | 34 | 40.5% |
| 3 | K | T | 750426 | 76 | 90.5% |
| 3 | L | T | 446688 | 110 | 73.3% |
| 3 | L | T | 737382 | 135 | 90.0% |
| 3 | L | T | 760107 | 105 | 70.0% |
| 3 | L | T | 7497 | 0 | 0.0% |
| 3 | L | T | 290872 | 130 | 86.7% |
| 3 | L | T | 770512 | 76 | 50.7% |
| 3 | L | T | 770609 | 125 | 83.3% |
| 3 | L | T | 387443 | 126 | 84.0% |
| 3 | L | T | 111155 | 87 | 58.0% |
| 3 | L | T | 83302 | 126 | 84.0% |
| 3 | L | T | 770404 | 141 | 94.0% |
| 3 | L | T | 111222 | 62 | 41.3% |
| 3 | L | T | 663294 | 134 | 89.3% |
| 3 | L | T | 643958 | 131 | 87.3% |
| 3 | L | T | 189577 | 134 | 89.3% |
| 3 | L | T | 741219 | 129 | 86.0% |
| 3 | L | T | 721021 | 142 | 94.7% |
| 3 | L | T | 761106 | 31 | 20.7% |
| 3 | L | T | 760731 | 130 | 86.7% |
| 3 | L | T | 252311 | 128 | 85.3% |
| 3 | L | T | 30478 | 139 | 92.7% |

Research Paper Results
Sorted by Year and Section
Detailed Listing by Unique Student Identifier

| Year | Section | Code | Student ID | Raw Score | Percent Score |
|-------------|----------------|-------------|-------------------|------------------|----------------------|
| 3 | L | T | 200176 | 130 | 86.7% |
| 3 | L | T | 790624 | 137 | 91.3% |
| 3 | L | T | 780313 | 0 | 0.0% |
| 3 | M | U | 691031 | 92 | 92.0% |
| 3 | M | U | 560708 | 90 | 90.0% |
| 3 | M | U | 751104 | 89 | 89.0% |
| 3 | M | U | 750529 | 88 | 88.0% |
| 3 | M | U | 751013 | 88 | 88.0% |
| 3 | M | U | 741017 | 87 | 87.0% |
| 3 | M | U | 680307 | 86 | 86.0% |
| 3 | M | U | 740725 | 83 | 83.0% |
| 3 | M | U | 560504 | 74 | 74.0% |
| 3 | M | U | 750125 | 72 | 72.0% |
| 3 | M | U | 580719 | 70 | 70.0% |
| 3 | M | U | 740522 | 65 | 65.0% |
| 3 | M | U | 700508 | 65 | 65.0% |
| 3 | M | U | 751226 | 65 | 65.0% |
| 3 | M | U | 750308 | 62 | 62.0% |
| 3 | M | U | 740912 | 61 | 61.0% |
| 3 | M | U | 730905 | 53 | 53.0% |
| 3 | M | U | 740908 | 49 | 49.0% |
| 3 | M | U | 690222 | 44 | 44.0% |
| 3 | M | U | 480711 | 37 | 37.0% |
| 3 | M | U | 561220 | 10 | 10.0% |
| 3 | M | U | 700327 | 0 | 0.0% |
| 3 | M | U | 690618 | 0 | 0.0% |
| 3 | M | U | 740801 | 0 | 0.0% |
| 3 | M | U | 701224 | 0 | 0.0% |
| 3 | M | U | 720816 | 0 | 0.0% |
| 3 | M | U | 750316 | 0 | 0.0% |
| 3 | M | U | 710516 | 0 | 0.0% |
| 3 | M | U | 670321 | 0 | 0.0% |
| 3 | N | U | 230879 | 106 | 73.1% |
| 3 | N | U | 750427 | 136 | 93.8% |
| 3 | N | U | 791111 | 110 | 75.9% |
| 3 | N | U | 730104 | 102 | 70.3% |
| 3 | N | U | 771124 | 0 | 0.0% |
| 3 | N | U | 770228 | 109 | 75.2% |
| 3 | N | U | 731120 | 139 | 95.9% |

Research Paper Results
Sorted by Year and Section
Detailed Listing by Unique Student Identifier

| Year | Section | Code | Student ID | Raw Score | Percent Score |
|-------------|----------------|-------------|-------------------|------------------|----------------------|
| 3 | N | U | 721225 | 83 | 57.2% |
| 3 | N | U | 691205 | 105 | 72.4% |
| 3 | N | U | 770616 | 69 | 47.6% |
| 3 | N | U | 669933 | 101 | 69.7% |
| 3 | N | U | 129988 | 108 | 74.5% |
| 3 | N | U | 770128 | 84 | 57.9% |
| 3 | N | U | 761216 | 97 | 66.9% |
| 3 | N | U | 780724 | 0 | 0.0% |
| 3 | N | U | 770930 | 56 | 38.6% |
| 3 | N | U | 791028 | 117 | 80.7% |
| 3 | N | U | 740612 | 112 | 77.2% |
| 3 | N | U | 750619 | 129 | 89.0% |
| 3 | N | U | 646547 | 141 | 97.2% |
| 3 | N | U | 771005 | 110 | 75.9% |
| 3 | N | U | 780116 | 52 | 35.9% |
| 3 | N | U | 969700 | 83 | 57.2% |
| 3 | N | U | 441444 | 92 | 63.4% |
| 3 | N | U | 792622 | 82 | 56.6% |
| 3 | N | U | 770404 | 141 | 97.2% |
| 3 | O | U | 760116 | 0 | 0.0% |
| 3 | O | U | 271172 | 140 | 93.3% |
| 3 | O | U | 700430 | 0 | 0.0% |
| 3 | O | U | 691002 | 117 | 78.0% |
| 3 | O | U | 650818 | 103 | 68.7% |
| 3 | O | U | 600602 | 134 | 89.3% |
| 3 | O | U | 460127 | 0 | 0.0% |
| 3 | O | U | 740523 | 0 | 0.0% |
| 3 | O | U | 750116 | 137 | 91.3% |
| 3 | O | U | 771013 | 106 | 70.7% |
| 3 | O | U | 721115 | 0 | 0.0% |
| 3 | O | U | 761203 | 0 | 0.0% |
| 3 | O | U | 581007 | 132 | 88.0% |
| 3 | O | U | 720529 | 0 | 0.0% |
| 3 | O | U | 770204 | 128 | 85.3% |
| 3 | O | U | 770113 | 128 | 85.3% |
| 3 | O | U | 750423 | 120 | 80.0% |
| 3 | O | U | 771124 | 126 | 84.0% |
| 3 | O | U | 123456 | 129 | 86.0% |
| 3 | O | U | 730402 | 91 | 60.7% |

Research Paper Results
Sorted by Year and Section
Detailed Listing by Unique Student Identifier

| Year | Section | Code | Student ID | Raw Score | Percent Score |
|-------------|----------------|-------------|-------------------|------------------|----------------------|
| 3 | O | U | 761014 | 140 | 93.3% |
| 3 | O | U | 770531 | 132 | 88.0% |
| 3 | O | U | 680923 | 0 | 0.0% |
| 3 | O | U | 741223 | 0 | 0.0% |
| 4 | P | T | 104511 | 127 | 84.7% |
| 4 | P | T | 91879 | 119 | 79.3% |
| 4 | P | T | 791702 | 92 | 61.3% |
| 4 | P | T | 187879 | 83 | 55.3% |
| 4 | P | T | 928791 | 99 | 66.0% |
| 4 | P | T | 82679 | 108 | 72.0% |
| 4 | P | T | 942893 | 93 | 62.0% |
| 4 | P | T | 220880 | 142 | 94.7% |
| 4 | P | T | 21074 | 106 | 70.7% |
| 4 | P | T | 246810 | 83 | 55.3% |
| 4 | P | T | 41920 | 119 | 79.3% |
| 4 | P | T | 290880 | 91 | 60.7% |
| 4 | P | T | 362326 | 98 | 65.3% |
| 4 | P | T | 12380 | 126 | 84.0% |
| 4 | P | T | 57208 | 140 | 93.3% |
| 4 | P | T | 109110 | 108 | 72.0% |
| 4 | P | T | 301280 | 124 | 82.7% |
| 4 | P | T | 196973 | 90 | 60.0% |
| 4 | P | T | 270580 | 127 | 84.7% |
| 4 | Q | T | 343434 | 110 | 73.3% |
| 4 | Q | T | 801213 | 127 | 84.7% |
| 4 | Q | T | 201338 | 107 | 71.3% |
| 4 | Q | T | 130975 | 132 | 88.0% |
| 4 | Q | T | 760811 | 128 | 85.3% |
| 4 | Q | T | 7794 | 143 | 95.3% |
| 4 | Q | T | 161180 | 103 | 68.7% |
| 4 | Q | T | 290380 | 99 | 66.0% |
| 4 | Q | T | 723107 | 108 | 72.0% |
| 4 | Q | T | 690316 | 95 | 63.3% |
| 4 | Q | T | 276012 | 139 | 92.7% |
| 4 | Q | T | 187109 | 144 | 96.0% |
| 4 | R | U | 558023 | 74 | 49.3% |
| 4 | R | U | 738438 | 92 | 61.3% |
| 4 | R | U | 463008 | 116 | 77.3% |
| 4 | R | U | 347424 | 127 | 84.7% |

Research Paper Results
Sorted by Year and Section
Detailed Listing by Unique Student Identifier

| Year | Section | Code | Student ID | Raw Score | Percent Score |
|-------------|----------------|-------------|-------------------|------------------|----------------------|
| 4 | R | U | 281259 | 137 | 91.3% |
| 4 | R | U | 790921 | 128 | 85.3% |
| 4 | R | U | 760630 | 98 | 65.3% |
| 4 | R | U | 770225 | 78 | 52.0% |
| 4 | R | U | 350916 | 125 | 83.3% |
| 4 | R | U | 20475 | 94 | 62.7% |
| 4 | R | U | 770221 | 138 | 92.0% |
| 4 | R | U | 200026 | 102 | 68.0% |
| 4 | R | U | 52180 | 135 | 90.0% |
| 4 | R | U | 345857 | 139 | 92.7% |
| 4 | R | U | 931978 | 89 | 59.3% |
| 4 | S | U | 382436 | 93 | 62.0% |
| 4 | S | U | 268765 | 119 | 79.3% |
| 4 | S | U | 57575 | 112 | 74.7% |
| 4 | S | U | 760207 | 118 | 78.7% |
| 4 | S | U | 730104 | 0 | 0.0% |
| 4 | S | U | 71276 | 96 | 64.0% |
| 4 | S | U | 800418 | 93 | 62.0% |
| 4 | S | U | 101876 | 114 | 76.0% |
| 4 | S | U | 102379 | 127 | 84.7% |
| 4 | S | U | 832374 | 112 | 74.7% |
| 4 | T | U | 46889 | 136 | 90.7% |
| 4 | T | U | 338027 | 110 | 73.3% |
| 4 | T | U | 347911 | 134 | 89.3% |
| 4 | T | U | 616498 | 98 | 65.3% |
| 4 | T | U | 268752 | 118 | 78.7% |
| 4 | T | U | 409184 | 98 | 65.3% |
| 4 | T | U | 271228 | 118 | 78.7% |
| 4 | T | U | 348083 | 105 | 70.0% |
| 4 | T | U | 189552 | 109 | 72.7% |
| 4 | T | U | 345279 | 136 | 90.7% |
| 4 | T | U | 801964 | 69 | 46.0% |
| 4 | T | U | 340304 | 108 | 72.0% |
| 4 | T | U | 447618 | 135 | 90.0% |
| 4 | T | U | 345311 | 0 | 0.0% |
| 4 | T | U | 268076 | 117 | 78.0% |
| 4 | T | U | 18562 | 83 | 55.3% |
| 4 | T | U | 345840 | 127 | 84.7% |
| 4 | T | U | 797363 | 127 | 84.7% |
| 4 | T | U | 594457 | 102 | 68.0% |
| 4 | T | U | 105575 | 142 | 94.7% |

Appendix N

Final Questionnaire Results (Treated and Untreated)

| TREATED CLASSES | | | | | | | |
|-----------------|-----|-----|-----|-----|-----|----|---|
| Question | A | B | C | D | E | F | G |
| 1 | 166 | 29 | 0 | 0 | 0 | 0 | 0 |
| 2 | 169 | 26 | 0 | 0 | 0 | 0 | 0 |
| 3 | 14 | 29 | 21 | 122 | 9 | 0 | 0 |
| 4 | 4 | 3 | 14 | 70 | 104 | 0 | 0 |
| 5 | 33 | 31 | 89 | 27 | 15 | 0 | 0 |
| 6 | 1 | 14 | 70 | 79 | 31 | 0 | 0 |
| 7 | 8 | 8 | 45 | 73 | 61 | 0 | 0 |
| 8 | 1 | 7 | 57 | 79 | 51 | 0 | 0 |
| 9 | 72 | 123 | 0 | 0 | 0 | 0 | 0 |
| 10 | 41 | 19 | 0 | 12 | 0 | 0 | 0 |
| 11 | 36 | 17 | 37 | 4 | 9 | 20 | 0 |
| 12 | 146 | 49 | 0 | 0 | 0 | 0 | 0 |
| 13 | 158 | 37 | 0 | 0 | 0 | 0 | 0 |
| 14 | 92 | 8 | 121 | 0 | 0 | 0 | 0 |
| 15 | 0 | 16 | 142 | 0 | 0 | 0 | 0 |
| 16 | 11 | 122 | 62 | 0 | 0 | 0 | 0 |
| 17 | 20 | 10 | 72 | 27 | 44 | 22 | 0 |
| 18 | 186 | 9 | 0 | 0 | 0 | 0 | 0 |
| 19 | 70 | 65 | 36 | 6 | 18 | 0 | 0 |
| 20 | 168 | 27 | 0 | 0 | 0 | 0 | 0 |
| 21 | 15 | 133 | 47 | 0 | 0 | 0 | 0 |

| UNTREATED CLASSES | | | | | | | |
|-------------------|-----|-----|-----|----|----|----|---|
| Question | A | B | C | D | E | F | G |
| 1 | 245 | 29 | 0 | 0 | 0 | 0 | 0 |
| 2 | 253 | 21 | 0 | 0 | 0 | 0 | 0 |
| 3 | 37 | 84 | 107 | 41 | 5 | 0 | 0 |
| 4 | 90 | 184 | 0 | 0 | 0 | 0 | 0 |
| 5 | 58 | 25 | 1 | 6 | 0 | 0 | 0 |
| 6 | 53 | 34 | 65 | 13 | 5 | 14 | 0 |
| 7 | 148 | 126 | 0 | 0 | 0 | 0 | 0 |
| 8 | 33 | 19 | 96 | 0 | 0 | 0 | 0 |
| 9 | 9 | 40 | 99 | 0 | 0 | 0 | 0 |
| 10 | 15 | 14 | 107 | 57 | 40 | 41 | 0 |
| 11 | 246 | 28 | 0 | 0 | 0 | 0 | 0 |
| 12 | 75 | 91 | 52 | 3 | 53 | 0 | 0 |