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THE USE OF COMPUTER-ASSISTED INSTRUCTION
IN A BIBLICAL STUDIES COURSE:
A CASE STUDY

by

Joseph P. Gallen

A dissertation submitted in partial fulfillment
of the requirements for the degree of

Doctor of Education

University of San Diego

1986

Dissertation Committee

Susan M. Zgliczynski, Ph.D., Director
Robert L. Infantino, Ed.D.
Ronald A. Pachence, Ph.D.

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STUDIES COURSE: A CASE STUDY
GALLEN, JOSEPH P., ED.D., University of San Diego, 1986.
Director: Susan M. Zgliczynski

One purpose of this case study was to determine the effect of the introduction of computer-assisted instruction (CAI) materials upon students' learning ability in a college Biblical studies course. Another purpose was to gather information from students with regard to their attitudes toward CAI and its effectiveness in learning the course material. A third purpose of the study was the design of CAI materials using a general application software package. The data base and word processing functions of a general application software package were adapted for CAI in the Biblical studies course.

The CAI components employed in the Biblical studies course were a data base function, a word processing exercise, and drill and practice exercises.

This case study collected data on 68 students of an introductory Biblical studies course during a college semester. Data on student attitudes were gathered through written questionnaires and interviews. Chi-square was used to investigate the change of student attitudes toward the course. Student learning of the course material was tested using a pretest/posttest design in addition to student grades. An analysis of variance was calculated on the pretest and posttest scores using the years of formal background in religious education as the independent

variable to measure gain scores.

Student response to the incorporation of CAI into the curriculum of the Biblical studies course showed that 54.7% of the students viewed CAI favorably with higher percentages in relation to each of the CAI activities: 62.7% for the data base, 70.8% for the word processing exercise, and 83% for the drill and practice. Students also perceived the CAI materials as enabling them to learn the material of the course. Students' attitudes with regard to the Biblical studies course were generally favorable and in those cases where negative attitudes were reported at the beginning of the study, 53% of these students reported that they had altered their view at the conclusion of the course.

The analysis of variance showed significant gain scores for students with little or no formal background in religious education in relation to students with greater experience in formal religious studies courses ($p < .002$).

The data collected indicated that it was possible to utilize general application software packages in the construction of CAI materials for college level coursework.

Implications of this study suggest that positive results in terms of students' perception of learning may be expected from the use of CAI in Biblical studies courses and that other liberal arts subject areas may benefit from the use of CAI. It is recommended that research be conducted for further incorporation of CAI into Biblical studies and religious studies curricula as well as other areas of the liberal arts.

DEDICATION

To my parents,
Anna and Joseph Gallen,
my first teachers in the lessons of life.

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Dr. Susan Zgliczynski, my committee chairperson, deserves my deepest appreciation. Her patience and enthusiasm for this project were compelling forces for seeing it to completion.

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I express thanks to my students who were willing to work hard as we attempted to peel away the meanings of the Scriptures.

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CHAPTER I

INTRODUCTION

The development of the microcomputer in the 1970s has brought about an era of rapid change in our culture, in our society, and in our schools. Most individuals now encounter computer operated services or appliances several times each day. With automobiles, home appliances, television sets, and automated teller machines, few of us realize how often we use computer operations in our daily living. Many homes now count a microcomputer among their electronic appliances (Graham, 1983).

Our schools have acquired microcomputers. The National Science Foundation estimates that there will be one million computers in the schools by the end of 1985, and three million by 1990 (Hoffman, 1985). Computers will be as common as telephones and typewriters in the near future (Agee, 1985).

One school district intends to provide a computer for every teacher and student (Braun, 1985). Several colleges plan to present every incoming freshman with a computer as a suitable tool for the student's school work. Term papers are to be written with the aid of the computer and therefore can be revised and adjusted more quickly. At one university

some professors even want to receive student assignments through electronic mail rather than in the conventional manner (Bray, 1985).

The U.S. Air Force Academy, the U.S. Naval Academy, and the U.S. Military Academy are requiring all students entering in 1986 to purchase personal computers ("Three Service Academies," 1986).

This widespread availability of microcomputers has brought about a resurgence of interest in computer-assisted instruction (CAI). Microcomputers were introduced commercially when interest in CAI was at its lowest ebb. Before the introduction of microcomputers, computers were either large main frames or minicomputers.

In the late 1950s and early 1960s, experimental work in CAI was begun at Dartmouth, Stanford, and the University of Illinois. Dartmouth developed the programming language BASIC (Beginner's All-purpose Symbolic Instruction Code) and implemented it throughout the campus. Many programs written in this language were prepared for public schools and colleges.

At Stanford in 1963, work was done in the area of language arts and mathematics for students who needed assistance with basic skills (Coburn, 1984). These CAI materials used a drill and practice format and were adopted by the school system of Chicago for a program of mathematics and reading instruction (Hirschbuhl, 1980).

The programming language PLATO was developed at the University of Illinois and produced many CAI programs which

were widely used throughout the United States. Unfortunately, despite the actual benefit from such programs, the cost of making these CAI programs educationally economical was never realized (Chambers & Sprecher, 1983).

The availability of the microcomputer has altered the outlook on CAI dramatically. The cost of microcomputers has decreased while the quality of the product has increased (Chambers & Sprecher, 1984). The situation most often facing those interested in CAI is now one of selection and evaluation, not cost (Lathrop & Goodson, 1983).

On the college level there have been CAI experiments in the areas of accounting, biology, chemistry, English, and mathematics. These experiments were the product of the PLATO and TICCIT (Time-Shared Interactive Computer Controlled Information Television) projects. The evaluation studies of these projects determined their impact to be largely positive (Chambers & Sprecher, 1984). The development time and costs of these programs were very high, a factor which may have slowed their widespread adoption.

It is fairly typical that the most extensive use of computers on a college campus will be by math, science, business, and computer science students. The computer is perceived to be an integral part of curricula in these disciplines and there are computer programs and software uniquely suited to them.

The field of the humanities is very different when it comes to computers. Since computers seem to be associated

with mathematics and science, humanists seem to neglect this field which has, in a way, neglected them (Turner, 1986). However, as a result of the microcomputer with its capability of being programmed independently of a large main frame computer or a minicomputer, programs can be effectively written by humanities' instructors. The programs which are written for the use of an individual instructor's class are the personal work of the teacher and will not appear in any catalog of software. This type of industry and opportunism is traceable directly to the independence given by the microcomputer and one of its programming languages. Unless such independent programs are shared or sold, the rest of the campus is not aware of them. This trend toward independent software programs has the potential of becoming a fairly common occurrence on college campuses.

With the advent of the microcomputer, a diversity of commercial software to accompany the "hardware" has arrived. General application software packages attempt to offer such activities as word processing, the data base function or a spreadsheet operation. For convenience, some of these general application packages attempt to combine the word processing, the data base and the spreadsheet. The combination general application software will often be adequate for the uses of a home computer while the general application software which offers only one component, such as word processing, would be more suitable for an operation where heavy usage of one function is necessary.

A survey of software catalogs will introduce the reader to software packages for entertainment, home budgeting, business budgeting, word processing, and a variety of types of learning (Conduit, 1986). The learning software packages cover such subjects as languages, mathematics, problem solving, writing skills, social studies and even quizzes on the Bible for religion ("Computer Software," 1985). What one does not see presented in these catalogs or brochures from publishers is software for the college level which attempts to help students with the study of religion among some other specialized subjects. More and more software products are being marketed for the humanities and liberal arts subjects, but most of this material is designed for use in elementary schools and high schools.

College level software is still unavailable in subject areas such as English, sociology, history, and religious studies. The arrival of the microcomputer and the plethora of software packages to assist with the learning of mathematics and science on the college level is a welcomed development. Several disciplines, however, are neglected in the area of available software. A variety of reasons are offered for the lack of software for the college level: poor market, the subject matter is not taught in all schools, and expensive development costs (Ramsden, 1984).

The lack of available software is little consolation to the teacher of religious studies. The discipline of religious studies should have the same advantages as other fields of learning to explore new methods for attracting the

student's interest. All instructors constantly search for better textbooks, visuals, films or tapes to add another dimension to their teaching. The search for good CAI software should be no different. Whatever will enable the learning process to proceed in a positive fashion is a suitable addition to the curriculum. If the addition of CAI can be advantageous to the student of religious studies, it is indeed worthy of study and experimentation.

It is, therefore, evident that the introduction of any device to promote and motivate the learning of fundamental factual information about religious studies is to be welcomed. It is necessary for the student to attain a certain degree of factual knowledge before he or she can reflect theologically upon the meaning of Biblical literature. To assist the learning process in religious studies through the use of computers is analogous to any other innovation which a teacher would introduce. The literature on CAI points to positive learning outcomes in many different fields of study (Fass, 1984).

This study not only examines the learning advantages provided by the computer but also the attitudinal advantages of using CAI in a college Biblical studies course. Can the computer help to alter attitudes by giving a student greater control over his or her learning of the material of a Biblical studies course?

The positive answers to questions concerning learning and attitude can provide information to assist all teachers and students of Biblical studies in particular, and

religious studies and related fields in general. The literature shows that teachers in the field of religious studies are making little or no classroom use of CAI (Bedell, 1986). Some teachers may use a computer for its word processing capabilities, but very few have made any transition to involving the computer in the curriculum. Thus, a positive outcome of a study of computer applications could open the door to CAI and provide an excellent tool for use by religious studies instructors and students alike.

Statement of the Issue

The literature on CAI, in general, points to positive results in the area of learning and attitude. The computer, however, is a neglected device in the arena of college Biblical studies education.

What contributions to learning and attitude can be made by CAI in a college Biblical studies course? This case study determines how college students are aided by computer drill and practice, computer data base operation, and computer word processing.

The literature indicates that CAI does enhance learning in certain subject areas. How can CAI enhance the learning in this new subject area? The subject areas of math and science have received much attention from designers of computer activities at all levels of the curriculum, kindergarten through college, but awareness has been gradual in the other subject areas.

Conclusions drawn by the results of this case study are drawn from an investigation of several questions pertaining

to student achievement and attitude. Do college students acquire more knowledge as the result of CAI? Can CAI serve as a knowledge equalizer for students with little or no formal education in Biblical studies? Can CAI directly impact students' attitudes in a positive manner toward religious studies courses? How do the attitudes of the student volunteers involved in this study compare with the attitudes of those students for whom CAI was a requirement? Are computers capable of enabling modes of learning which do not occur in normal class learning?

Purpose of the Study

The purpose of this study was to determine whether computer-assisted instruction (CAI), integrated into a college Biblical studies course, could yield positive results in terms of students' learning and students' attitudes toward the subject matter of the course. This study was designed to examine the effectiveness of using CAI in an introductory college Biblical studies course.

A second purpose of this study was the design of CAI materials using a general application software package since appropriate software was not available. The CAI materials developed from the general application software known as "Appleworks" included both the data base and the word processing functions.

Another purpose was to gather information from students regarding their attitudes toward this type of instructional innovation. Since the research focused in a special way on the individual student and his or her perceptions of this

innovation, a case study or qualitative approach was selected for this research.

The case study method allows the flexibility to measure both qualitative and quantitative information (Smith, 1974). The pretest and posttest devices of quantitative research were combined with the tools of qualitative research such as written questionnaires and interviews in order to maximize the data available (Stake, 1978).

Accordingly, data were collected on achievement in learning the material of the course. Observations were made concerning the attitudes exhibited by the students while participating in the course and the computer-assisted learning.

Through the introduction of CAI in these classes, the following questions were studied:

1. Will students perceive CAI as enabling them to attain greater mastery of the subject matter of the course?
2. Will students who demonstrate a poor attitude toward religious studies and who participate in the CAI demonstrate a more positive view of religious studies as indicated by both their written and oral comments?
3. Will students who participate in the CAI perceive CAI to be a positive enhancement to the course as determined through oral comments and questionnaires?
4. Will students with no previous experience in computer operation demonstrate positive attitudes toward using CAI materials?

5. Can college level CAI materials, developed from general application software, offer positive learning assistance as determined by students' written and oral comments?

6. What will the attitudes of student volunteers involved in this study show when compared and contrasted with the attitudes of students for whom CAI is a course requirement?

7. Will students who avail themselves of CAI acquire and retain more information than students who do not use this learning tool, as indicated through improvement in written pretest and posttest results?

8. Will students who participate in drill and practice CAI demonstrate higher test grades than students who do not participate in drill and practice CAI?

9. Will students with little or no formal education in Biblical studies but who use CAI compare positively with students with formal Biblical education who also use CAI as evidenced in their posttest results?

10. Will students with little or no formal education in Biblical studies but who use CAI compare positively with students with formal Biblical education who also use CAI as evidenced in their final grades?

The contribution of the positive outcomes of the above questions would lend credibility to another useful medium of instruction. The positive response of the students would also enhance the possibilities of the further development of materials for this field of study. Negative response would

limit the likelihood of widespread adoption of CAI among religious studies faculty. Negative response could also raise doubt about the students' readiness for CAI in a religious studies course, or doubt concerning the quality of the software. Negative feedback would also indicate areas of necessary improvements which must be made for future success.

Significance of the Study

The computer and CAI represent an innovation in addressing the course material of a Biblical studies course. CAI offers the advantage of allowing students to work on their own and at their own pace.

CAI may enable students to acquire and retain more information and it may serve as a leveler for students with little or no background in a course of study. CAI may improve student attitudes since it provides students the opportunity to work on their own. The use of CAI in Biblical studies courses and religious studies courses may become more prevalent because of the research reported in this study.

Since appropriate software programs for religious studies are unavailable, this study can demonstrate the need for additional appropriate programs. The microcomputer is a useful tool which may make a contribution to the field of religious studies as well as other fields where CAI may seem inappropriate at first glance.

Every discipline requires a command of factual knowledge as well as the skills of other types of knowledge.

The microcomputer is specially suited to providing ways of learning factual knowledge (Steinberg, 1984). The microcomputer can add another facet to the learning or review of the necessary factual data which is required in a particular discipline.

Definition of Terms

Applications Program: software that is designed for a specific purpose, e.g., word processing programs, general ledger programs (Clemans, 1986).

Computer-Assisted Instruction (CAI): the use of a computer to provide course content instruction in the form of drill and practice, tutorials, and simulations.

Data Base: A collection of related information, such as found on a mailing list, that can be stored in the computer and retrieved in several ways.

Data Base Management: 1. Refers to a classification of software designed to act like an electronic filing cabinet, allowing the user to store, retrieve, and manipulate files. 2. The practice of using computers to assist in routine filing and information processing chores.

Drill and Practice: a common CAI form in which a type of repetitive, or "flash card," approach emphasizes memory. Drill and practice is used extensively at all educational levels.

General Applications Program: software that is designed to incorporate several different purposes, i.e., word processing, general ledger program, data base, etc.

Microcomputer: Computers that are built around microprocessors. Most microcomputers are low-cost, desk-top machines. As a general rule, they offer less processing capability than minicomputers. However, the best microcomputers do match or exceed the performance of some minicomputers, and in the future microcomputers may reach the performance level of main frames (Vockell & Rivers, 1984).

Minicomputer: These are small computers that are not built around microprocessors. Minicomputers lie between microcomputers and main frames in terms of size, cost, and processing capability. Some of the best minicomputers, called superminis, offer capabilities similar to those of main frames. Because the best microcomputers perform at the level of minicomputers, and the best minicomputers perform at the level of main frames, the minicomputer category may in time disappear (Graham, 1983).

Main frame: Main frames are the standard, large-scale computers found in the computer rooms of corporations, universities, government agencies, scientific establishments, and the like. A main frame is capable of meeting all, or a substantial part of, the information processing requirements of a large organization. Because they may cost more than a million dollars, main frames are definitely for organizations, not individuals (Graham, 1983).

Simulations: provide a model in which the student plays a role and interacts with the computer. Simulations have

been used most often in higher education to model scientific processes. They are applicable to any field, however, and can be of significant help in illustrating concepts, in helping students to develop problem solving techniques, and in allowing students to explore complex interactions.

Software: The programs used by the computer. Often refers to the programs as stored on a disk.

Tutorials: use of the computer in a higher-level mode in which question and answer dialogue-type learning in the traditional tutor mode is emphasized. Like drill and practice, tutorials are used extensively at all educational levels.

Word processing: refers to the use of computers as enhanced electronic typewriters capable of entering and retrieving text, storing it on disks, and performing a wide range of editing functions (Vockell & Rivers, 1984).

The three categories: drill and practice, tutorials, and simulations make up what has become known in the United States as computer-assisted instruction (CAI), computer-based instruction (CBI), or computer-based education (CBE). In Europe and elsewhere, the activities are usually referred to as computer-assisted learning (CAL) (Chambers & Sprecher, 1983). For the purposes of this paper, the term computer-assisted instruction (CAI) will be considered synonymous with all of these terms.

Limitations of the Study

This case study was conducted over the course of two college semesters. The intention of the study was to

discover the benefits of CAI. It was also the intention of the study to avoid any disruption of the normal flow of these Introduction to Biblical Studies courses. The courses proceeded as usual and were conducted according to the normal catalog description and syllabus.

One segment of the population being considered in this study were volunteer students. The difficulties inherent in coping with volunteers must also be considered. This case study depended on the willingness of other course instructors to cooperate in providing information and a positive outlook on such an endeavor. It must be recognized that conditions are never ideal under such circumstances.

The software used in this study represented what was available at the time of the development of the computer activities for this course. The general application software package known as "Appleworks" was utilized for its data base and word processing capacity. The functions of the data base and the word processing were considered advantageous for approaching the material of the Biblical studies course. "Appleworks" was chosen because of its widespread availability and the absence of any other suitable software for either the data base or the word processing operations. Both of these CAI functions were constructed to incorporate the goals of the course. Another instructor teaching the same course might see the need for changes in the data base and the word processing exercises since these were composed representing only one teacher's approach to the material of the course.

The researcher conducted most of the study himself. Only the formal interviewing was conducted by a volunteer who understood the goals of the study but had no vested interest in its outcome. In the planning stage, the researcher extended invitations to other faculty members to discuss the goals of his study and to become participants. These conversations were met with enthusiasm by several colleagues while other teachers simply were not interested. Throughout the formative stages one faculty member at first indicated that he would become a full participant in the process. He did not withdraw until the formative stages were completed and he realized the amount of work in the project. Another faculty member expressed interest but simply did not have the time to participate.

Since cooperation with other instructors was impossible, the original experimental design for the study was abandoned. It was restructured as a case study in order to diminish the probability of experimenter bias.

Emphasis in this case study was placed on written responses to questionnaires and the interviews of students by a disinterested party in order to avoid experimenter bias. Anecdotal or subjective information is accurately labeled as exactly that.

CHAPTER II

REVIEW OF THE LITERATURE

This review of the literature surveyed several aspects of computer-assisted instruction (CAI). The first section surveys the history of CAI. A second section investigates the advent of the microcomputer and its impact. The third section reports evaluative comments on CAI. A fourth section researches work done on college level religious education.

History of Computer-Assisted Instruction

The history of computers in education extends over twenty years. Early experiments in CAI were initiated in the United States in the late 1950s and early 1960s. Experimental work began at Dartmouth, Stanford and the University of Illinois.

At Dartmouth, John Kemeny and associates developed the BASIC language and implemented it throughout the campus at Dartmouth. This language was then used to develop CAI programs that eventually found their way into a large number of public schools, colleges, and universities throughout the nation and world. The BASIC language along with the programs permitted CAI to develop at all levels (Hirschbuhl, 1980).

One use of BASIC, known as the Huntington Project, was initiated at the Polytechnic Institute in Brooklyn and was continued at the State University of New York (SUNY) at Albany. The purpose of the project was to develop simulations for use in high school science classes. These programs were widely disseminated, and it is estimated that they have been used in over 400 schools by 600 teachers and 25,000 students (Kearsley, Hunter, & Seidel, 1982). This project promoted the use of BASIC and demonstrated how the computer was appropriate for science teaching. Many of the simulations now available on microcomputers derive from the Huntington work (Chambers & Sprecher, 1983).

At Stanford in 1963, Patrick Suppes and Richard Atkinson applied CAI methodology in a different area. Their work represented the first attempt to increase childrens' skill levels in language arts and mathematics through computerized drill and practice. The work was eventually funded by the National Science Foundation and the U.S. Office of Education and has been very well received by the educational community and used extensively in school projects throughout the United States. Suppes and his colleagues have directed their efforts to specific populations of learners whom they feel have the greatest need for specialized supplementary or individualized learning experiences.

Their work has centered on low-achieving students, handicapped students, college students taking courses in subjects with low enrollment at a particular college, and

gifted high school students who could not be adequately served by their own schools (Coburn, 1985).

The Chicago City Schools Project began in 1971 using Suppes' materials. The project involved over 12,000 fourth through eighth grade children in the inner-city schools, with 850 terminals providing tutorial lessons in mathematics and reading. The project has had significant results. Prior to its implementation, the average increase in reading ability in the schools was 5.4 months per pupil for each 10 months of regular classroom instruction. This average rose to 9.0 months improvement for 8 months of instruction after the inception of the project (Suppes, 1980).

The Philadelphia schools also introduced CAI to improve basic skills and have improved educational gains in mathematics and reading (Hirschbuhl, 1980).

The PLATO system, funded by the National Science Foundation and housed at the University of Illinois under the direction of Donald Bitzer, is probably the most well-known CAI project in the world. This system developed the Tutor language which was intended as a CAI authoring language. The system has been extensively used as supplemental to the learning situation. The system can produce complex CAI programs with graphics capabilities and animation. The University of Illinois developed a large number of CAI programs using PLATO and these were then used extensively in other educational institutions in the United States.

Control Data Corporation acquired full rights to the

PLATO system and now markets it internationally as a training device. Bitzer's dream of making the system sufficiently economical for educators was never realized (Chambers & Sprecher, 1983).

Alfred Bork of the University of California at Irvine received grant money in 1969 and began the development of computer-based materials for instruction in physics at the undergraduate level. Bork and his colleagues have developed simulations that have enriched and supplemented basic physics courses and made available to the students experiences which were not attainable in the classroom. Bork's work is now used extensively and has been made available for the microcomputer (Hirschbuhl, 1980).

Another project of interest which emphasized the use of CAI on the minicomputer for introductory college level courses was TICCIT (Time-Shared Interactive Computer Controlled Information Television) project. Funded by the National Science Foundation through a grant to the MITRE Corporation, TICCIT was developed at the University of Texas and Brigham Young University under the direction of Victor Bunderson. Using minicomputers and modified TV receivers, the system was designed to provide basic undergraduate instruction in English and mathematics. It was initially implemented at Phoenix College (Arizona) and the Alexandria Community College (Virginia). The Educational Testing Service evaluated both courses at both sites and offered some encouraging if not conclusive evaluation for the effectiveness of CAI as an educational tool. All or parts

of the programs are still in place at the two community colleges. Since 1976, the Hazeltine Corporation has marketed TICCIT and it is in use at military training sites (Zucker, 1984).

During the early 1970s, Dartmouth College in conjunction with the Universities of Oregon, North Carolina, Iowa, and Texas, formed a consortium (CONDUIT) to acquire, evaluate, and distribute quality instructional computing materials for the university on a national basis. This consortium, supported by the National Science Foundation and the Fund for the Improvement of Post-Secondary Education, is located on the University of Iowa campus. It offers CAI computer programs for microcomputers and has focused its attention on the microcomputer as the CAI vehicle of the future (Sadowski, 1984).

The Minnesota Educational Computing Consortium (MECC) was an effort similar to CONDUIT during the 1970s, but it encompasses both pre- and post-secondary education. It is located at Lauderdale, Minnesota and originated as a state funded effort committed to statewide computer literacy for Minnesota. This consortium has provided guidance to the schools through a cost/benefit analysis of available microcomputers. The consortium has also served in the capacity of a general courseware evaluation, development, and distribution source for Apple II materials (Coburn, 1984).

The Massachusetts Institute of Technology and Seymour Papert, the former director of the MIT Logo Group in the

Artificial Intelligence Laboratory, have viewed computers somewhat differently than their predecessors did. Rather than being concerned with preparing people for jobs in a computer-based society, or with using computers to replace instruction by teachers, Papert's work has centered on the use of computers and computer programming to create entirely new types of learning environments for children.

Since he was dissatisfied with current educational computer languages, Papert set out to devise his own language which he named Logo. Papert attempted to incorporate his research in the psychology of learning together with artificial intelligence to create this new language. Logo has become a very popular language. Its accessibility and its strong graphics orientation make it appealing to children and adults alike (Coburn, 1984). Papert has set down his theory in a book entitled Mindstorms. His approach would require extensive training of teachers and the development of materials to support new forms of teaching and learning (Papert, 1980).

The Advent of the Microcomputer

Microcomputers were introduced commercially in the 1970s, when interest in CAI was at its low point. Until this time computers were regarded as either large main frames or minicomputers, depending upon their capabilities, size and cost. The microcomputers could be placed on a desk, did not require connection to a larger computer, did not require special atmospheric conditions, and were easy to operate (Chambers & Sprecher, 1983).

These latter qualities caused a new optimism among educators. Declining costs made it easier for individuals to purchase computers. Their mobility made it possible for home and school use among educators. The ease of operation made extensive training unnecessary and since there was an increased awareness of their use in society, funding became available to schools. Surveys report computer access for students in schools ranging from 50 to 90 percent and CAI usage was found to be predominantly microcomputer-based (Coburn, 1985).

This new availability of computer access through the microcomputer has created new research and extensive publishing in the field of microcomputers. Journals emerged which featured articles to share information, experiments, case studies, and the latest advances in the field of computer technology. These journals indicate an extensive amount of information available for the sciences and mathematics and an occasional article for the liberal arts areas of education (White, 1983).

From a critical perspective, the predominance of microcomputers and the rush to write software programs to accompany them has led to a problem of quality control. Groups have established themselves to evaluate programs, but critics have commented that program evaluation is a secondary concern. The critics believe that energy and expertise should be concentrated on the more preliminary level of planning and design in the light of an articulated

educational philosophy and psychology. This method would assure a higher quality of software programs (Self, 1985).

In response to such cautionary language, other authors are giving attention to the characteristics of learning programs and their integrity and appropriateness in relation to the student and the subject matter being taught. Attention is being directed to the strategies involved in program design in order to create a product which is beneficial to its user as well as being technically sound (Bell, 1984).

Evaluation of CAI

The effectiveness of CAI is an area of constant concern for educators. Results of studies indicate positive outcomes for the blending of microcomputers with educational tasks (Kulik, 1983).

A portion of the literature certainly demonstrates positive results in the case of computer usage. Most researchers discover a positive difference with CAI in terms of student learning rate, learning retention, and general achievement (Douglas & Bryant, 1985).

Some authors also report that the utilization of computers in the classroom has decreased discipline problems. They claim that students are more attentive and for longer periods of time. They also see an increase of student industry and seriousness in approaching their other classes (Green, 1985).

A review of fifty-one separate research studies on CAI in a variety of subject areas among secondary school

students revealed that students who have received CAI scored better on objective tests than students who received traditional instruction only. The findings of these studies showed that both retention of subject matter and the speed at which students learn improved (Kulik, 1983).

The Educational Testing Service undertook a four year across the curriculum study of CAI in grades K-6 and found that CAI was effective over the long term (defined as one year minimum) as well as the short term, and that the study was easily replicated (Bracey, 1982).

The area of the affective/motivational outcomes of CAI shows positive results. Students of all ages seem to enjoy the luxury of moving at their own rate and not being subject to the embarrassment of public mistakes. The control of the learning situation is a very appealing aspect of CAI (Rushby, 1979). An observation from many researchers has to do with the students' attitudes as they work on computers. The researchers observe that cooperation is high when students are attempting to get a program to run. This observation seems to dispel any fear of the computer as dehumanizing our society (Bracey, 1982).

College Level Religious Education

The literature in the area of CAI with regard to religious education in general is minimal. There is nothing written relating CAI to college level coursework in Biblical studies. A search of the literature revealed no titles dealing with CAI used in conjunction with the microcomputer

and Biblical studies. A search of Dissertation Abstracts International and an ERIC search also proved futile.

The publication of the Religious Education Association, Religious Education, annually reviewed dissertations of interest to those involved in religious education. A search of the annual abstracts editions from 1980 through 1985 showed that there had been nothing included which connected religious education to the use of computers in any fashion.

The College Theology Society publishes Horizons, a periodical directed to college level teachers of religion. A review of this publication from 1980 through 1985, along with the proceedings of the annual meetings of the College Theology Society, shows no titles connecting the teaching of religion to the use of computers.

Other periodicals where articles were likely to appear were reviewed with the same results. Religion Teacher's Journal from 1980 to 1985 and The Bible Today from 1980 to 1986 yielded no articles.

Criteria for Computers and Religious Education

In Using Computers in Religious Education, E.V. Clemans (1986) attempts to address individuals who are interested in the use of computers in parish religious education programs.

Clemans borrowed six criteria from Charles Melchert (1977) and developed a rationale for computer use in a catechetical setting. The first criterion is intentional activity; that is, learning is a planned and deliberate activity and therefore the incorporation of any computer

activity must have a certain integrity which is appropriate to the entire educational process.

The second criterion is value or merit. The computer usage must contribute to the overall goals of the educational program. It must be able to withstand measurement; that is, does the computer make people better?

The third issue is the ability to interrelate facts and concepts. The computer must enable a type of knowledge and understanding in depth and breadth. This means that the computer is used as an educational tool with adjunct status. It is used to enable and speed work such as research which ordinarily takes a great deal of time.

The fourth criterion is the role of time in the learning process. Time is considered from the vantage point of the past and the future, since education builds upon the known and investigates the unknown. The computer may be met with enthusiasm initially because of its novelty. This excitement will be brief unless effort is expended to make the computer relevant and useful far into the future.

A fifth criterion is interpersonal interaction. This is the most difficult to measure since it will tax planners to use the computers in a manner which encourages students to cooperate and interact with one another.

The final criterion is wholeness. This criterion seeks to involve the entire person in the activity of learning. The concern here is that the computer not be used to indoctrinate a person but that it be used as an integrative

tool recognizing the multiple levels on which human persons operate (Clemans, 1986).

Methodology for College Level Biblical Studies

These six criteria blend well with models for the teaching of Biblical studies in the classroom. A fairly representative approach to the teaching of the Bible is presented by Mary Boys and Thomas Groome (1982).

Approaching the Bible from the perspective of historical criticism, they outline five presuppositions necessary for creating a favorable climate. They would have the instructor see the Bible (a) as a collection of ancient and diverse materials, (b) as a reflection of the beliefs and experiences of communities, (c) as a classic text, (d) as the Word of God in human language, and (e) as the Scripture for several communities.

According to the model proposed by Boys and Groome, the five perspectives have implications for the teacher and learner as they approach the study of the Bible. For instance, the view of the Bible as a collection of ancient and diverse literature indicates that the Bible is from a totally different culture and portrays a particular distant time. As a work of literature it represents an anthology culled from many eras and viewpoints of antiquity. Several concerns arise when relating this ancient literature to the perspective of the learner. The learner needs to understand and respect the antiquity and circumstances of the text, to read the text with a certain sensitivity and imagination,

and to draw upon the resources of those who have researched this book.

The second perspective asserts that the Bible is a record of the beliefs and experiences of ancient communities. This view implies that the Bible has formed the traditions of ancient peoples. These traditions serve as living memories of the past to be reflected upon for generations to come. The implication of this quality for both teacher and student is that they must inquire into the ways in which the text and tradition were used by a given community.

The fact that the Bible is regarded as a classic text means that the Bible confronts the universality of human experience. The implication is that both the teacher and student must recognize that there can be many meanings which may seem appropriate to a given passage of the Scriptures depending upon the human situation. The prisoner will view a passage differently than a free person, a young person differently than an adult. The task becomes one of being aware that differences will be the norm and one should be cautious of singling out one meaning as the only appropriate message.

Boys and Groome next address the issue of the Bible as the Word of God in human language. This perspective involves faith interpretation of the text and, therefore, does not deal with issues pertinent to this study.

Finally it is significant to regard the Bible as the Scriptures, as a sacred and normative text for Christians

and Jews in the sense that the Scriptures give direction to the communities which look to them as inspired by God. History shows that the Scriptures, understood as a normative text, have shaped many communities.

The use of the guidelines of historical criticism in the classroom is intended to make the study of the Bible both objective and subjective. The study of the Bible and its context comprise the objective side of the task. The subjective side is the recognition that the human experience of each of the students of the Bible will be diverse. What the authors caution against is making the presumption that all students share the same human experience in their lives. The above guidelines are intended to assist the teacher in respecting the differences of the students while communicating the essential Biblical themes.

In this study, the use of CAI in a Biblical studies course respects the guidelines discussed above. There are certain ways in which the computer can assist Biblical studies once one realizes that the computer is a tool for learning and not an end in itself.

Summary

The literature on CAI demonstrates a checkered history. At a time when many proponents of computer usage were becoming discouraged, the microcomputer became available and energized the field into a new industry. The widespread availability of the microcomputer has created a new tool which is affecting education.

The computer has long been the province of the science or mathematics department. The curriculum in the liberal arts, however, can also benefit from the computer (Turner, 1986). The exposure and introduction of the computer and its capabilities to liberal arts students will offer many possibilities for the usefulness of this device in the realm of studies other than mathematics and science.

Carlson speaks to the advantages of a wedding of computers and liberal arts: "Thus the choice of how to use computing technology in a particular discipline can be best decided by persons from that discipline. I would argue that educators and scholars should view computing technology not as a challenge to traditional disciplines but as a tool that can be used to extend the discipline" (1985).

Computers are used for most administrative tasks in schools and most elementary and high school classrooms either have microcomputers or the class has access to them through a learning center or laboratory. Most college campuses have at least one computer laboratory. College students often have access to their own microcomputers (Bray, 1985).

The educational results of student interaction with microcomputers have been demonstrated to be fairly positive. The research on student attitudes is less conclusive. It points to instances of positive outcome but there is additional research to be done.

In the area of religious studies in general, there has been no appreciable research done concerning students

interacting with computers. What is currently available appears to be literature which anticipates positive developments in the future rather than the results of hard research. There is little doubt that the literature in the area of computers and religious education and Biblical education will be augmented in the near future.

Some teachers in the field of religious studies employ the word processing capabilities of the microcomputer for their personal work, but that seems to be the extent of their interest. No data have been produced to show the concrete and specific application of computers to enable learning in the field of religious studies.

This study attempts to gather information which may be useful to religious studies instructors as they consider whether to use CAI materials in their Biblical studies courses.

CHAPTER III

RESEARCH DESIGN AND METHODOLOGY

This case study was designed to examine the feasibility of introducing computer-assisted instruction (CAI) into an introductory college Biblical studies course. The purpose was to determine whether CAI, integrated into a college Biblical studies course, would yield positive results in students' learning and in students' attitudes toward the subject matter of the course. The study collected data on advances made in learning the material of the course and made observations concerning the attitudes exhibited by the students while participating in the course and the CAI.

A second purpose of this study was the design of CAI materials using a general application software package since appropriate software was not available. The CAI materials which were developed from the general application software known as "Appleworks" included both the data base and the word processing functions.

Another purpose was to gather information from students regarding their attitudes toward this type of instructional innovation. Since the purposes of the research focus in a special way on the individual student and his or her perceptions of this innovation, a case study or qualitative

approach was selected for this research.

The case study represents a method of organizing data for the purpose of probing and analyzing the phenomena that constitute the general characteristics of the subject under study. A diverse range of techniques is employed in the collection of both qualitative and quantitative data (Cohen & Manion, 1985). The case study attempts to identify the factors that explain change or growth in a group since the emphasis of a case study is on typicalness rather than uniqueness (Best, 1981). The goal of this method of research is to establish generalizations about the wider populations to which a particular unit belongs. The case study has the advantage of giving a much better picture of the effect of an experience on the whole person or group as opposed to a more specific method of research (Knowles, 1970). This type of approach has produced creative perspectives on education, schooling, and child and adult development. It is an appropriate method for an intensive examination of a particular phenomena (Goetz & Le Compt, 1984).

In this case study, the pretest and posttest devices of quantitative research were combined with the tools of qualitative research such as written questionnaires and observations in order to maximize the data available in this experience of CAI (Johnson, 1977).

The Biblical Studies Course

The course selected for this case study was entitled, "Introduction to Biblical Studies." The catalog description

for the course under consideration, reads as follows: "An investigation of the Bible in terms of its formation, historical character, and primary themes. Questions regarding inspiration, canonicity and hermeneutics are treated." A sample syllabus is included in Appendix W. This course was offered at a Roman Catholic institution which requires nine units in religious studies for all of its undergraduates. This institution, located on the West Coast, is an independent university with an enrollment of approximately 5,200 students. There was no control over who took this course, though the majority were freshman and sophomores since this course is lower division and satisfies general education requirements. This course is also a pre-requisite for other upper division courses in scripture.

This course seemed appropriate to the case study since it is an introductory course and usually involves more instructors than any other offered by the department. At times there have been as many as ten sections of this course and there are usually 30 to 35 students in each section.

Recruitment of faculty members to participate in this study seemed optimal under these conditions. Efforts to recruit faculty included a letter of explanation of the study and an invitation to meet and explore participation. Five faculty members received information and invitations, two were part-time teachers. Conversations were held with each of the faculty members. Neither of the part-time faculty was available and only one full time instructor felt that he could participate in the study. One instructor said

that he would get back to me and never did. Another instructor felt that she simply did not have the time to commit to this project. In the final stages of planning, however, the instructor who was willing to join in the study declined participation based on the demands of the study and the fact that he wanted control over all grading for his students.

Since there were no faculty available to participate in the study, the design was altered from an experimental design to the case study approach.

Subjects

In order to reach the proposed objectives, a pilot of this case study was conducted during the Fall Semester of 1985. This included 33 students using the CAI materials and who were enrolled in the Introduction to Biblical Studies course. During the Spring Semester of 1986, 68 students used the CAI materials as subjects in the case study. Students from other Biblical Studies sections were invited to participate in the study and use the CAI materials on a volunteer basis. The teachers of the other Biblical Studies sections were contacted and asked to distribute flyers to their students. An additional notice was also delivered to the instructors for distribution to the students in order to attract students who were undecided.

The Pilot Study

Students of the pilot study took the pretest and posttest, received an orientation to the CAI materials and were required to work on assignments which involved the data

base exercise and the word processing exercise on the "Appleworks Program." The drill and practice format which was in the form of a game was also available to them in the Media Center of the university. Students were encouraged to use the drill and practice exercise as a review of the course material and a preparation for examinations. This was, however, a voluntary exercise on the part of the students.

Student feedback questionnaires and interviews during this pilot study altered most of the CAI materials to reflect the student evaluations. The design of the CAI materials remained the same but the content and work load was changed. For example, the pilot group entered every book of the Bible into the data base exercise of the "Appleworks Program." This volume of work for the following semester was reduced to only those books from which readings were assigned. As a result of the pilot study and conversations with another religious studies faculty member, the questions on the word processing exercise were modified to include more themes, but the material on the drill and practice exercise remained essentially the same.

The students involved in the pilot study demonstrated improvement on their pretest/posttest scores and requested that they have the benefit of the drill and practice for their final examination since the original plan of the pilot had included the drill and practice game for only the first two units of course material.

The Study

During the Spring Semester of 1986, this study included 75 students in the Introduction to Biblical Studies course. A majority of these students (68) were required to perform computer-assisted activities. The remainder (7) of the students were volunteer participants.

All students received an orientation program on the use of the software and the special requirements of the course. The orientation was conducted in the Media Center of the university and students were assigned specific times to arrive for their orientation. There were 15 microcomputers available during each orientation session which lasted approximately 25 minutes. All three facets of the CAI materials, that is, the data base, the word processing and the drill and practice exercise, were explained and handout materials were distributed (Appendices D, E, F). Special attention was given to those students who had not operated microcomputers and to those who needed a review of microcomputer operations. Additional tutorial assistance was available to any student who expressed the need.

Some students entering this course have had extensive theology or religion coursework in their earlier education while others have had minimal or no contact with courses of this type. Some students may be resentful that this type of course is required, or may regard it as merely a repetition of what they already know. Some students may be negative toward any "religion" course.

Data Gathering

An introductory questionnaire was administered to the students entering the course sections under study to determine: a) their attitude toward religious studies courses, b) their formal background in religious education, and c) their previous experience with computers (Appendix A).

Another questionnaire was administered immediately prior to the conclusion of the study to determine the perception of the students with regard to their current attitudes toward religious studies courses, their attitudes toward CAI, and their attitudes toward this religious studies course being accompanied by CAI. Additional questions concerned the overall helpfulness of microcomputer-assisted instruction and their personal feelings concerning an increased use of this type of study aid (Appendix B).

Both the introductory questionnaire and the exit questionnaire were first prepared for the pilot study. The questionnaires were administered and then altered for the purpose of validity. Improvements were made in the interest of clarity and thoroughness in preparation for the second semester phase of the case study. Each of these questionnaires reflected the information sought in the research questions. Five students completed the Initial questionnaire twice in order to assure the reliability of the instrument (Best, 1981). Ten students, selected at random, were observed for the purpose of monitoring the

consistency and reliability of their responses on the printed instruments (Saslow, 1982).

In addition to the questionnaires at the beginning and end of the study, interviews of students were conducted. These interviews involved students chosen according to the following categories: five students with a positive attitude toward religious studies, five students with a negative attitude toward religious studies, five students with a positive attitude toward CAI and five students with a negative attitude toward CAI.

The interview phase of the study was conducted after the first half of the course by a volunteer who was acquainted with the focus of the study but who had no vested interest in the responses of the students. The interviews concentrated on the students' experiences with the computer materials, the students' perceptions of the learning benefits and drawbacks of the computer materials, and the students' attitudes toward the course itself employing the use of the computer materials.

The interviewer used the questions in Appendix C to conduct the interviews. When possible, these interviews were scheduled in groups since this format was used during the pilot phase with very good results. Student interaction produced a comfortable climate in which students themselves expressed surprise at how relaxed and talkative they were in that environment.

Group interviews were scheduled for 40 minutes. In cases where students were unable to meet a group schedule,

individual interviews were conducted. Individual interviews were scheduled for 20 minutes.

Along with the questionnaires and interviews, a pretest and a posttest were used to test for development and changes in knowledge of the subject matter of the course (Appendices G and H). The results of the pretest/posttest were studied for signs of significant change in knowledge.

Both the pretest and the posttest which consisted of matched-pair items were piloted as part of the planning phase of this research in order to assure the reliability of the instruments. These tests were 25 item multiple choice formats which were derived from a survey of the course material of Introduction to Biblical Studies. The tests were subjected to the Kuder-Richardson formula 21 procedure for reliability (Appendix S).

The pretest had a reliability coefficient of .58 and the posttest had a reliability coefficient of .55 (Nitko, 1983). For the purpose of achieving validity, two other faculty members, both teachers of religious studies, reviewed the tests and made suggestions for amendment and clarification in preparation for the actual research phase of the second semester (Borg & Gall, 1979).

Content validity was achieved by consulting the syllabus of the course and selecting paired questions from the most important sections of the syllabus for use in the two instruments. Each test had two general questions, ten questions from the Pentateuch, two from the era of Joshua

and Judges, two from the era of the kings, three from the prophets and six from the New Testament.

Computer Activities

The actual types of CAI which were employed included a data base exercise (Appendix D), a word processing component (Appendix E), and a drill and practice exercise in a game format (Appendix F). The rationale behind this diversity was to offer students a variety of experiences with CAI. The drill and practice was the most easily learned, while the data base and the word processing components were slightly more difficult.

The Data Base

The data base for the Biblical studies students was an exercise on the books of the Bible. Each student received a disk containing the data base exercise. It contained the name of each of the books of the Bible, both Old and New Testaments, and required the student to search out the following data on assigned books: authorship, date or era during which the book was written, date or era during which the events recounted in the book took place, the major characters of the book, the principal message of the book, the literary genre, a memorable quote from the book, the length of the book, its language, and any anecdotal information which the student found of interest.

This particular data base exercise lasted the entire semester and was checked at four predetermined times by the instructor. The instructor would grade the assignment based on thoroughness and accuracy. At the end of the semester

the disk was turned in as a completed assignment equivalent to a major test. It was not necessary for the student to submit a printed copy of the data base work. This assignment using the data base acquainted students with the volume and diversity of Biblical literature and the major characters and themes in the text.

During the pilot study students were required to complete the entire data base. After the evaluative comments of the students and some adaptation of the data base itself, it was determined that completing only those books of the Bible from which students had been assigned readings would be sufficient. Since the point of the exercise was to introduce students to the variety of the books of the Bible and to teach them how to do research, a study of all the books was not necessary.

This data base exercise on the books of the Bible was formatted according to the general application software known as the "Appleworks Program." This program was available in the Media Center of the university. Since this particular program is quite popular, it was also possible that students who had Apple computers at their disposal may also have possessed copies of the "Appleworks Program." This eventuality would make it simpler for some students to complete the exercise at home.

Game Format - Drill and Practice

The drill and practice exercise utilized was available throughout the course and was based on the game of baseball. This game is published by the Davka Corporation and allows

the instructor to use up to 200 multiple choice questions. The instructor composed these questions and stored them on a supplemental disk. These materials were available to students at the Media Center. The purpose of the game was to help students review the course material in preparation for the examinations.

Examination questions were similar to the material in the drill and practice exercise but there were not any questions which were worded exactly as they appeared in the exercise. Each of the four units of the course had an accompanying set of approximately 90 questions. Students were urged to use this optional exercise when they were preparing for examinations in order to see how familiar they were with the material. It was suggested to students that if they did poorly on the questions in this exercise they should do more studying in preparation for the examination. The game format was not intended as a substitute for actual study.

A questionnaire completed by the students after each of the examinations requested information on how helpful the drill and practice exercise was for reviewing the test material and how much time the student spent using the drill and practice.

Word Processing

A word processing exercise for each student was required. This particular exercise consisted of a series of questions to be answered by all students. These questions were formulated during the pilot study and then revised as a

result of findings during the pilot and conversations with another religious studies faculty member who was encouraging his students to volunteer to participate in using the CAI materials.

Each question dealt with an historical event or theme studied in the course such as the Exodus of the Hebrews. Students were asked to compose an essay in response to these questions. The final part of the essay, however, allowed for a subjective response. For example, in the case of the Exodus event cited above, there are several levels of meaning which can be explored. Students were requested to analyze the event for its meaning to the Hebrews in Egypt, its importance to later Hebrew religion, and its meaning on a personal level to today's Jew or Christian.

This exercise gave students the opportunity to reflect on what type of literature they perceived the Bible to be, what particular view of religious history their opinions represented, and finally, to express the importance of these events for contemporary believers.

Each set of questions, which were assigned unit by unit, followed the same pattern. Students responded to the question on their disks using the word processing component of the general application software package known as the "Appleworks Program." These questions and responses were critiqued and graded each time the disk was collected by the instructor. The instructor recommended clarifications and rewriting if necessary. As an aid to making changes, responses from other students to the same questions were

included on the disk when it was returned to the student. This feature not only offered models of how others answered these questions but also demonstrated the thought processes of one's peer group in formulating these essays. Each student was monitored for improvement in response to the questions as the semester progressed.

The grade for these essays was based on completeness and accuracy. The points awarded on the essay and on the data base work mentioned above were combined to equal a major test grade for the semester.

Security

The information on the disks in the "Appleworks" scheme is easily copied. In the pilot study a very simple security measure was taken with each of the disks before they were given to the students at the beginning of the semester.

All of the disks were coded with a number in two different locations. The first location of the numbering was within the name of the disk itself. This was visible when the student inspected the files in the "Appleworks" menu or the catalog of files contained on the disk. This location actually blended in with other information presented in the list of files. In viewing the file, students would be concerned with the location of the actual file titles and not with what was printed above since this information would not be useful to them at that time.

The second location was within one of the files on the disk entitled "Directions." "Directions" referred to a set of instructions which were not only on the disk in the form

of a file but also were identical to a handout which was presented to all students and used as a working document for the orientation to the computer. Since most of the students had a hard copy of the directions, it was expected that they would seldom need to refer to the file entitled "Directions" on their disk. If a student did refer to the file for help with operating the computer, that was exactly what the student would find. It was at the end of this file that the notation occurred: "end of page" followed by a number that corresponded to the first location number.

The teacher gave the disks to the students at the beginning of the semester with a warning that copying was prohibited, that each student was expected to work individually on his or her own disk and that information was not to be shared. Each disk was identified by the student's name written on the disk label. At no time during the semester was reference made to the code numbers of the disks. The instructor kept a master list of students' names and numbers and could check that these remained the same each time that the disks were turned in to the teacher as a completed assignment.

The ability to monitor the disks and their numbers during the course of the semester was an added assurance that the work presented had not been copied from another student.

In a pilot of this arrangement, two students turned in identical assignments. There was no other evidence of any copying among the students.

Several students reported on written questionnaires that they would not know how to copy. One student did report that a friend, not in the course, attempted to demonstrate how to copy information. When the student's friend erased several entries which the student had made, that was sufficient experience to forego any other attempts at a copying routine.

During the second semester of the study, an additional marker was placed within the data base file on the books of the Bible. This marker corresponded to the number which had been placed in the disk name. The purpose of the marker was to serve as an indicator of copying the individual file. The final assignments of the second semester gave evidence of two disks being copied as indicated by the incorrect marker which appeared within a student's assignment. Upon closer scrutiny, the instructor discovered that the original file had been copied and then the material was altered in places so as not to be identical with the original material.

Data Analysis

The methods for gathering data in this study consisted of the Initial and Exit questionnaires, the pretest and the posttest, the interviews, observations, and the evaluative questionnaires for each aspect of the computer materials (data base, drill and practice, and word processing). These sources yielded both qualitative and quantitative data.

Through the introduction of CAI in these classes, the following questions were studied:

The first six research questions concerned qualitative data. For each of these six research questions an item by item analysis of the questionnaire data was made to demonstrate the results. The Chi-square was used as a nonparametric test of significance where it was deemed appropriate. Both the interview and observational data were included to supplement the information for these first six questions.

Research Question 1

1. Will students perceive CAI as enabling them to attain greater mastery of the subject matter of the course?

The first research question reported on the perceptions of the students with regard to their mastery of the subject matter and the role which the computer played in the learning process. The evaluative questionnaires for the different functions of the CAI and the interview questions supplied these data.

Research Question 2

2. Will students who demonstrate a poor attitude toward religious studies and who participate in the CAI demonstrate a more positive view of religious studies as indicated by their written and oral comments?

The second research question seeks to detect if there was any change in attitude toward religious studies as a result of CAI. This was determined through an analysis of the Initial and Exit questionnaires and the interview data. A Chi-square was used to analyze the results of the Initial and Exit questionnaires.

Research Question 3

3. Will students who participate in the CAI perceive CAI to be a positive enhancement to the course as determined through oral comments and questionnaires?

The third research question gathered data with regard to the students' perception of CAI as a positive experience and a learning help for a course of this type. This was accomplished through an analysis of the evaluative and Exit questionnaires and appropriate interview information.

Research Question 4

4. Will students with no previous experience in computer operation demonstrate positive attitudes toward using CAI materials?

The fourth research question surfaced attitudes of those students who had no previous experience with computers as reported on the evaluative questionnaires of these students. This was accomplished by an analysis of the Initial and Exit questionnaires and appropriate interview information.

Research Question 5

5. Can college level CAI materials, developed from general application software, offer positive learning assistance as determined by students' written and oral comments?

Research question five attempted to identify the students' estimation of the learning assistance given by the CAI materials during the course of the semester. Each of the evaluative questionnaires for the three components of

the CAI materials were consulted for information in response to this question. Information supplied by the interviews was also used for this research question.

Research Question 6

6. What will the attitudes of student volunteers involved in this study show when compared and contrasted with the attitudes of students for whom CAI is a course requirement?

The sixth research question compared and contrasted the Initial and Exit questionnaires of those students who voluntarily participated in the CAI with the students for whom the CAI was a requirement. Interview data were also included in this question.

Research questions seven through ten addressed quantitative data which were available from the pretests, the posttests, and the final grades.

Research Question 7

7. Will students who avail themselves of CAI acquire and retain more information than students who do not use this learning tool, as evidenced through improvement in written pretest and posttest results?

Research question seven yielded information through the use of an analysis of covariance procedure with the independent variables being the actual CAI and the absence of the CAI. The pretests and posttests of students who participated in the CAI exercises were compared with another section of the same Introduction to Biblical Studies course who did not use the CAI materials.

Research Question 8

8. Will students who participate in drill and practice CAI demonstrate higher test grades than students who do not participate in drill and practice CAI?

Research question eight studied the results of those students who used the optional drill and practice exercise as a preparation for the examinations during the semester and those students who did not use this exercise. To test for levels of significance in this case the independent variables are identified as those students who participated in the drill and practice and those who did not. The t test for a two sample case was used to test for levels of significance.

Research Question 9

9. Will students with little or no formal education in Biblical studies but who use CAI compare positively with students with formal Biblical education who also use CAI as evidenced in their posttest results?

Research question nine had as its independent variables the levels of formal education in religious studies and the results of the pretest/posttest. An analysis of variance procedure was used to determine the results of this research question.

Research Question 10

10. Will students with little or no formal education in Biblical studies but who use CAI compare positively with students with formal Biblical education who also use CAI as evidenced in their final grades?

Research question ten had as its independent variables the levels of formal education in religious studies and the final grades of the students for the entire semester. An analysis of variance procedure was performed using the four categories of formal religious education along with the final grades for the semester.

In addition to the procedures mentioned above, the results of the interviews and observations were included to provide additional information appropriate to the study.

CHAPTER IV

ANALYSIS OF DATA

This case study was designed to examine the feasibility of introducing computer-assisted instruction (CAI) into an introductory college Biblical studies course. The purpose was to determine whether CAI, integrated into a college Biblical studies course, would yield positive results in students' learning of the subject matter of the course. Data were collected on learning the material of the course.

A second purpose of this study was the design of CAI materials using a general application software package since appropriate software was not available. The CAI materials which were developed from the general application software known as "Appleworks" included both the data base and the word processing functions.

Another purpose was to gather information from students regarding their attitudes toward this type of instructional innovation. Since the purposes of the research focus in a special way on the individual student and his or her perceptions of this innovation, a case study or qualitative approach was selected for this research. The study includes observations made concerning the attitudes of the students' exhibited while participating in the course and the CAI.

Subjects

During the Spring Semester of 1986 this study included 75 students in several sections of the Introduction to Biblical Studies course. A majority of these students (68) were required to perform computer-assisted activities as course requirements. The remainder (7) of the students were volunteer participants.

The subjects for this study were the students who registered for the Introduction to Biblical Studies courses. The majority of these students were freshman and sophomores and most were not majors in the field of religious studies.

Research Questions

The following section will consider each of the research questions using data from the questionnaires, the interviews, and informal observations. Tables are presented with the students' responses to the questionnaires.

Questions from the Initial questionnaires (Appendix A) and the Exit questionnaires (Appendix B) along with the evaluative questionnaires on the data base (Appendix I), the word processing (Appendix J) and the drill and practice exercises (Appendix K) were referenced to these research questions.

Research question 1

1. Will students perceive CAI as enabling them to attain greater mastery of the subject matter of the course?

Questionnaire Data

Questions from the evaluative questionnaires on the data base (Appendix I), the word processing (Appendix J) and

the drill and practice exercises (Appendix K) pertained to this research question.

Questions 2 and 4 from the data base evaluation questionnaire were selected along with questions 2 and 5 from the word processing evaluation questionnaire and question 4 from the drill and practice evaluation questionnaire.

On question 2 of the data base evaluation questionnaire 71.7% (n = 48) of the students agreed that the data base exercise enabled them to learn more about the books of the Bible than they would have learned from the classroom alone (Table 1).

Table 1

Question 2 from Data Base Questionnaire

02. I learned more about the books of the Bible as a result of using the Appleworks Exercise on the Books of the Bible than I would have learned from class alone.

Strongly Agree	Agree	Disagree	Strongly Disagree	<u>N</u>
10	38	14	5	67
15%	56.7%	20.9%	7.4%	

Question 4 of the data base evaluation recorded 89.5% (n = 60) of the students agreeing that the data base exercise helped them to learn about the variety of literature contained in the Bible (Table 2).

Table 2

Question 4 from Data Base Questionnaire

04. The Appleworks Exercise on the books of the Bible helped me to learn about the different kinds of literature which are contained in the Old and New Testaments.

Strongly Agree	Agree	Disagree	Strongly Disagree	<u>N</u>
12	48	6	1	67
17.9%	71.6%	9.0%	1.5%	

The word processing component was also seen as favorable to learning beyond the classroom with 79.4% (n = 54) of the students agreeing in question 2 that the word processing exercise assisted them (Table 3).

Table 3

Question 2 from Word Processing Questionnaire

02. I learned more about the Bible as a result of using the Appleworks Word Processing Exercise than I would have learned from class alone.

Strongly Agree	Agree	Disagree	Strongly Disagree	<u>N</u>
11	43	14	0	68
16.2%	63.2%	20.6%	0%	

Question 5 of the same evaluative questionnaire on the word processing exercise showed 79.4% (n = 54) of the students believed that this word processing exercise enabled them to think more critically concerning questions in the Bible (Table 4).

Table 4

Question 5 from Word Processing Questionnaire

05. The Appleworks Word Processing Exercise enabled me to think more critically concerning questions in the Bible.

Strongly Agree	Agree	Disagree	Strongly Disagree	<u>N</u>
16	38	14	0	68
23.5%	55.9%	20.6%	0%	

On question 4 of the drill and practice evaluative questionnaire, 85.2% (n = 46) of the student users reported that the drill and practice exercise enabled them to learn more about the events and characters of the Bible (Table 5).

Table 5

Question 4 from Drill and Practice Questionnaire

04. The RS 16 Game helped me to learn more about the many characters and events contained in the Bible.

Strongly Agree	Agree	Disagree	Strongly Disagree	<u>N</u>
6	40	8	0	54
11.1%	74.1%	14.8%	0%	

Interview Data

Twelve students were interviewed using the questions listed in Appendix C. Questions 4, 8, 12, and 17 related to this research question (Table 6). On question four, 11 students responded positively on the effectiveness of the drill and practice exercise. One student commented, "definitely, it reviewed (the material) and also made me realize what I did not know," and another student interviewed said, "I really didn't know what to look for on the tests so this was a big help."

There were 11 positive responses to question 8 dealing with the effectiveness of the data base on the books of the Bible. One student reported, "I have no background and this helped to keep everybody and all the books straight," while another student commented, "The quotes (required quotations) did help me to remember the books."

With regard to question 12 on the effectiveness of the

word processing exercise, 11 students responded that they thought that it did assist them in learning the material. One student commented that the word processing exercise helped, "to review the class material and put it into an essay form," while another student said that it helped, "to learn and remember the material."

Table 6

Questions 4, 8, 12, and 17 from the Interview Questions

-
04. Did the RS 16 Game format help you to learn the material?
08. Did the exercise on the books of the Bible help you to learn the material?
12. Did the word processing exercise on the essay questions help you to learn the material?
17. How much more did you learn as a result of using the computer in this course than if the course did not have the computer exercises?
-

Question 17 attempted to summarize an overall opinion with regard to the positive learning influence of the CAI and most of the students responded positively to this question. One respondent said, "probably not much," and two others were quite vague while the remaining nine replied in the affirmative that they did learn more as a result of using the computer exercises than they would have learned without the computer exercises. One students said that,

"the computer gave me an edge," while another said that, "the computer organized the material."

The negative responses to the above questions were primarily from a student who did not do well on the tests and therefore answered all questions without separating any learning questions from her actual performance. For example on question 8 she responded, "Yes, it helped with the material but I still didn't do that great on the tests," and on question 12 she commented, "I got poor grades in the tests so I guess that it didn't help me that much."

Overall the interview comments were favorable toward the assistance given by the CAI materials toward the learning of the subject matter of the course.

Observational Data

It was difficult to ascertain the perceptions of the students toward the subject matter of the course at the beginning of the semester since there was a definite period of adjustment to the computer exercises at the outset. Another difficulty was that students did not seem to wish to present the appearance of having mastered the material, or of being too confident.

Even as the semester proceeded, students gave the impression that they were overworked and were struggling to keep up with the computer assignments, the assigned readings, and the examination preparations.

A review of the results on Research Question 1 would reveal that the students did perceive the CAI materials as

helping them to attain greater mastery of the subject matter of the course. Over 70% percent of the students on each of the evaluative questionnaires perceived these CAI components as enabling them to learn more of the material. Student responses to the interview questions confirm the questionnaire findings, that is, the majority of the students interviewed (nine of twelve) perceived the three different operations of the CAI (data base, word processing, and drill and practice) as assisting them to learn more of the subject matter of the course.

Research question 2

2. Will students who demonstrate a poor attitude toward religious studies and who participate in the CAI demonstrate a more positive view of religious studies as indicated by both their written and oral comments?

Questionnaire Data

Question 5 of the Initial Questionnaire (Appendix A) and Question 5 of the Exit Questionnaire (Appendix B) were used as the criteria for this research question.

On question 5 of the Initial Questionnaire, 26.1% (n = 17) responded with either the "Agree" or "Strongly Agree" option, indicating that if it were not for the college credit, they would not be taking this course (Table 7).

Table 7

Question 5 from the Initial Questionnaire

05. If I didn't need three units of credit I definitely would not be taking this course.

Strongly Agree	Agree	Disagree	Strongly Disagree	<u>N</u>
3	14	35	13	65
4.6%	21.5%	53.9%	20%	

An analysis of these same students on the Exit Questionnaire offered the following results. On question 5 of the Exit Questionnaire, of this same group of 26.1% (n = 17), 12 of the original students altered their position by indicating that they disagreed with the statement that the course earned them three credits and that that was all that was important. Five of the group retained their original position and agreed with the statement that they received three credits and that was most important. Three other students noted agreement on the Exit Questionnaire who had not made this selection on the Initial Questionnaire (Table 8).

Table 8

Question 5 from the Exit Questionnaire

05. In the final analysis this course gets me three units of credit and that's all that is important to me.

Strongly Agree	Agree	Disagree	Strongly Disagree	<u>N</u>
1	7	30	27	65
1.5%	10.8%	46.2%	41.5%	

When question 5 of both the Initial and Exit Questionnaires was submitted to a Chi-square calculation for a two-sample case, Chi-square (3, N = 65) = 8.61, $p < .05$, the results were significant demonstrating that 53% (n = 9) of the original 17 students altered their attitudes with regard to the importance of this course (Table 9, Appendix Q).

Table 9

Chi-square for Question 5 of the Initial and Exit Questionnaires

<u>N</u>	χ^2	<u>p</u>	<u>df</u>
65	8.61*	7.81	4

Note: * $p < .05$.

Interview Data

Questions 21, 22, and 23 of the Interview Questions (Appendix C) were referenced to research question 2 (Table 10). Seven students were interviewed who had responded affirmatively to Question 5 of the Initial Questionnaire and stated that if they did not need three units of credit they would not be taking this course. Of the seven students interviewed four gave truly negative answers to question 21. Two of these four students interviewed did demonstrate a change in their attitude toward this religious studies course and both of these students mentioned that the computer played a role in changing their point of view. One of the students who exhibited a change in attitude remarked that, "I think that the material was made easier by the use of the computer and that relaxed me about the course and the tests." The other student who experienced a change in attitude, commented that he felt that his skill with computers gave him an edge in the course overall and this led to his feeling confident about the religious studies course.

Of the two students interviewed who remained negative about the course, one said that she was not too enthusiastic about taking the course initially and since she has not done very well that her feelings remained the same. The other student who retained his negative opinion was a transfer student who intended to attend another college in the fall. Because he did not think this course would transfer, he was less than enthusiastic about the work and study.

Table 10

Question 21, 22, 23 from Interview Questionnaire

-
21. What were your feelings about religious studies courses when you began this course?
 22. What are your feelings now?
 23. If there has been any change, to what do you attribute this change?
-

Observational Data

There was no observed behavior or conversation among the students which would offer data relative to the attitudes of the students toward religious studies. From an observer's perspective one could see discontent with a poor grade or a below average score on an assignment but students did not verbalize any negative attitudes beyond what would be considered normal in a classroom setting.

Research Question 2 found that 53% (n = 9) of the students who began the course on a negative note did change their perspective by the end of the course. This change was significant when submitted to the χ^2 calculation (3, N = 65), $p < .05$. Student interviews revealed that two of the four students interviewed who had begun the course feeling dissatisfied, did alter their attitudes and stated that the computer was a contributing factor to this change.

Research question 3

3. Will students who participate in the CAI perceive CAI to be a positive enhancement to the course as determined through oral comments and questionnaires?

Questionnaire Data

The data in response to research question 3 were taken from question 13 of the Exit Questionnaire (Appendix B), questions 5 and 7 of the data base evaluation questionnaire (Appendix I), questions 6 and 8 of the word processing evaluation questionnaire (Appendix J) and questions 6 and 7 of the drill and practice evaluation questionnaire (Appendix K).

Question 13 of the Exit Questionnaire indicated that 54.7% (n = 35) of the students were pleased that they were required to use CAI in this course (Table 11).

Table 11

Question 13 from Exit Questionnaire

13. I am glad that I was required to use the computer with this course.

Strongly Agree	Agree	Disagree	Strongly Disagree	<u>N</u>
8	27	19	10	64
12.5%	42.2%	29.7%	15.6%	
No response 1				

On question 5 of the data base evaluation questionnaire, 62.7% (n = 42) indicated that they were glad to have worked with this specific component of the CAI in the course (Table 12).

Table 12

Question 5 from Data Base Questionnaire

05. I was glad to have the opportunity to work with the Appleworks Exercise on the Books of the Bible.

Strongly Agree	Agree	Disagree	Strongly Disagree	<u>N</u>
5	37	16	9	67
7.5%	55.2%	23.9%	13.4%	

Question 7 of the data base evaluation indicated that 71.6% (n = 48) of the students felt that the data base was overall a positive experience (Table 13).

Table 13

Question 7 Data Base Questionnaire

07. Overall the Appleworks Exercise on the Books of the Bible was a positive experience.

Strongly Agree	Agree	Disagree	Strongly Disagree	<u>N</u>
6	42	15	4	67
8.9%	62.7%	22.4%	6.0%	

On question 6 of the word processing questionnaire, 70.6% (n = 48) of the students noted that they were glad to have used the word processing exercise (Table 14).

Table 14

Question 6 from Word Processing Questionnaire

06. I was glad to have the opportunity to work with the Appleworks Word Processing Exercise.

Strongly Agree	Agree	Disagree	Strongly Disagree	<u>N</u>
14	34	17	3	68
20.6%	50.0%	25.0%	4.4%	

On question 8, a very high percentage, 80.9% (n = 55) indicated that the word processing exercise was a positive experience overall (Table 15).

Table 15

Question 8 from Word Processing Questionnaire

08. Overall the Appleworks Word Processing Exercise was a positive experience.

Strongly Agree	Agree	Disagree	Strongly Disagree	<u>N</u>
14	41	12	1	68
20.6%	60.3%	17.6%	1.5%	

The drill and practice responses indicated that on question 6, a very high percentage, 83% of the student-users were glad to have had access to this mode of CAI (Table 16).

Table 16

Question 6 from Drill and Practice Questionnaire

06. I was glad to have the opportunity to experience the computer in this mode.

Strongly Agree	Agree	Disagree	Strongly Disagree	<u>N</u>
13	31	7	2	53
24.5%	58.5%	13.2%	3.8%	
No response 1				

A larger group of 94.1% (n = 48) noted on question 7 that the drill and practice exercise was a positive experience for them during the semester (Table 17).

Table 17

Question 7 from the Drill and Practice Questionnaire

07. Overall the RS 16 Game was a positive experience.

Strongly Agree	Agree	Disagree	Strongly Disagree	<u>N</u>
11	37	3	0	51
21.6%	72.5%	5.9%	0.0%	
No response 3				

Interview Data

Question 17 of the Interview Questions (Appendix C) was used in relation to research question 3. Question 17 (Table 18) was answered negatively by one of the students who was interviewed and affirmatively by ten. The other student interviewed felt that the word processing exercises were beneficial but that the other CAI exercises were not helpful. Some of the reasons offered by the students for answering affirmatively to question 17 were: "I felt that the computer work was like homework. It did not give me the opportunity to procrastinate. I was definitely more prepared for the tests as a result of using the computer," or "Definitely learned more since I feel that I spent more time with the material as a result of the computer." Another student answered the question this way, "I feel the game helped me to learn about 10% more and the other exercises about 15% overall."

Students evaluated the word processing exercise as positive because of its relevance to the examinations during the semester and its uniqueness. Most of the students had never used a computer in this mode with a college course. The additional feature of seeing another essay in addition to one's own on the disk drew favorable comment. From the instructor's vantage point, this model essay on the disk led to improvement in the students' performance on essays both on the computer assignments and on the tests. One student pointed out that the essay exercise on the computer gave

practice in writing on a particular topic. If that topic appeared on the test then it was very easy to formulate a good essay in response to the question.

Students said that they liked the data base for its uniqueness and the fact that the message of a particular book of the Bible would emerge because of the research which they did. The female students stated that they liked to search out the quotations which were required while the male students thought that the anecdotal information was the most challenging. The males seemed to prefer that which was most unusual about the book and they would note these data as anecdotal information.

Table 18

Question 17 from the Interview Questions

17. How much more did you learn as a result of using the computer in this course than if the course did not have the computer exercises?

Observational Data

There were three different activities which comprised the CAI used in this course: the data base exercise, the word processing exercise, and the drill and practice. Of the three activities, the data base exercise drew the most negative comments from the students because of the volume of work which was required. The word processing exercise was generally accepted among the students and the drill and

practice drew many favorable comments since the students found it to be different and somewhat entertaining.

At the beginning of the semester, one of the students asked during class why these computer exercises were being used as part of a religious studies course. He mentioned that this use of CAI had been criticized by a person in the Media Center and he felt at a loss for a response. As a result of his question during class, time was spent reviewing the reasons for implementing CAI in a class such as this Biblical Studies class. Later in the semester, this student commented that it had all come together for him and now he was able to see the connections between the class material and the CAI exercises.

Research Question 3 investigated the perception of the students toward the CAI exercises as a positive addition to the course. The Exit Questionnaire recorded 54% of the students as being glad for the CAI experience. This overall percentage is somewhat low compared to the percentages recorded for each of the CAI components: 62.7% for the data base, 70.6% for the word processing, and 83% for the drill and practice. The percentages recorded in response to the question concerning CAI as a positive experience are even higher: 71.6% on the data base, 80.9% on the word processing, and 94% on the drill and practice. There is no simple explanation for the differences between the overall result and the percentages on each of the CAI components. What can be said is that the students definitely regarded

the CAI materials as a positive enhancement to the course judging from the questionnaire results.

In the interviews, ten of twelve students regarded the CAI materials favorably. In these interviews the word processing exercise ranked second behind the drill and practice exercise in popularity. The data base exercise received the least favorable comment since students felt that too much work was involved with the data base and they could see no direct results from their work. Overall results, however, indicate that each of the CAI exercises was seen to be a positive enhancement to the course even though certain students favored the exercises differently.

Research question 4

4. Will students with no previous experience in computer operation demonstrate positive attitudes toward using CAI materials?

Questionnaire Data

On question 11 of the Initial Questionnaire (Appendix A), 29.2% (n = 19) of the students indicated that they had never operated a computer and a total of 41.5% indicated only limited utilization of the computer (Table 19).

Table 19

Question 11 from Initial Questionnaire

11. Which of the following best describes your experience with computers?

- A) I have never operated a computer
- B) I have only played computer games
- C) I have had some experience with using computers
- D) I have had experience writing computer programs

A	B	C	D	<u>N</u>
19	8	21	17	65
29.2%	12.3%	32.3%	26.2%	

On question 11 of the Exit Questionnaire (Appendix B) these same students' responses offered the following information: one student disagreed with the statement that she was glad for the opportunity to operate a computer, ten agreed and six strongly agreed with the statement. Two students did not respond to the statement (Table 20).

Table 20

Question 11 from the Exit Questionnaire

11. I had never operated a computer before this course and I am glad that I had the opportunity.

Strongly Agree	Agree	Disagree	Strongly Disagree	<u>N</u>
6	10	1	0	17
31.25%	62.5%	6.5%	0.0%	
No response 2				

For 84% (n = 16) of the 19 original student users the computer provided an opportunity which they had never experienced and they stated that they were glad for this opportunity.

Interview Data

Four of the 12 students interviewed had no previous experience with computers. Question 16 (Table 21) of the Interview Questions (Appendix C) was related to research question 4. Three of the four students without previous computer experience interviewed, responded that they would select this section of Biblical Studies again and that the computers presented no problem. The fourth student said that she would not select this section because of the computers.

Table 21

Question 16 from the Interview Questions

16. If you had it to do over again, would you have selected this section of this course if you know about the computer assignments?

Observational Data

The students without previous computer experience were the most verbal and inquisitive group among the students in this study. One student used the word processing function of "Appleworks" for his other courses and expressed gratitude over the fact that he had gained exposure to the functioning of a computer.

Another student without previous computer experience made a point to mention that she was purchasing a computer for her personal use and planned to use it for her term paper assignments.

A third student mentioned that her family was going to purchase a computer and that she looked forward to using it for her school work.

Research Question 4 focused on 29.2% (n = 19) of the students who had no previous computer experience and investigated their attitude toward using CAI materials. At the end of the semester, 16 of the 19 students stated that they were pleased with the opportunity to have operated a computer. Four students who had no previous experience with computers were interviewed. Three of the four interviewed

stated that they would select this section of the Biblical Studies course again because of the computers. The other student stated that she would not select this section again and the reason that she gave was the CAI activities.

The results indicate that the majority of the students without previous computer experience were pleased with the opportunity to work with computers and considered this exposure to be a positive experience. Three of the four students interviewed also shared this view of the CAI materials as a positive experience. Research questions 9 and 10 contain data on learning outcomes for all the students including those who entered the course without any previous experience with computers.

Research question 5

5. Will students evaluate CAI materials developed from general application software as effective in terms of ease of operation as determined through their written and oral comments?

Questionnaire Data

Research question 5 gathers data on the ease of operation of the CAI materials which were developed from the general application software package known as "Appleworks." Evaluative statements were taken from the data base evaluation questionnaire (Appendix I) and the word processing evaluation questionnaire (Appendix J). Questions 10, 11, and 13 were selected from the data base evaluation and questions 11, 12, and 14 were utilized from the word processing survey.

Question 10 of the data base evaluation is concerned with ease of operation and 95.5% (n = 64) of the students agreed with the statement that the data base exercise was fairly simple to operate (Table 22).

Table 22

Question 10 from the Data Base Questionnaire

10. I found the Appleworks Exercise on the books of the Bible fairly simply to operate.

Strongly Agree	Agree	Disagree	Strongly Disagree	<u>N</u>
10	54	2	1	67
15.0%	80.5%	3.0%	1.5%	

Question 11 evaluates the adequacy of the written instructions which the students received to assist in the operation of the data base. A total of 92.5% (n = 62) of the students noted that these instructions were adequate for operation of the data base exercise (Table 23).

Table 23

Question 11 from the Data Base Questionnaire

11. I found the written instructions to be adequate for operating the Appleworks Exercise on the Books of the Bible.

Strongly Agree	Agree	Disagree	Strongly Disagree	<u>N</u>
15	47	5	0	67
22.4%	70.1%	7.5%	0.0%	

Question 13 addressed the adequacy of the time allotted in preparation for the operation of the data base and 85.1% (n = 57) of the students disagreed that there should have been more instruction time on the use of the data base. They had found the instruction time to be adequate (Table 24).

Table 24

Question 13 from the Data Base Questionnaire

13. I think that we should have had more instruction time on how to use the Appleworks Exercise on the Books of the Bible.

Strongly Agree	Agree	Disagree	Strongly Disagree	<u>N</u>
1	9	48	9	67
1.5%	13.4%	71.7%	13.4%	

In evaluating the word processing exercise for ease of operation, question 11 shows 97% (n = 65) of the students found this exercise fairly simple to operate (Table 25).

Table 25

Question 11 from Word Processing Exercise Questionnaire

11. I found the Appleworks Word Processing Exercise fairly simple to operate.

Strongly Agree	Agree	Disagree	Strongly Disagree	<u>N</u>
14	51	2	0	67
20.9%	76.1%	3.0%	0.0%	
No response 1				

For the adequacy of the written instructions, question 12 shows 98.5% (n = 65) of the students agreeing with this statement (Table 26).

Table 26

Question 12 from Word Processing Exercise Questionnaire

12. I found the written instructions to be adequate for operating the Appleworks Word Processing Exercise.

Strongly Agree	Agree	Disagree	Strongly Disagree	<u>N</u>
17	48	1	0	66
25.8%	72.7%	1.5%	0.0%	
No response 2				

On the adequacy of the instruction time spent in preparation for operating the word processing exercise, 83.8% (n = 57) of the students thought that the time allotted was adequate (Table 27).

Table 27

Question 14 from Word Processing Exercise Questionnaire

14. I think that we should have had more instruction time on how to use the Appleworks Word Processing Exercise.

Strongly Agree	Agree	Disagree	Strongly Disagree	<u>N</u>
3	8	47	10	68
4.4%	11.8%	69.1%	14.7%	

Interview Data

In the student interviews, question 15 (Appendix C) asked if the students felt that the computer offered greater ease or if the computer added another level of difficulty (Table 28). Of the twelve students interviewed, ten commented that the computer provided greater ease in handling the class material. Two students felt that the computer made it more difficult. One of these students had commented that he was a terrible typist and this unduly prolonged the completion of his assignments. The other student who felt that the computer added another level of difficulty mentioned the difficulty of limited computer facilities and the demand for time on the computers

immediately prior to the due dates for assignments. One of the ten students who thought that the computer provided greater ease in handling the material of the class also mentioned the demand for the computers immediately before assignments for the class were due.

Table 28

Question 15 from Interview Questions

15. Does the computer make it easier to work with the questions or add another level of difficulty?

Observational Data

Office hours were posted and announced to the students and they were encouraged to seek assistance if there was any difficulty with the CAI. At the beginning of the semester some students sought assistance with specific problems and there were a few questions during classtime. As the semester progressed, however, there were very few requests for assistance and the quality of the work done on the computer disks by the students was quite excellent. One observation with regard to students who encountered difficulties was that they often did not have their handouts which contained the directions for the particular function on which they were working. It seemed that some students preferred to bypass the directions and just trust in getting assistance from the instructor, another student or a work study student in the Media Center.

Research Question 5 ascertained the students' evaluation of the CAI materials for ease of operation. The questionnaire data revealed that the students rated the CAI materials developed from the general application software package very highly. All the percentages in response to ease of operation were in the 95.5% and 97% range and percentages in response to the clarity of the written instructions were 92.5% and 98.5%. Most of the students believed that the instruction time on the CAI materials was adequate with percentages of 83.8% and 85.1% responding favorably.

Ten of the twelve students interviewed thought that the computer operations offered greater ease rather than another level of difficulty in working with the material of the course. The drawbacks which were cited concerned a lack of typing skills and the lack of an available computer during the periods immediately prior to an assignment due date.

Overall results indicated that CAI materials composed from a general application software program met with positive evaluation from most of the students.

Research question 6

6. What will the attitudes of student volunteers involved in this study demonstrate when compared and contrasted with the attitudes of students for whom this is a course requirement?

Questionnaire Data

Seven students volunteered to participate in the CAI

exercises, six women and one man. Six of the students were from a section of the Introduction to Biblical Studies course whose instructor was very supportive of the CAI project.

Pretest/posttest data and the Initial Questionnaire revealed that the volunteers were comparable with the rest of the students, they did not demonstrate any advantage or disadvantage. Their pretest mean was higher than both the "control" and the study group and their posttest mean fell between the two groups (Table 29).

Table 29

Comparison of Pretest/Posttest Means for Volunteers,
"Control" Group and Study Group

	Volunteers	"Control"	Study
<u>N</u>	7	29	65
Pretest	16.57	14.9	16
Posttest	19.85	17.8	21

The Initial and Exit Questionnaires for the volunteers showed that they were similar to the other students except in the area of computer experience (Appendices X & Y). All of the volunteers had previous experience with computers and were very positive about the use of computers with this course. In all other respects the volunteers' responses were the same as the other students in the study. The volunteers began and concluded the course without any change

in their initial positive attitude toward the course (Tables 30 & 31).

Table 30

Question 5 from the Initial Questionnaire

05. If I didn't need three units of credit I definitely would not be taking this course.

Strongly Agree	Agree	Disagree	Strongly Disagree	<u>N</u>
0	0	2	5	7

Table 31

Question 5 from the Exit Questionnaire

05. In the final analysis this course gets me three units of credit and that's all that is important to me.

Strongly Agree	Agree	Disagree	Strongly Disagree	<u>N</u>
0	0	2	5	7

The volunteers evaluated the drill and practice exercise (Appendix Z) positively in all respects and included such comments as, "Great game, wish they had it to help me in more of my classes," and "Information as to the operation of the disk was all very clear and easy to apply to the computer." Another volunteer said, "I liked the game

and it helped me to understand who was who which helped to make the Bible stories more clear."

None of the volunteers used the data base or word processing exercises so there were no evaluations for these components.

Interview Data

One of the student volunteers was interviewed and she was glad for the opportunity to use the computer with her coursework. She had experience with computers and did not encounter any difficulty using the drill and practice exercise. She had looked at the data base and the word processing exercises and did not use these in connection with her coursework since she did not see a direct relation to what was being covered in her class.

Observational Data

There were opportunities at the beginning of the semester to speak with each of the seven volunteers as they received their orientation to the CAI materials. Since all of the volunteer students had experience with computers, there were no reports of any difficulties. None of the volunteers actually used the data base or the word processing exercises. When asked about these two components the uniform response was that the data base appeared to be a great deal of work and the word processing questions did not seem to be completely relevant. This comment on the word processing exercise came as a surprise since these questions were composed in consultation with an instructor in whose

section six of the volunteers were pupils. A more appropriate assessment might be that since there was no immediate reward, such as points or the correct answer, as in the drill and practice, the students did not invest the effort in working on the word processing exercise.

They all used the drill and practice as a preparation for their tests and indicated that it had helped in their test preparation. The Media Center records indicated that these volunteers used the drill and practice more often than the students from the two sections who had CAI assignments.

Research Question 6 compared the attitudes of students who volunteered to use the CAI materials with the students for whom the CAI was a requirement. From the questionnaire data a comparison of attitudes at the beginning and at the end of the course revealed that the positive attitudes of the volunteers remained the same. It is not surprising that the attitudes of those who would volunteer for an exercise such as this would be positive at the beginning. The fact that the students completed the semester and maintained their positive attitudes would indicate that the CAI materials were considered helpful by these student volunteers.

All of the volunteers had previous computer experience and six of the seven were women. The future would seem to be open to using the volunteer concept as more students enter college with computer experience. The fact that all but one of the volunteers were women is not surprising.

What is notable is the fact that this percentage of females had computer experience.

Research question 7

7. Will students who avail themselves of CAI acquire and retain more information than students who do not use this learning tool as evidenced through improvement in written pretest and posttest results?

A comparison of pretest and posttest results (Appendices G & H) was made with students who participated in the CAI exercises and with students from another Biblical studies section who did not participate in the CAI exercises.

The 29 students who did not participate in the CAI exercises were from another section of the same Introduction to Biblical Studies course. These students had a different teacher, but they used the same textbook and had the same number of tests. Before each of the four tests, the teachers of both the non-CAI students and the CAI students, exchanged and compared notes on the upcoming test. Both teachers followed similar syllabi and had exchanged sample syllabi and samples of previous tests prior to the beginning of the semester. Each teacher gave permission to the other to borrow freely from the copies of the tests.

Both teachers were involved in the revision of the pretest and the posttest of the Pilot Study. This revision was made at the beginning of the semester. There was little possibility of either teacher coaching his class for the

posttest at the end of the semester. All students participated in the pretest and the posttest at the same point in the semester. The scores of the 29 students who did not participate in the CAI exercises were used as the results of a "control group" would be used in an experimental study. A comparison of the means of these two groups appears in Table 32.

Table 32

Means on Pretest/Posttest for Control and Study Group

	N	Pretest	Posttest
"Control"	29	14.9	17.9
Study	65	16.0	21.0

The results of an analysis of covariance appear in Table 33 and demonstrate that the students who participated in the CAI exercises did demonstrate a statistically significant difference in group means on the posttest by the grouping variable controlling for the pretest. The results were significant at the $p < .001$.

Table 33

Analysis of Covariance Comparing Pretest/Posttest Scores of
CAI Users and Non-Users

<u>Source</u>	<u>Sum of Squares</u>	<u>df</u>	<u>Mean Square</u>	<u>F</u>	<u>Signif of F</u>
Covariates	253.667	1	253.667	38.20529	0.00
Main Effects	141.962	1	141.962	21.38128	0.00
Explained	395.629	2	197.815	29.79328*	0.00
Residual	604.201	91	6.640		
Total	999.830	93	10.751		

Note: * $p < .001$.

Observational Data

Both teachers of the different groups of students engaged in extensive conversations as a result of having exchanged so much course material with one another. This exchange of materials and ideas was very helpful in monitoring the progress of each teacher throughout the semester. Both teachers also exchanged test averages and grades which gave additional data on the progress of the courses and the areas of the syllabus which each instructor stressed. This type of exchange assured that the students of both teachers were learning the same material at the same time.

Although the significant gain scores of the students using CAI may not be said to be directly correlated to the use of CAI in connection with this course, students did demonstrate learning through the recorded pretest and posttest scores and they did demonstrate stronger gain scores than those students without the CAI materials.

Research Question 8

8. Will students who participate in drill and practice CAI demonstrate higher test grades than students who do not participate in drill and practice CAI?

All students had the opportunity to participate in a drill and practice exercise which was formatted as a game. Students were encouraged to go to the Media Center and use this drill and practice exercise as one mode of preparation for their four tests during the semester. Participation was voluntary and students were surveyed after each of the four examinations to discover if they had utilized the drill and practice exercise as a preparation for the examination. An analysis of a two-sample case on the test scores of those students who used the game and those who did not is presented in Table 34. The first and second tests show significantly higher means scores for those students who utilized the game while tests three and four demonstrate higher mean scores which are not significant ($p < .05$).

Table 34

Comparison of Means of Test Grades of Non-users and Users of Drill and Practice CAI

	Test 1		Test 2		Test 3		Test 4	
	<u>n</u>	<u>M</u>	<u>n</u>	<u>M</u>	<u>n</u>	<u>M</u>	<u>n</u>	<u>M</u>
Non-users	29	76.93	45	73.88	25	76.36	23	83.04
Users	44	86.25	28	82.67	46	77.91	44	84.75
<u>t</u>	5.48*		2.71*		.48		.71	

Note: * $p < .05$.

Observational Data

A review of Table 34 shows that the participation in the drill and practice for Test 2 is very low. Students were encouraged after the second test and before the third test to use the drill and practice. The students were told that those students who had used the drill and practice did score better as a group than those students who had not used the drill and practice. One could speculate that the results of the third and fourth tests are a reflection of students who thought that the drill and practice was the key to the test and these students may have relied too heavily upon the drill and practice to study for the tests and neglected other areas of study in preparation for the examination.

The first two tests reflect significant differences in favor of the students who utilized the drill and practice exercises. The third and fourth tests do indicate an advantage but this is not statistically significant. There are several possible reasons for the leveling off of test scores on tests three and four. Students may have relied too heavily on the drill and practice. The drill and practice exercise may have engendered a false security on the first two tests. The quality of questions for units three and four may have been poorer than those for units one and two. The test questions on units three and four may not have been as closely aligned as on units one and two. In the final analysis, however, the drill and practice reveals significance only on Test 1 and Test 2.

Research Question 9

9. Will students with little or no formal education in Biblical Studies but who use CAI compare positively with students with formal Biblical education who also use CAI as evidenced in their posttest results?

Students were placed in four categories with regard to their formal education: A) those with no formal background, B) those with less than six years of background, C) those with six to eight years of background and D) those with nine to twelve years of background. The mean scores along with these categories are presented in Table 35.

Table 35

Pretest/Posttest Means Based on Years of Formal Religious Education

Years	0	1-5	6-8	9-12
<u>n</u>	11	19	11	24
Pretest	13.09	14.89	14.90	18.70
Posttest	19.63	21.00	20.90	21.66

An analysis of variance procedure on the results of the pretest and posttest for students grouped according to the four categories based on years of formal religious education revealed that there was statistically significant gain on Table 36

Analysis of Variance Comparing Pretest/Posttest Scores of Differing Backgrounds of Formal Religious Education

Source	<u>Sum of</u> <u>Squares</u>	<u>df</u>	<u>Mean</u> <u>Square</u>	<u>F</u>	Signif of <u>F</u>
Between	160.5249	3	53.5083	5.4267*	0.0022
Within	601.4751	61	9.8602		
Total	762.0000	64			

Note: * $p < .002$.

the part of those students without formal background, those students with less than six years of formal background, and those students with six to eight years of background in religious studies (Table 36). The posttest scores indicated a significant gain ($p < .002$) for all three groups. Those students with nine to twelve years of formal religious education background did not show significant gain scores.

These results point to the significance of the gain scores of those with less experience in formal religious education. The four categories of formal background in religious education were combined with the three following classifications based on the students' previous computer experience: 1) no experience with computers, 2) some experience with computers, and 3) programming experience with computers. A two-way analysis of variance on these combined categories demonstrated that there was no significant learning advantage shown by students with either more formal religious education background or previous computer experience. The cell means of the posttest are presented in Table 37 and the two-way analysis of variance in Table 38.

Table 37

Cell Posttest Means Based on Years of Formal Religious
Education Background and Previous Computer Experience

Background	Computer Experience		
	None	Some	Programming
0	19.60	19.67	19.67
<u>n</u>	(5)	(3)	(3)
1-5	18.00	22.50	21.00
<u>n</u>	(4)	(8)	(7)
6-8	20.20	21.00	22.00
<u>n</u>	(5)	(3)	(3)
9-12	21.50	22.33	21.25
<u>n</u>	(14)	(6)	(4)

These results demonstrate that the variables of formal background in religious education and previous computer experience were inconsequential in the results of the pretest/posttest means and therefore of no significant learning advantage in the context of this Biblical studies course. Learning gain was not attributable to previous experience in either religious education or previous computer usage. Students who entered the course without either background in religious education or computer experience were not disadvantaged. Every student was under the same constraints to study and work in the course in order to learn and to achieve a respectable final grade.

Table 38

Two-Way Analysis of Variance Comparing Pretest/Posttest Scores with Years of Formal Religious Education and Previous Computer Experience

Source	<u>Sum of Squares</u>	<u>df</u>	<u>Mean Square</u>	<u>F</u>	Signif of <u>F</u>
Covariates	85.302	1	85.302	14.95319	0.000
Main Effects	20.007	5	4.001	0.70142	0.625
Rel Ed Bkgnd	6.254	3	2.085	0.36542	0.778
Computer Exp	13.753	2	6.876	1.20541	0.308
Interaction	54.054	6	9.009	1.57924	0.172
Explained	159.362	12	13.280	2.32798	0.018
Residual	296.638	52	5.705		
Total	456.000	64	7.125		

Note: * $p < .001$.

Research Question 10

10. Will students with little or no formal education in Biblical Studies but who use CAI compare positively with students with formal Biblical education who also use CAI as evidenced in their final grades?

Students were placed in four categories with regard to their formal education: A) those with no formal background, B) those with less than six years of background, C) those with six to eight years of background and D) those with nine

to twelve years of background. The mean averages for the groups are presented in Table 39.

Table 39

Means of Final Averages Based on Years of Formal Religious Education

Years	0	1-5	6-8	9-12
<u>n</u>	11	19	11	24
Final Avg.	81.28	81.31	85.35	85.95

An analysis of variance procedure was performed using the four categories in conjunction with the students' final averages. With the level of significance set, ($p < .05 = 2.76$) the analysis of variance test statistic of $F = 2.05$ revealed no significant differences among the students final averages using the four categories of previous formal religious education experience as classifications for the scores. This lack of significance indicates that all students did equally well regardless of their previous formal experience with Biblical studies and that those students without formal background did compare positively with those who did have extensive background (Table 40).

Table 40

Analysis of Variance for Comparison of Years of Formal Religious Education

<u>Source</u>	<u>Sum of Squares</u>	<u>df</u>	<u>Mean Square</u>	<u>F</u>	<u>Signif of F</u>
Between	332.9	3	110.9	2.05	0.05
Within	3578.2	66	54.21		
Total	3911.1	69			

Note: $p < .05$.

These results would affirm the outcomes of research question 9 which showed that no students were disadvantaged as a result of their lack of background in either religious education or computer experience. The Biblical Studies course would seem to have fulfilled its purpose as an introductory course and afforded all students the opportunity of doing equally well.

Summary

This chapter has compiled data in response to a series of research questions which focused on students' perceptions and achievement in relation to the use of CAI in a Biblical studies course. The data indicate that students perceived that they learned more as a result of using CAI and that they thought CAI was a worthwhile addition to the course. Results also showed that students' attitudes were influenced

positively through the use of CAI and that students without any previous experience with computers felt no disadvantage. The CAI materials were judged to be effective in terms of ease and speed of operation by the students.

Students who volunteered to participate in the CAI exercises evaluated their experience as beneficial and demonstrated a positive outlook at the beginning and at the end of the study. When the volunteers were compared to the students required to use CAI, the main difference was that all the volunteers had previous computer experience. This fact, in addition to the overall positive outlook of the volunteers were the main differences between the two groups.

The students using CAI showed significantly higher gain scores on the pretest/posttest when compared to another section of students who did not use the CAI materials. Students in the study who used the drill and practice exercise as a preparation for tests showed significant advantage on tests 1 and 2 when tests scores were compared with those students who did not use the drill and practice. No statistical significance was found in tests 3 and 4.

A statistical analysis of the pretest/posttest results and the final averages revealed that no advantage in the course could be attributed to either previous computer experience or years of formal religious education background. All students who entered the course had an equal opportunity to do well regardless of previous experiences.

CHAPTER V

SUMMARY, CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

One purpose of this case study was to determine the effect of the introduction of computer-assisted instruction (CAI) materials upon students' learning ability in a college Biblical studies course. Another purpose was to gather information from students with regard to their attitudes toward CAI and its effectiveness in learning the course material. A third purpose of the study was the design of CAI materials using a general application software package. The data base and word processing functions of a general application software package were adapted for CAI in the Biblical studies course.

The CAI materials employed in the Biblical studies course consisted of a data base exercise, a word processing component and a drill and practice exercise in a game format.

This case study collected data on 68 students during a college semester. Data on student attitudes were gathered through written questionnaires and interviews. Chi-square was used to investigate the differences in response to the items of the surveys. Student learning of the course material was tested using a pretest/posttest design in

addition to student grades. An analysis of covariance was calculated on the pretest and posttest scores comparing the group under study with another group who did not have access to the CAI materials. An analysis of variance was used to compare the pretest/posttest gain scores of students with the independent variable being the years of formal background in religious education. Another analysis of variance was done using the years of formal background in religious education as the independent variable to test for significance on the student's final grades.

Findings

Ten research questions were used to determine the findings of this study. The research questions gathered data from students through questionnaires, interviews, and observation as well as using the scores of pretests and posttests and final averages.

The data indicate that students perceived that they learned more of the subject matter of the course as a result of using the CAI materials. Students judged that the CAI was a worthwhile addition to the course. Results also showed that students' attitudes were influenced positively through the use of CAI. Students without any previous computer experience felt comfortable with these materials and did as well as students with more computer experience. The CAI materials were judged to be effective in terms of ease and speed of operation by the students.

Students who volunteered to participate in the CAI exercises evaluated their experience as beneficial and demonstrated a positive outlook at the beginning and at the end of the study. When the volunteers were compared to the students required to use CAI, the main differences were that the volunteers had previous computer experience and they maintained a positive outlook throughout the study.

The students using CAI showed significantly higher gain scores on the pretest/posttest when compared to another section of students who did not use the CAI materials. Students in the study who used the drill and practice exercise as a preparation for tests showed a significant advantage on tests 1 and 2 when tests scores were compared with those students who did not use the drill and practice. No statistical significance was found in tests 3 and 4.

A statistical analysis of the pretest/posttest results and the final averages revealed that no statistical advantage could be attributed to either previous computer experience or years of formal religious education. All students who entered the course had an equal opportunity to do well regardless of previous experience with computers or background in religious education.

Conclusions

Student response to the incorporation of CAI into the curriculum of the Biblical studies course indicated that the students perceived the CAI materials as assisting them to master the course material.

Students' attitudes with regard to the Biblical studies course were generally favorable and in those cases where negative attitudes were reported at the beginning of the study, 53% of these students reported that they had altered their view at the conclusion of the course. It is not possible to correlate this alteration directly with the use of CAI. It does indicate, however, that the CAI did not impact adversely the attitudes of the students. In the case of the four students with negative attitudes who were interviewed, two of these students who did change their attitudes stated that the computer contributed to altering their perspective. It can be conjectured that the computer did play a role in more than two cases of the nine cases of improved attitudes.

Students regarded the CAI materials as a positive enhancement to the course. They were most favorable to the word processing exercise and the drill and practice exercise. They did not evaluate the data base as favorably as the other components because they felt that it was too much work and not sufficiently helpful in preparing for the tests. Students may have overlooked the long term value of the data base exercise. This component of the CAI materials was primarily an exercise in research, students were given credit for their thoroughness and accuracy in researching the books of the Bible. This effort of searching for and acquiring the correct information on a book of the Bible assisted students in the formation of good research habits.

The majority of students without previous computer experience indicated positive attitudes toward the CAI materials used in this course. Questionnaire data showed 16 of 19 students and interview data showed three of four students responding positively to questions on how they regarded the computer used in connection with this course.

The data collected indicated that it was possible to utilize general application software packages in the construction of CAI materials for college level coursework and meet with positive evaluation on the part of the students. The results also indicated that the general application software can be operated easily by the students with a brief orientation and printed directions.

The volunteers for this study numbered seven. Attitudinally there was no change among the volunteers. They remained positive throughout the semester toward the use of the CAI materials. The fact that all of the students who volunteered had previous experience with computer work would indicate that any effort to attract students without experience would have to emphasize that they will be taught how to operate the computer.

An analysis of variance showed that the students who used CAI scored significantly higher on a pretest/posttest combination than students who did not use the CAI materials. This gain may not be said to be directly correlated to the use of CAI in connection with this course but it does show

that CAI did not interfere with student performance. It can be conjectured that the CAI did enhance student scores.

Students using the drill and practice exercise showed statistically significant scores on the first and second test but not on the third or fourth. A careful monitoring of this component would be necessary if it were to be used again.

Students with less formal religious education background demonstrated statistically significant gain scores on the pretest/posttest. These gain scores are certainly not directly attributable to the use of CAI in connection with this course but it does show that the CAI did not adversely affect students with fewer years of formal religious education background. Students did demonstrate learning as indicated through their pretest/posttest scores and they did demonstrate stronger gain scores than those students with more formal background in the subject matter of religious studies.

Research also indicated that all students shared an equal advantage to learn and do well in this course. This was discovered through the comparison of computer experience and years of formal religious education background with pretest/posttest gain scores. There was no statistical significance and therefore no advantage to any student because of previous knowledge in religious education or previous experience with computers.

The lack of significance among the final averages when compared according to formal background in religious studies cannot be directly correlated to the presence of CAI in the course. It can be said, however, that CAI did not impact student grades adversely and may have given certain students an advantage in working with the material of the course.

Implications

The study described above constitutes only an initial effort at combining the advantages of the computer and liberal arts courses. Future efforts could benefit from the strengths of this study and from its weaknesses.

The research presented in this study demonstrates a "leveling" effect among students' scores on the pretest/posttest combination and the final averages. The data show no significant differences among students regardless of their previous computer experience or religious education background. The course under study, Introduction to Biblical Studies, is an introductory course. There are no prerequisites and this accounts for the wide variety of student backgrounds. This means that students with no background participate in the same course with students who have had 12 years of previous training in religious education. This gap in student backgrounds renders the leveling effect more powerful than a situation where equal background was presupposed for students entering a course.

This study reported on the use of the data base and word processing components, two activities which are less

common in the literature than the drill and practice exercise which was also addressed. The data base assisted the students' research skills and enabled them to prepare more effectively for tests while the word processing exercise led to an improvement in grammatical expression on the essay sections of tests. The combination of these two components contributed to the overall learning of the course material. The formats of the data base and the word processing exercise helped the students to perform well on examinations and therefore presumably to learn more. The unique contribution of these two components cannot be ignored when assessing their overall influence on the course. They are extremely helpful and it is recommended that they be included in all Introduction to Biblical Studies courses.

Future usage might also benefit from the advances being made in general application software. There is every indication that improvements will continue to be made and these advances will certainly assist approaches such as the one described in this study.

The pretest and posttest in this study utilized a 25 item multiple choice format. The number of questions should be doubled in order to establish greater reliability.

The questionnaires in this study were separate instruments, designed to evaluate only one function of the CAI materials. It would be more economical in terms of time

and labor if these instruments were combined with the Exit questionnaire.

The drill and practice format should not remain the same throughout the semester. Alternating designs or providing a choice of formats would help prevent students from getting bored.

The data base exercise was demanding on the students' time and research ability. It would be reasonable to tailor it to fit one's own Biblical perspective and one's estimation of the students' abilities. In this study the computer activities were 20% of the grade. Instructors may wish to alter this value depending upon the conditions and syllabus under which they teach.

The CAI materials utilized in this study could be made available in a computer laboratory or a media center of a college for students who wish to use them in connection with a course similar to the one described in this study. One instructor could assemble the components or several instructors could cooperate in creating the materials that could be used by students in the lab setting. The general application software packages give this advantage of uncomplicated directions and fairly simple functions such as the data base and the word processing.

Future studies would certainly benefit from increased faculty planning and participation. The emphasis would be on long-range planning since many faculty seem to plan at least one semester in advance.

College faculty need time to become familiar with the advantages of computers for their work. Deliberate efforts are necessary to make time available to share the advantages of this tool. When faculty are provided with the time and opportunity to explore the capabilities of computers, they might see the assistance which computers can give them.

Recommendations

In the light of this study, the following recommendations are made:

1. Continued research needs to be done on the benefits that CAI can bring to Biblical studies courses.
2. CAI needs to be investigated in relation to the other areas of religious studies coursework on an experimental basis. The proper CAI exercises might demonstrate distinct advantages in certain introductory courses.
3. Teachers need adequate training with computers to be in a position to use this tool to their own advantage and for the benefit of their students.
4. Teachers need encouragement and rewards to attempt the appropriate incorporation of CAI into their classes.
5. More computer software addressed to the college level student is necessary to fully utilize the capabilities of computers.

Suggestions for Further Research

Students have benefited from the use of CAI in their college courses. Further research is needed to discover

what types of CAI are most beneficial to student learning in Biblical studies and religious studies curricula as well as other disciplines in liberal arts.

Teachers of mathematics and science have benefitted from the use of CAI in their college courses. Incentives need to be offered to encourage teachers in liberal arts to adapt CAI to their own courses.

A great deal of fundamental information is necessary for such introductory courses as Biblical studies, the history of Christianity, and the history of theology. This information could be made available to students in a variety of CAI programs.

Advanced courses in Biblical studies and theology could benefit from CAI software which would help to review the important persons, events and ideas which are significant to a particular discipline of theology.

Final Note

This case study emerged from the efforts of a teacher of Biblical studies to discover ways in which the technology of the computer could assist students. This study is not the work of a computer expert. It represents the efforts of one teacher to develop ways to use the computer to manage a vast body of material in an uncomplicated format. It shares the conviction that learning may be enjoyable as well as hard work and it reflects the hope that others will be encouraged to experiment and to utilize the computer as an effective tool for learning.

Appendix A

Initial Questionnaire

The purpose of this questionnaire is to determine your background in formal religious studies and your general attitude toward religious studies courses. Several statements also concern your experience with computers and computer assisted instruction. Please answer these questions frankly and honestly.

Student # Teacher's Name

Please use the following scale for your responses:

- 1 - Strongly disagree
- 2 - Disagree
- 3 - Agree
- 4 - Strongly agree

- 1- -2- -3- -4- 01. I think it is important for a person living in today's world to have some knowledge of the Bible.
- 1- -2- -3- -4- 02. I think that I will do well in this course if I apply myself.
- 1- -2- -3- -4- 03. I have always done well in religion classes.
- 1- -2- -3- -4- 04. I look forward to this class and learning more about the Bible.
- 1- -2- -3- -4- 05. If I didn't need three units of credit I definitely would not be taking this course.

Please use the following scale for your responses:

1 - Strongly disagree

2 - Disagree

3 - Agree

4 - Strongly agree

- 1- -2- -3- -4- 06. I am confident in my knowledge of the books of the Bible as I begin this course.
- 1- -2- -3- -4- 07. I can identify or associate most of the major characters of the Bible as I begin this course.
- 1- -2- -3- -4- 08. Right now I feel I could research a passage from the Bible correctly.
- 1- -2- -3- -4- 09. When I discuss or argue about the Bible I am very sure of my own information.
- 1- -2- -3- -4- 10. I am able to offer my opinion confidently on what a section of the Bible means.

Circle the appropriate response:

11. Which of the following best describes your experience with computers?
- A) I have never operated a computer
 - B) I have only played computer games
 - C) I have had some experience with using computers
 - D) I have had experience writing computer programs

Circle the appropriate response:

12. Which of the following statements best describes your attitude toward computers used in connection with a religious studies course:
- A) I really do not like computers.
 - B) I would rather not be bothered with computers.
 - C) I would be open to it.
 - D) I think it's an interesting idea.
13. Which of the following best describes your experience in formal religious education programs?
- A) none at all
 - B) less than six years of religion in school or in a Religious Education Program
 - C) six to eight years of religion in school or in a Religious Education Program
 - D) nine to twelve years of religion in school or in a Religious Education Program
14. Which of the following best describes your college religious studies experience?
- A) this is my first course in college level religious studies
 - B) this is my second course in college level religious studies
 - C) this is my third course in college level religious studies
 - D) this is my fourth or fifth course in college level religious studies

Appendix B

Exit Questionnaire

The purpose of this questionnaire is to evaluate your experience of this course during the past semester.

Student # Teacher's Name

Please use the following scale for your responses:

1 - Strongly disagree

2 - Disagree

3 - Agree

4 - Strongly agree

- 1- -2- -3- -4- 01. Knowledge of the Bible is important for a person living in today's world.
- 1- -2- -3- -4- 02. I have done well in this course because I have worked hard on the material.
- 1- -2- -3- -4- 03. I should get a good grade in this course.
- 1- -2- -3- -4- 04. This course helped me to learn more about the Bible than I expected.
- 1- -2- -3- -4- 05. In the final analysis this course gets me three units of credit and that's all that is important to me.
- 1- -2- -3- -4- 06. I know much more about the books of the Bible now than when I began this course.
- 1- -2- -3- -4- 07. I know much more about the characters of the Bible than I did before this course.

Please use the following scale for your responses:

1 - Strongly disagree

2 - Disagree

3 - Agree

4 - Strongly agree

-1- -2- -3- -4- 08. I believe that this course equipped me to research any passage of the Bible with confidence.

-1- -2- -3- -4- 09. I believe that I could be confident in a discussion or argument on the Bible as a result of this course.

-1- -2- -3- -4- 10. I now possess the skills to speak about the meaning of a passage of the Bible with confidence.

Please respond only to those statements which are applicable to you.

-1- -2- -3- -4- 11. I had never operated a computer before this course and I am glad that I had the opportunity.

-1- -2- -3- -4- 12. I still do not like computers.

-1- -2- -3- -4- 13. I am glad that I was required to use the computer with this course.

-1- -2- -3- -4- 14. I am glad that I volunteered to use the computer with this course.

-1- -2- -3- -4- 15. I would be confident in taking another course which had computer assignments as a part of the course.

A B C D 16. I expect my grade for this course to be:

A B C D 17. If I had not been required to use the
computer for this course, my grade would
be:

Appendix C

Interview Questions to be used with Students Participating
in Religious Studies Computer Assisted Instruction

RS 16 Game Format (Bible Baseball)

01. How often during the semester have you used the RS 16 Game?
02. When you did not use the RS 16 Game, what conditions kept you from doing so?
03. Did you enjoy using the game format? Why? Why not?
04. Did the RS 16 Game format help you to learn the material?
05. What in your estimation was the value of the RS 16 Game for preparing for the examinations?
06. Were the results of your exams worth the time you put in on the game as preparation?

Data Base Exercise (Exercise on the books of the Bible)

07. In your estimation, how valuable is the exercise on the list of the books of the bible? What are its strong points? What are its weak points?
08. Did the exercise on the books of the Bible help you to learn the material?
09. What in your estimation was the value of the exercise on the books of the Bible in preparing for examinations?
10. What aspect, if any, did you enjoy with the exercise on the list of the books of the Bible?

Word Processing Exercise (Essay Questions on the Bible)

11. In your estimation, how valuable is the word processing exercise dealing with the essay questions? What are its strong points? What are its weak points?
12. Did the word processing exercise on the essay questions help you to learn the material?
13. What in your estimation was the value of the word processing exercise on the essay questions in preparing for examinations?
14. What aspect, if any, did you enjoy with the word processing exercise on the essay questions?
15. Does the computer make it easier to work with the questions or add another level of difficulty?

Overall Questions

16. If you had it to do over again, would you have selected this section of this course if you knew about the computer assignments?
17. How much more did you learn as a result of using the computer in this course than if the course did have the computer exercises?
18. What were your feelings about computers when you began this course?
19. What are your feelings now?
20. If there has been any change, to what do you attribute this change?
21. What were your feelings about religious studies courses when you began this course?

22. What are your feelings now?
23. If there has been any change, to what do you attribute this change?
24. Would you recommend this course to another student?
Why? Why not?

Appendix D

Directions for using "Appleworks" with RS 16 Data Base on
the books of the Bible

Go to the Media Center check out desk and obtain the Appleworks disks. There are two Appleworks disks, one is the "Start up" disk and the other is the "Program" disk. Then go to the Academic computing room, De Sales 107.

01. Insert "Appleworks Start Up" disk in drive 1 and your disk in drive 2.
02. Turn on computer, button is on left rear of computer. Button to turn on monitor (screen) is in upper right corner.
03. In a few moments the red light on the disk drive will go out, then replace "Appleworks Start Up" disk with "Appleworks Program" disk and press "Return."
04. Type in today's date and press "Return."
05. Main menu appears. Select # 1, press "Return."
06. Add Files, Get files from: Select # 1, if it reads: "The current disk: Drive 2." If it does not read as above Select #2, "a different disk" and specify that you wish to go to Disk 2 by placing the highlighted cursor over Disk 2. Press "Return."
07. Appleworks files: "Bible" will be your choice, press "Return."
08. Bible: chart will appear with "Sample" as the first category, Genesis the second, etc.
09. With the cursor blinking on "Sample" press the "Open Apple Symbol" and the letter "Z" simultaneously. (This

- allows you to 'zoom' in on the record titled "Sample.")
10. The "Sample" file gives you the required information for each of the books of the Bible.
 11. Use "Apple Symbol" and "down arrow" simultaneously to see the Genesis file. The Genesis file is an actual sample.
 12. Use "Return" key and move cursor to Author category. Type in your entry and use "Return" key to accept your entry. If you make a mistake use the "delete" key, (upper right).
 13. Use arrow keys and "Return" key to move about the file.
 14. Use "Apple Symbol" and arrow keys to move through the files.

To leave the Computer

01. Press "Apple Symbol" and "S." (This saves the file to the disk.)
02. Press "Esc" key. (stands for "escape," upper left)
03. Select # 4 "Remove files from the desktop." Press "Return."
04. Select # 6, "Quit." Press "Return."
05. Select "Yes" (use right arrow) Press "Return."
06. Remove your disks from the disk drives.
07. Turn off the computer.
08. Don't forget to return the "Appleworks" disks to the "check out desk."
09. HINT: When the disk drive is in operation, that is, when the red light is on, do not remove or insert disks.

Appendix E

Directions for using "Appleworks" with RS 16Word Processing Exercise

Go to the Media Center check out desk and obtain the Appleworks disks. There are two Appleworks disks, one is the "Start up" disk and the other is the "Program" disk. Then go to the Academic computing room, De Sales 107.

01. Insert "Appleworks Start Up" disk in drive 1 and your disk in drive 2.
02. Turn on computer, button is on left rear of computer. Button to turn on monitor (screen) is in upper right corner.
03. In a few moments the red light on the disk drive will go out, then replace "Appleworks Start Up" in Drive 1 with "Appleworks Program" disk and press "return."
04. Type in today's date and press "Return."
05. Main menu appears. Select # 1, "add files to desktop," press "Return."
06. Add Files, Get files from: Select # 1 if it reads: "The current disk: Drive 2." If it does not read as above Select #2, "a different disk" and specify that you wish to go to Disk 2 by placing the highlighted cursor over Disk 2. Press "Return."
07. Appleworks files: "QUESTION ..." will be your choice, press "Return."
08. You may go to any of the questions that you intend to work upon, you will probably want to review all four

- questions to see what they are asking you to accomplish.
09. You will treat the computer now like a typewriter and plan your answers which are to be written on the screen and saved to your disk.
 10. Notice as you begin typing that space will be made between the questions for your response. If you make a mistake use the "Delete" key (upper right of keyboard).

To leave the Computer

01. Press "Apple Symbol" and "S." (This saves the file to the disk.)
02. Press "Esc" key. (stands for "escape," upper left)
03. Select # 4 "Remove files from the desktop." Press "Return."
04. Select # 6 "Quit." Press "Return."
05. Select "Yes" (use right arrow) Press "Return."
06. Remove your disks from the disk drives.
07. Turn off the computer.
08. Don't forget to return the "Appleworks" disks to the "check out desk."
09. HINT: When the disk drive is in operation, that is, when the red light is on, do not remove or insert disks.

Appendix F

Directions for Using RS 16 Game (Drill & Practice)

Go to the Media Center check out desk and obtain the 'RS 16 Game' disks. There are two, one is a 'program disk' and the other contains the questions for your use. The Media Center will have these disks listed under "Religious Studies 16".

Special note: this game can be played on an Apple computer with only one disk drive unlike the Appleworks which demands two disk drives. You will only utilize one disk drive with this "RS 16 Game."

01. Make sure "caps lock" key is in depressed position.
02. Insert 'program disk' in disk drive 1.
03. Turn on computer, button is on left rear of computer.
04. It will take a moment for the machine to be ready, be patient.
05. Screen will ask question, "Proceed directly to game? (Y/N) You will respond by pressing the letter "Y" or "N".
06. Read instructions.
07. Select Baseball for one or two players, use numeral to make your selection (don't be startled by sounds)
08. Screen reads "If you want to use the questions from a supplementary disk please insert it now."
09. Remove 'program disk' and insert 'questions disk' into drive 1.

10. Select level of play. (Don't be startled by any sound).
11. Make sure that "caps lock" is in depressed position.
12. You may play a full game or leave the game between innings. Please do not leave the game during an inning.
13. You will know it is safe to leave when the following instructions come on the screen: "PRESS SPACE TO CONTINUE OR 'ESC' TO END." Space = space bar.

To leave the Computer

01. Press 'esc.'
02. Answer 'N' to the question: "Would you like to play again? (Y/N)"
03. Remove disk from disk drive.
04. Turn off computer.
05. Return disks to the check out counter.

CAUTION

Please do not remove disks while the disk drive red light is on.

Please handle disks carefully.

If for any reason you are stumped or the game seems to have malfunctioned, remove the disk from the drive after you have checked that the disk drive light is not on.

If you wish, insert the program disk again and press the following keys simultaneously, "Control," "C," and "Reset."

This should restart the program disk without making it necessary to turn the computer off and on.

Appendix G

Pretest Questions

Student I.D. #

Multiple Choice: Please choose the most appropriate answer and mark the correct space on the Scantron in pencil.

01. The language of most of the Old Testament is
a. Hebrew b. Aramaic c. Greek d. Latin
02. The author of the first five books of the Bible is:
a. Noah b. Abraham c. Adam d. unknown
03. The "rainbow" is representative of God's Covenant with:
a. Noah b. Abraham c. Moses d. David
04. The survivors of the flood were
a. Abraham and Lot b. Noah and his family
c. Moses and the Hebrews d. no one survived
05. The greatest patriarch of the Hebrews in the book of Genesis is:
a. Adam b. Abraham c. Moses d. David
06. Isaac is best known as:
a. the recipient of the Ten Commandments
b. the brother of Esau
c. the son almost sacrificed by his father
d. Moses' right hand man
07. God changed Abram's name to "Abraham" and Jacob's name to:
a. Isaac b. Judah c. Israel d. Benjamin
08. The Hebrews left Egypt and Pharaoh under the guidance of
a. Abraham b. Joseph c. Moses d. Joshua

09. God disclosed his name, "Yahweh," to Moses:
- a. on Mt Tabor
 - b. at the edge of the Promised Land
 - c. on the banks of the Nile
 - d. at the Burning Bush
10. The Ten Commandments originally
- a. were presented by Jesus
 - b. emerged from the Garden of Eden
 - c. were given to Moses on Mt Sinai
 - d. were created by Solomon
11. The events of the Book of Exodus probably took place during which century?
- a. 18 th BC
 - b. 15 th BC
 - c. 13 th BC
 - d. 10 th BC
12. A general, successor to Moses who fought for the Promised Land:
- a. Aaron
 - b. Miriam
 - c. Joshua
 - d. Samson
13. Consecrated at birth, a strong man, undone by a woman:
- a. Moses
 - b. Joshua
 - c. Samson
 - d. Solomon
14. The man first anointed king of Israel was:
- a. Samuel
 - b. Saul
 - c. David
 - d. Solomon
15. The original Temple in Jerusalem was constructed by:
- a. Abraham
 - b. Moses
 - c. David
 - d. Solomon
16. The prophet who spoke of the "law being written on the hearts of the people" was:
- a. Isaiah
 - b. Amos
 - c. Ezekiel
 - d. Jeremiah
17. The prophet who spent time inside a fish was:
- a. Judah
 - b. Jacob
 - c. Jonah
 - d. Jehovah

18. Which of the following is not considered a major prophet of the Old Testament?
a. Job b. Isaiah c. Jeremiah d. Ezekiel
19. The term "New Testament" refers to:
a. the body of literature after the life of Jesus
b. the New Covenant of Jeremiah
c. a fresh interpretation of the Ten Commandments
d. the Old Testament from a Christian perspective
20. This book comes first in the order of books in the New Testament:
a. Mark b. Matthew
c. Acts of the Apostles d. 1 Corinthians
21. Which of the following receives credit for having written a canonical gospel?
a. Peter b. Paul c. Mark d. James
22. Traditionally regarded as the most prolific letter writer of the New Testament:
a. Peter b. Paul c. Mark d. John
23. A teacher and preacher who never wrote:
a. Peter b. Paul c. Mark d. Jesus
24. The first martyr of the New Testament era was:
a. James b. John c. Stephen d. Peter
25. Which of the following Old Testament events is considered as the most significant for Judaism?
a. the Nativity b. Pentecost
c. the Resurrection d. the Exodus

Appendix H

Posttest Questions

Student I.D. #

Multiple Choice: Please choose the most appropriate answer and mark the correct space on the Scantron in pencil.

01. Contemporary Christian scholars often refer to the Old Testament as:
- a. the Hebrew Scriptures
 - b. The Christian Book
 - c. the Torah
 - d. the life and times of the early Hebrews
02. The Pentateuch is another name for the:
- a. Temple
 - b. New Testament
 - c. first five books of the Bible
 - d. the Covenant
03. The "human hero" of most of the Pentateuch is:
- a. Adam
 - b. Abraham
 - c. Noah
 - d. Moses
04. The Tower of Babel story tries to answer the question concerning:
- a. original sin
 - b. the Great Flood
 - c. the diversity of languages
 - d. the legends of the patriarchs
05. The external sign of Abraham's Covenant:
- a. a rainbow
 - b. circumcision
 - c. decalogue
 - d. Torah

06. Abraham
- a. was the son of Isaac
 - b. wrote the book of Genesis
 - c. founded the Hebrew nation
 - d. received the covenant on Mt Sinai
07. Isaac and Jacob were
- a. sons of Abraham
 - b. patriarchs of the Hebrews
 - c. brothers of Joseph
 - d. famous judges
08. Joseph in the Old Testament was
- a. the father of Jesus
 - b. the brother who sold his birthright
 - c. a close friend of Moses
 - d. sold into slavery by his brothers
09. The departure of the Hebrews from Egypt under Moses is called:
- a. the Promised Land
 - b. the Exodus
 - c. the Covenant
 - d. the Ten Commandments
10. Mt. Sinai describes the site of:
- a. the transfiguration
 - b. the crucifixion
 - c. the Ten Commandments
 - d. the Sermon on the Mount
11. Who commanded the Israelites at the Battle of Jericho and led them into the Promised Land?
- a. Moses
 - b. Aaron
 - c. Joshua
 - d. Abraham
12. The last of the Judges of Israel was:
- a. Aaron
 - b. Samson
 - c. Samuel
 - d. Saul

13. An earthly king of the Hebrews who came to prominence by slaying Goliath :
- a. Samuel b. Saul c. David d. Solomon
14. The son of David, reputed to be a wise man
- a. Samuel b. Saul c. Jonathan d. Solomon
15. The prophet of the New Covenant is:
- a. Isaiah b. Jeremiah c. Ezekiel d. Amos
16. Which of the following is not considered a "Writing Prophet" of the Old Testament?
- a. Amos b. Samuel c. Joel d. Obadiah
17. The most accurate Biblical description tells of Jonah being swallowed by:
- a. a great fish b. a great white whale
c. a monster with four heads d. an apocalyptic beast
18. Which of the following dates marks the beginning of the Babylonian Captivity?
- a. 621 BC b. 586 BC c. 538 BC d. 515 BC
19. The New Testament is written in:
- a. Hebrew b. Aramaic c. Greek d. Latin
20. Chronologically the first book of the New Testament is probably:
- a. 1 Corinthians b. 1 Thessalonians
c. 1 Peter d. 1 Timothy
21. Receives credit for writing a gospel and letters:
- a. Peter b. Paul c. Mark d. John

22. The most famous preacher and missionary of the early Church was:
- a. Paul b. Timothy c. Stephen d. James
23. One of the leaders of the Christians in Jerusalem after the death of Jesus:
- a. James b. Paul c. Mark d. John
24. Most scholars would agree that Jesus Christ spoke:
- a. Hebrew b. Greek c. Aramaic d. Latin
25. "Apostle" is a term applied to:
- a. a religious person
- b. a follower who writes
- c. the twelve men close to Jesus
- d. a person without faith

Appendix I

Student Evaluation of the Appleworks Exercise
on the Books of the Bible (Data Base)

"Appleworks Exercise on the Books of the Bible" refers to the listing which you have worked on this semester. Please do not confuse it with the RS 16 Game which you used as a preparation for the examinations.

Please use the following as a guide for your responses and circle the appropriate number with each question.

1 - Strongly disagree

2 - Disagree

3 - Agree

4 - Strongly Agree

-1- -2- -3- -4- 01. I felt as though the Appleworks Exercise on the Books of the Bible was a good preparation for the examinations.

-1- -2- -3- -4- 02. I learned more about the books of the Bible as a result of using the Appleworks Exercise on the Books of the Bible than I would have learned from class alone.

-1- -2- -3- -4- 03. The Appleworks Exercise on the Books of the Bible helped me to realize the large amount of literature contained in the Old and New Testaments.

Please use the following as a guide for your responses and circle the appropriate number with each question.

1 - Strongly disagree

2 - Disagree

3 - Agree

4 - Strongly Agree

-1- -2- -3- -4- 04. The Appleworks Exercise on the Books of the Bible helped me to learn about the different kinds of literature which are contained in the Old and New Testaments.

-1- -2- -3- -4- 05. I was glad to have the opportunity to work with the Appleworks Exercise on the Books of the Bible.

-1- -2- -3- -4- 06. I would have preferred that the course not have the Appleworks Exercise on the Books of the Bible.

-1- -2- -3- -4- 07. Overall the Appleworks Exercise on the Books of the Bible was a positive experience.

-1- -2- -3- -4- 08. It was difficult to find time to work on the Appleworks Exercise on the Books of the Bible.

-1- -2- -3- -4- 09. There was usually available work space in the computer room.

-1- -2- -3- -4- 10. I found the Appleworks Exercise on the Books of the Bible fairly simple to operate.

Please use the following as a guide for your responses and circle the appropriate number with each question.

1 - Strongly disagree

2 - Disagree

3 - Agree

4 - Strongly Agree

-1- -2- -3- -4- 11. I found the written instructions to be adequate for operating the Appleworks Exercise on the Books of the Bible.

-1- -2- -3- -4- 12. The Media Center staff was very helpful.

-1- -2- -3- -4- 13. I think that we should have had more instruction thme on how to use the Appleworks Exercise on the Books of the Bible.

Appendix J

Student Evaluation of the AppleworksWord Processing Exercise

"Appleworks Word Processing Exercise" refers to the questions with which you have worked this semester on the computer. Please do not confuse it with the "Appleworks Exercise on the Books of the Bible" with which you also worked during the semester.

Please use the following scale for your responses:

1 - Strongly disagree

2 - Disagree

3 - Agree

4 - Strongly Agree

- 1- -2- -3- -4- 01. I felt as though the Appleworks Word Processing Exercise was a good preparation for the examinations.
- 1- -2- -3- -4- 02. I learned more about the Bible as a result of using the Appleworks Word Processing Exercise than I would have learned from class alone.
- 1- -2- -3- -4- 03. The Appleworks Word Processing Exercise gave me the opportunity to work in depth on some of the more important questions on the Bible.
- 1- -2- -3- -4- 04. The Appleworks Word Processing Exercise helped me to view the way that others approach important questions concerning the Bible.

Please use the following scale for your responses:

1 - Strongly disagree

2 - Disagree

3 - Agree

4 - Strongly Agree

- 1- -2- -3- -4- 05. The Appleworks Word Processing Exercise enabled me to think more critically concerning questions in the Bible.
- 1- -2- -3- -4- 06. I was glad to have the opportunity to work with the Appleworks Word Processing Exercise.
- 1- -2- -3- -4- 07. I would have preferred that the course not have the Appleworks Word Processing Exercise.
- 1- -2- -3- -4- 08. Overall the Appleworks Word Processing Exercise was a positive experience.
- 1- -2- -3- -4- 09. It was difficult to find time to work on the Appleworks Word Processing Exercise.
- 1- -2- -3- -4- 10. There was usually available work space in the computer room.
- 1- -2- -3- -4- 11. I found the Appleworks Word Processing Exercise fairly simple to operate.
- 1- -2- -3- -4- 12. I found the written instructions to be adequate for operating the Appleworks Word Processing Exercise.

Please use the following scale for your responses:

1 - Strongly disagree

2 - Disagree

3 - Agree

4 - Strongly Agree

-1- -2- -3- -4- 13. The Media Center staff was very helpful.

-1- -2- -3- -4- 14. I think that we should have had more
instruction time on how to use the
Appleworks Word Processing Exercise.

Appendix K

Student Evaluation of the RS 16 Game

"RS 16 GAME" refers to the Baseball game used in preparation for the examinations. Please do not confuse it with the Appleworks Exercise on books of the Bible.

Please use the following scale for your responses:

1 - Strongly disagree

2 - Disagree

3 - Agree

4 - Strongly Agree

- 1- -2- -3- -4- 01. I felt as though the RS 16 Game was a good preparation for the examinations.
- 1- -2- -3- -4- 02. I think that I would have done better on the tests if I had put more time in on the RS 16 Game.
- 1- -2- -3- -4- 03. The RS 16 Game demonstrated to me the large amount of material contained in the books of the Bible.
- 1- -2- -3- -4- 04. The RS 16 Game helped me to learn more about the many characters and events contained in the Bible.
- 1- -2- -3- -4- 05. I would have preferred that the course not have this type of RS 16 Game.
- 1- -2- -3- -4- 06. I was glad to have the opportunity to experience the computer in this mode.
- 1- -2- -3- -4- 07. Overall the RS 16 Game was a positive experience.

Please use the following scale for your responses:

1 - Strongly disagree

2 - Disagree

3 - Agree

4 - Strongly Agree

- 1- -2- -3- -4- 08. There was usually space in the Media Center to work.
- 1- -2- -3- -4- 09. I used the RS 16 Game for at least four hours during the semester.
- 1- -2- -3- -4- 10. It was difficult to find time to work on the RS 16 Game on the computer.
- 1- -2- -3- -4- 11. I never used the RS 16 Game.
- 1- -2- -3- -4- 12. I found the RS 16 Game fairly simple to operate.
- 1- -2- -3- -4- 13. I think that we should have had more instruction time on how to use the RS 16 Game.
- 1- -2- -3- -4- 14. I found the written instructions to be adequate for operating the RS 16 Game.
- 1- -2- -3- -4- 15. The Media Center staff was very helpful.

Appendix L

Initial Questionnaire

The purpose of this questionnaire is to determine your background in formal religious studies and your general attitude toward religious studies courses. Several statements also concern your experience with computers and computer assisted instruction. Please answer these questions frankly and honestly.

Student # Teacher's Name

Please use the following scale for your responses:

- 1 - Strongly disagree (SD)
- 2 - Disagree (D)
- 3 - Agree (A)
- 4 - Strongly agree (SA)

.....

Scale	<u>n</u>	Relative frequency (%)	Adjusted frequency (%)	Cumulative adjusted frequency (%)
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01. I think it is important for a person living in today's world to have some knowledge of the Bible.

SD	0	0	0	0
D	3	4.6	4.7	4.7
A	36	55.3	56.3	61.0
SA	25	38.4	39.0	100.0
	<u>64</u>			

No response 1

Scale	<u>n</u>	Relative frequency (%)	Adjusted frequency (%)	Cumulative adjusted frequency (%)
-------	----------	------------------------------	------------------------------	---

02. I think that I will do well in this course if I apply myself.

SD	0	0	0	0
D	0	0	0	0
A	19	29.2	29.2	29.2
SA	46	70.8	70.8	100.0
	<u>65</u>			

03. I have always done well in religion classes.

SD	1	1.5	1.7	1.7
D	3	4.6	4.9	6.6
A	37	57.0	60.6	67.2
SA	20	31.0	32.8	100.0
	<u>61</u>			

No response 4

04. I look forward to this class and learning more about the Bible.

SD	0	0	0	0
D	5	7.7	7.7	7.7
A	38	58.5	58.5	66.2
SA	22	33.8	33.8	100.0
	<u>65</u>			

SD - Strongly Disagree

D - Disagree

A - Agree

SA - Strongly Disagree

Scale	<u>n</u>	Relative frequency (%)	Adjusted frequency (%)	Cumulative adjusted frequency (%)
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05. If I didn't need three units of credit I definitely would not be taking this course.

SD	13	20.0	20.0	20.0
D	35	53.9	53.9	73.9
A	14	21.5	21.5	95.4
SA	3	4.6	4.6	100.0
	<u>65</u>			

06. I am confident in my knowledge of the books of the Bible as I begin this course.

SD	13	20.0	20.3	20.3
D	31	47.6	48.4	68.7
A	17	26.1	26.6	95.3
SA	3	4.6	4.7	100.0
	<u>64</u>			

No response 1

07. I can identify or associate most of the major characters of the Bible as I begin this course.

SD	3	4.6	4.6	4.6
D	23	35.4	35.4	40.0
A	34	52.3	52.3	92.3
SA	5	7.7	7.7	100.0
	<u>65</u>			

SD - Strongly Disagree

D - Disagree

A - Agree

SA - Strongly Disagree

Scale	<u>n</u>	Relative frequency (%)	Adjusted frequency (%)	Cumulative adjusted frequency (%)
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08. Right now I feel I could research a passage from the Bible correctly.

SD	9	13.9	13.9	13.9
D	32	49.2	49.2	63.1
A	20	30.8	30.8	93.9
SA	4	6.1	6.1	100.0
	<u>65</u>			

09. When I discuss or argue about the Bible I am very sure of my own information.

SD	11	16.9	17.4	17.4
D	39	60.0	62.0	79.4
A	13	20.0	20.6	100.0
SA	0	0	0	0
	<u>63</u>			

No response 2

10. I am able to offer my opinion confidently on what a section of the Bible means.

SD	6	9.2	9.4	9.4
D	30	46.2	46.9	56.3
A	24	37.0	37.5	93.8
SA	4	6.2	6.2	100.0
	<u>64</u>			

SD - Strongly Disagree

D - Disagree

A - Agree

SA - Strongly Disagree

Scale	<u>n</u>	Relative frequency (%)	Adjusted frequency (%)	Cumulative adjusted frequency (%)
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Circle the appropriate response:

11. Which of the following best describes your experience with computers?

- A) I have never operated a computer
- B) I have only played computer games
- C) I have had some experience with using computers
- D) I have had experience writing computer programs

A)	19	29.2	29.2	29.2
B)	8	12.3	12.3	41.5
C)	21	32.3	32.3	73.8
D)	17	26.2	26.2	100.0

65

12. Which of the following statements best describes your attitude toward computers used in connection with a religious studies course:

- A) I really do not like computers.
- B) I would rather not be bothered with computers.
- C) I would be open to it.
- D) I think it's an interesting idea.

A)	7	10.7	10.7	10.7
B)	20	30.8	30.8	41.5
C)	22	33.8	33.8	75.3
D)	16	24.7	24.7	100.0

65

Scale	<u>n</u>	Relative frequency (%)	Adjusted frequency (%)	Cumulative adjusted frequency (%)
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Circle the appropriate response:

13. Which of the following best describes your experience in formal religious education programs?

A) none at all

B) less than six years of religion in school or in a religious education program

C) six to eight years of religion in school or in a religious education program

D) nine to twelve years of religion in school or in a religious education program

A)	10	15.4	15.4	15.4
B)	20	30.8	30.8	46.2
C)	11	16.9	16.9	63.1
D)	24	36.9	36.9	100.0

65

Scale	<u>n</u>	Relative frequency (%)	Adjusted frequency (%)	Cumulative adjusted frequency (%)
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14. Which of the following best describes your college religious studies experience

A) this is my first course in college level religious studies

B) this is my second course in college level religious studies

C) this is my third course in college level religious studies

D) this is my fourth or fifth course in college level religious studies

A)	23	35.4	35.4	35.4
B)	28	43.1	43.1	78.5
C)	12	18.5	18.5	97.0
D)	2	3.0	3.0	100.0

65

Appendix M

Exit Questionnaire

The purpose of this questionnaire is to evaluate your experience of this course during the past semester.

Student # Teacher's Name

Please use the following scale for your responses:

- 1 - Strongly disagree (SD) 2 - Disagree (D)
- 3 - Agree (A) 4 - Strongly agree (SA)

Scale	<u>n</u>	Relative frequency (%)	Adjusted frequency (%)	Cumulative adjusted frequency (%)
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01. Knowledge of the Bible is important for a person living in today's world.

SD	1	1.5	1.6	1.6
D	9	13.8	14.5	16.1
A	36	55.3	58.1	74.2
SA	16	24.6	25.8	100.0
	<hr style="width: 20%; margin: 0 auto;"/> 62			

No response 3

02. I have done well in this course because I have worked hard on the material.

SD	1	1.5	1.6	1.6
D	16	24.6	25.9	27.5
A	35	53.8	56.4	83.9
SA	10	15.3	16.1	100.0
	<hr style="width: 20%; margin: 0 auto;"/> 62			

No response 3

Scale	<u>n</u>	Relative frequency (%)	Adjusted frequency (%)	Cumulative adjusted frequency (%)
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03. I should get a good grade in this course.

SD	0	0	0	0
D	9	13.8	14.1	14.1
A	37	56.9	57.8	71.9
SA	18	27.6	28.1	100.0
	<u>64</u>			

No response 1

04. This course helped me to learn more about the Bible than I expected.

SD	0	0	0	0
D	5	7.6	7.8	7.8
A	35	53.8	54.7	62.5
SA	24	36.9	37.5	100.0
	<u>64</u>			

No response 1

05. In the final analysis this course gets me three units of credit and that's all that is important to me.

SD	27	41.5	41.5	41.5
D	30	46.2	46.2	87.7
A	7	10.8	10.8	98.5
SA	1	1.5	1.5	100.0
	<u>65</u>			

SD - Strongly disagree

D - Disagree

A - Agree

SA - Strongly agree

Scale	<u>n</u>	Relative frequency (%)	Adjusted frequency (%)	Cumulative adjusted frequency (%)
-------	----------	------------------------------	------------------------------	---

06. I know much more about the books of the Bible now than when I began this course.

SD	0	0	0	0
D	1	1.5	1.5	1.5
A	29	44.6	44.6	46.1
SA	35	53.9	53.9	100.0
	<u>65</u>			

07. I know much more about the characters of the Bible than I did before this course.

SD	0	0	0	0
D	3	4.6	4.6	4.6
A	26	40.0	40.0	44.6
SA	36	55.4	55.4	100.0
	<u>65</u>			

08. I believe that this course equipped me to research any passage of the Bible with confidence.

SD	1	1.5	1.5	1.5
D	17	26.2	26.2	27.7
A	37	56.9	56.9	84.6
SA	10	15.4	15.4	100.0
	<u>65</u>			

SD - Strongly disagree

D - Disagree

A - Agree

SA - Strongly agree

Scale	<u>n</u>	Relative frequency (%)	Adjusted frequency (%)	Cumulative adjusted frequency (%)
09. I believe that I could be confident in a discussion or argument on the Bible as a result of this course.				
SD	1	1.5	1.6	1.6
D	14	21.5	22.2	23.8
A	39	60.0	61.9	85.7
SA	9	13.8	14.3	100.0
	<u>63</u>			

No response 2

10. I now possess the skills to speak about the meaning of a passage of the Bible with confidence.				
SD	1	1.5	1.6	1.6
D	15	23.0	24.2	25.8
A	41	63.0	66.1	91.9
SA	5	7.6	8.1	100.0
	<u>62</u>			

No response 3

SD - Strongly disagree

D - Disagree

A - Agree

SA - Strongly agree

Scale	<u>n</u>	Relative frequency (%)	Adjusted frequency (%)	Cumulative adjusted frequency (%)
-------	----------	------------------------------	------------------------------	---

Please respond only to those statements which are applicable to you.

11. I had never operated a computer before this course and I am glad that I had the opportunity.

SD	0	0	0	0
D	1	1.5	6.25	6.25
A	10	15.4	62.5	68.75
SA	5	7.7	31.25	100.0
	<hr/> 16			

No response 49

12. I still do not like computers.

SD	13	20.0	22.0	22.0
D	33	50.7	56.0	78.0
A	5	7.7	8.5	86.5
SA	8	12.3	13.5	100.0
	<hr/> 59			

No response 6

SD - Strongly disagree

D - Disagree

A - Agree

SA - Strongly agree

Scale	<u>n</u>	Relative frequency (%)	Adjusted frequency (%)	Cumulative adjusted frequency (%)
13. I am glad that I was required to use the computer with this course.				
SD	10	15.3	15.6	15.6
D	19	29.2	29.7	45.3
A	27	41.5	42.2	87.5
SA	8	12.3	12.5	100.0
	<u>64</u>			

No response 1

14. I am glad that I volunteered to use the computer with
this course.

Volunteers only.

15. I would be confident in taking another course which had
computer assignments as a part of the course.

SD	4	6.1	6.1	6.1
D	10	15.4	15.4	21.5
A	38	58.5	58.5	80.0
SA	13	20.0	20.0	100.0
	<u>65</u>			

SD - Strongly disagree

D - Disagree

A - Agree

SA - Strongly agree

Scale	<u>n</u>	Relative frequency (%)	Adjusted frequency (%)	Cumulative adjusted frequency (%)
-------	----------	------------------------------	------------------------------	---

16. I expect my grade for this course to be:

A	14	21.5	23.0	23.0
B	29	44.6	47.5	70.5
C	18	27.6	29.5	100.0
D	0	0	0	100.0
	<u>61</u>			

No response 4

17. If I had not been required to use the computer for this course, my grade would be:

A	8	12.3	13.1	13.1
B	32	49.2	52.4	65.5
C	14	21.5	23.0	88.5
D	7	10.7	11.5	100.0
	<u>61</u>			

No response 4

Note: The responses to questions 16 and 17 present the following data.

Students who did not anticipate any change in their grade.

A	6	9.2	30.0	30.0
B	8	12.3	40.0	70.0
C	6	9.2	30.0	100.0
	<u>20</u>			

No response 45

Scale	<u>n</u>	Relative frequency (%)	Adjusted frequency (%)	Cumulative adjusted frequency (%)
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Students who anticipated a higher grade because of the computer.

B* to A**	8	12.3	25.0	25.0
B- to B+	9	13.8	28.1	53.1
D to B	1	1.5	3.1	56.2
C to B	8	12.3	25.0	81.2
D to C	6	9.2	18.8	100.0
	<u>32</u>			

No response 33

Note: * column refers to anticipated grade without the computer.

** column refers to anticipated grade with computer.

Students who believed that their grade without the computer would have been higher.

A* to B**	2	3.0	22.2	22.2
B+ to B-	1	1.5	11.1	33.3
B to C	6	9.2	66.7	100.0
	<u>9</u>			

No response 56

Note: * column refers to anticipated grade without the computer.

** column refers to anticipated grade with computer.

Appendix N

Student Evaluation of the Appleworks Exercise
on the Books of the Bible (Data Base)

"Appleworks Exercise on the Books of the Bible" refers to the listing which you have worked on this semester.

Please do not confuse it with the RS 16 Game which you used as a preparation for the examinations.

Please use the following as a guide for your responses and circle the appropriate number with each question.

1 - Strongly disagree

2 - Disagree

3 - Agree

4 - Strongly Agree

Scale	<u>n</u>	Relative frequency (%)	Adjusted frequency (%)	Cumulative adjusted frequency (%)
01. I felt as though the Appleworks Exercise on the Books of the Bible was a good preparation for the examinations.				
SD	3	4.5	4.5	4.5
D	23	34.3	34.3	38.8
A	32	47.8	47.8	86.6
SA	9	13.4	13.4	100.0
—				
67				

SD - Strongly disagree

D - Disagree

A - Agree

SA - Strongly agree

Scale	<u>n</u>	Relative frequency (%)	Adjusted frequency (%)	Cumulative adjusted frequency (%)
-------	----------	------------------------------	------------------------------	---

02. I learned more about the books of the Bible as a result of using the Appleworks Exercise on the Books of the Bible than I would have learned from class alone.

SD	5	7.4	7.4	7.4
D	14	20.9	20.9	28.3
A	38	56.7	56.7	85.0
SA	10	15.0	15.0	100.0

67

03. The Appleworks Exercise on the Books of the Bible helped me to realize the large amount of literature contained in the Old and New Testaments.

SD	1	1.5	1.5	1.5
D	10	14.9	14.9	16.4
A	34	50.8	50.8	67.2
SA	22	32.8	32.8	100.0

67

SD - Strongly disagree

D - Disagree

A - Agree

SA - Strongly agree

Scale	<u>n</u>	Relative frequency (%)	Adjusted frequency (%)	Cumulative adjusted frequency (%)
-------	----------	------------------------------	------------------------------	---

04. The Appleworks Exercise on the Books of the Bible helped me to learn about the different kinds of literature which are contained in the Old and New Testaments.

SD	1	1.5	1.5	1.5
D	6	9.0	9.0	10.5
A	48	71.6	71.6	82.1
SA	12	17.9	17.9	100.0

67

05. I was glad to have the opportunity to work with the Appleworks Exercise on the Books of the Bible.

SD	9	13.4	13.4	13.4
D	16	23.9	23.9	37.3
A	37	55.2	55.2	92.5
SA	5	7.5	7.5	100.0

67

SD - Strongly disagree

D - Disagree

A - Agree

SA - Strongly agree

Scale	<u>n</u>	Relative frequency (%)	Adjusted frequency (%)	Cumulative adjusted frequency (%)
-------	----------	------------------------------	------------------------------	---

06. I would have preferred that the course not have the
Appleworks Exercise on the Books of the Bible.

SD	9	13.4	13.8	13.8
D	30	44.7	46.2	60.0
A	15	22.3	23.1	83.1
SA	11	16.4	16.9	100.0

65

No response 2

07. Overall the Appleworks Exercise on the Books of the
Bible was a positive experience.

SD	4	6.0	6.0	6.0
D	15	22.4	22.4	28.4
A	42	62.7	62.7	91.1
SA	6	8.9	8.9	100.0

67

SD - Strongly disagree

D - Disagree

A - Agree

SA - Strongly agree

Scale	<u>n</u>	Relative frequency (%)	Adjusted frequency (%)	Cumulative adjusted frequency (%)
08. It was difficult to find time to work on the Appleworks Exercise on the Books of the Bible.				
SD	2	2.9	3.0	3.0
D	14	20.8	21.2	24.2
A	25	37.3	37.9	62.1
SA	25	37.3	37.9	100.0
<hr/>				
66				
No response 1				

09. There was usually available work space in the computer room.				
SD	3	4.4	4.5	4.5
D	10	14.9	15.2	19.4
A	50	74.6	75.8	95.5
SA	3	4.4	4.5	100.0
<hr/>				
66				
No response 1				

SD - Strongly disagree D - Disagree
A - Agree SA - Strongly agree

Scale	<u>n</u>	Relative frequency (%)	Adjusted frequency (%)	Cumulative adjusted frequency (%)
10. I found the Appleworks Exercise on the Books of the Bible fairly simply to operate.				
SD	1	1.5	1.5	1.5
D	2	3.0	3.0	4.5
A	54	80.6	80.6	85.1
SA	10	14.9	14.9	100.0
—				
67				

11. I found the written instructions to be adequate for operating the Appleworks Exercise on the Books of the Bible.				
SD	0	0	0	0
D	5	7.5	7.5	7.5
A	47	70.1	70.1	77.6
SA	15	22.4	22.4	100.0
—				
67				

SD - Strongly disagree

D - Disagree

A - Agree

SA - Strongly agree

Scale	<u>n</u>	Relative frequency (%)	Adjusted frequency (%)	Cumulative adjusted frequency (%)
12. The Media Center staff was very helpful.				
SD	3	4.4	4.5	4.5
D	13	19.4	19.7	24.2
A	43	64.1	65.2	89.4
SA	7	10.4	10.6	100.0

66

No response 1

13. I think that we should have had more instruction time on how to use the Appleworks Exercise on the Books of the Bible.				
SD	9	13.4	13.4	13.4
D	48	71.7	71.7	85.1
A	9	13.4	13.4	98.5
SA	1	1.5	1.5	100.0

67

SD - Strongly disagree

D - Disagree

A - Agree

SA - Strongly agree

Appendix 0

Student Evaluation of the AppleworksWord Processing Exercise

"Appleworks Word Processing Exercise" refers to the questions with which you have worked this semester on the computer. Please do not confuse it with the "Appleworks Exercise on the Books of the Bible" with which you also worked during the semester.

Please use the following as a guide for your responses and circle the appropriate number with each question.

- 1 - Strongly disagree
- 2 - Disagree
- 3 - Agree
- 4 - Strongly Agree

Scale	<u>n</u>	Relative frequency (%)	Adjusted frequency (%)	Cumulative adjusted frequency (%)
01. I felt as though the Appleworks Word Processing Exercise was a good preparation for the examinations.				
SD	0	0	0	0
D	6	8.8	8.8	8.8
A	38	55.9	55.9	64.7
SA	24	35.3	35.3	100.0

68

SD - Strongly disagree D - Disagree
A - Agree SA - Strongly agree

Scale	<u>n</u>	Relative frequency (%)	Adjusted frequency (%)	Cumulative adjusted frequency (%)
02. I learned more about the Bible as a result of using the Appleworks Word Processing Exercise than I would have learned from class alone.				
SD	0	0	0	0
D	14	20.6	20.6	20.6
A	43	63.2	63.2	83.8
SA	11	16.2	16.2	100.0
	<hr/> 68			

03. The Appleworks Word Processing Exercise gave me the
opportunity to work in depth on some of the more
important questions on the Bible.

SD	0	0	0	0
D	8	11.8	11.8	11.8
A	47	69.1	69.1	80.9
SA	13	19.1	19.1	100.0
	<hr/> 68			

SD - Strongly disagree

D - Disagree

A - Agree

SA - Strongly agree

Scale	<u>n</u>	Relative frequency (%)	Adjusted frequency (%)	Cumulative adjusted frequency (%)
04. The Appleworks Word Processing Exercise helped me to view the way that others approach important questions concerning the Bible.				
SD	0	0	0	0
D	17	25.0	25.0	25.0
A	41	60.3	60.3	85.3
SA	10	14.7	14.7	100.0
<hr/>				
68				

05. The Appleworks Word Processing Exercise enabled me to think more critically concerning questions in the Bible.				
SD	0	0	0	0
D	14	20.6	20.6	20.6
A	38	55.9	55.9	76.5
SA	16	23.5	23.5	100.0
<hr/>				
68				

SD - Strongly disagree D - Disagree
A - Agree SA - Strongly agree

Scale	<u>n</u>	Relative frequency (%)	Adjusted frequency (%)	Cumulative adjusted frequency (%)
-------	----------	------------------------------	------------------------------	---

06. I was glad to have the opportunity to work with the
Appleworks Word Processing Exercise.

SD	3	4.4	4.4	4.4
D	17	25.0	25.0	29.4
A	34	50.0	50.0	79.4
SA	14	20.6	20.6	100.0

68

07. I would have preferred that the course not have the
Appleworks Word Processing Exercise.

SD	13	19.1	19.1	19.1
D	31	45.6	45.6	64.7
A	19	28.0	28.0	92.7
SA	5	7.3	7.3	100.0

68

SD - Strongly disagree

D - Disagree

A - Agree

SA - Strongly agree

Scale	<u>n</u>	Relative frequency (%)	Adjusted frequency (%)	Cumulative adjusted frequency (%)
-------	----------	------------------------------	------------------------------	---

08. Overall the Appleworks Word Processing Exercise was a positive experience.

SD	1	1.5	1.5	1.5
D	12	17.6	17.6	19.1
A	41	60.3	60.3	79.4
SA	14	20.6	20.6	100.0

68

09. It was difficult to find time to work on the Appleworks Word Processing Exercise.

SD	2	3.0	3.0	3.0
D	18	26.4	26.4	29.4
A	34	50.0	50.0	79.4
SA	14	20.6	20.6	100.0

68

SD - Strongly disagree

D - Disagree

A - Agree

SA - Strongly agree

Scale	<u>n</u>	Relative frequency (%)	Adjusted frequency (%)	Cumulative adjusted frequency (%)
10. There was usually available work space in the computer room.				
SD	4	5.9	5.9	5.9
D	9	13.2	13.2	19.1
A	52	76.5	76.5	95.6
SA	3	4.4	4.4	100.0
<hr/>				
68				

11. I found the Appleworks Word Processing Exercise fairly simple to operate.				
SD	0	0	0	0
D	2	3.0	3.0	3.0
A	51	75.0	76.1	79.1
SA	14	20.6	20.9	100.0
<hr/>				
67				

No response 1

SD - Strongly disagree

D - Disagree

A - Agree

SA - Strongly agree

Scale	<u>n</u>	Relative frequency (%)	Adjusted frequency (%)	Cumulative adjusted frequency (%)
-------	----------	------------------------------	------------------------------	---

12. I found the written instructions to be adequate for operating the Appleworks Word Processing Exercise.

SD	0	0	0	0
D	1	1.4	1.5	1.5
A	48	70.5	72.7	74.2
SA	17	25.0	25.8	100.0

66

No response 2

13. The Media Center staff was very helpful.

SD	3	4.4	4.5	4.5
D	18	26.4	26.9	31.4
A	38	55.8	56.7	88.1
SA	8	11.7	11.9	100.0

67

No response 1

SD - Strongly disagree

D - Disagree

A - Agree

SA - Strongly agree

Scale	<u>n</u>	Relative frequency (%)	Adjusted frequency (%)	Cumulative adjusted frequency (%)
14. I think that we should have had more instruction time on how to use the Appleworks Word Processing Exercise.				

SD	10	14.7	14.7	14.7
D	47	69.1	69.1	83.8
A	8	11.8	11.8	95.6
SA	3	4.4	4.4	100.0

68

SD - Strongly disagree D - Disagree
A - Agree SA - Strongly agree

Appendix P

Student Evaluation of the RS 16 Game

"RS 16 GAME" refers to the Baseball game used in preparation for the examinations. Please do not confuse it with the Appleworks Exercise on books of the Bible. Please use the following as a guide for your responses and circle the appropriate number with each question.

1 - Strongly disagree

2 - Disagree

3 - Agree

4 - Strongly Agree

Scale	<u>n</u>	Relative frequency (%)	Adjusted frequency (%)	Cumulative adjusted frequency (%)
01. I felt as though the RS 16 Game was a good preparation for the examinations.				
SD	0	0	0	0
D	5	9.3	9.3	9.3
A	40	74.1	74.1	83.4
SA	9	16.6	16.6	100.0

 54

SD - Strongly disagree

D - Disagree

A - Agree

SA - Strongly agree

Scale	<u>n</u>	Relative frequency (%)	Adjusted frequency (%)	Cumulative adjusted frequency (%)
02. I think that I would have done better on the tests if I had put more time in on the RS 16 Game.				
SD	6	11.2	11.2	11.2
D	22	40.7	40.7	51.9
A	22	40.7	40.7	92.6
SA	4	7.4	7.4	100.0

54				

03. The RS 16 Game demonstrated to me the large amount of material contained in the books of the Bible.				
SD	2	3.7	3.8	3.8
D	8	14.8	15.4	19.2
A	37	68.5	71.2	90.4
SA	5	9.2	9.6	100.0

52				

No response 2

SD - Strongly disagree D - Disagree
A - Agree SA - Strongly agree

Scale	<u>n</u>	Relative frequency (%)	Adjusted frequency (%)	Cumulative adjusted frequency (%)
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04. The RS 16 Game helped me to learn more about the many characters and events contained in the Bible.

SD	0	0	0	0
D	8	14.8	14.8	14.8
A	40	74.1	74.1	88.9
SA	6	11.1	11.1	100.0

54

05. I would have preferred that the course not have this type of RS 16 Game.

SD	16	29.6	30.2	30.2
D	27	50.0	50.9	81.1
A	9	16.6	17.0	98.1
SA	1	1.8	1.9	100.0

53

No response 1

SD - Strongly disagree

D - Disagree

A - Agree

SA - Strongly agree

Scale	<u>n</u>	Relative frequency (%)	Adjusted frequency (%)	Cumulative adjusted frequency (%)
-------	----------	------------------------------	------------------------------	---

06. I was glad to have the opportunity to experience the computer in this mode.

SD	2	3.7	3.8	3.8
D	7	12.9	13.2	17.0
A	31	57.4	58.5	75.5
SA	13	24.0	24.5	100.0

53

No response 1

07. Overall the RS 16 Game was a positive experience.

SD	0	0	0	0
D	3	5.5	5.9	5.9
A	37	68.5	72.5	78.4
SA	11	20.3	21.6	100.0

51

No response 3

SD - Strongly disagree

D - Disagree

A - Agree

SA - Strongly agree

Scale	<u>n</u>	Relative frequency (%)	Adjusted frequency (%)	Cumulative adjusted frequency (%)
-------	----------	------------------------------	------------------------------	---

08. There was usually space in the Media Center to work.

SD	1	1.9	1.9	1.9
D	12	22.2	22.2	24.1
A	32	59.3	59.3	83.4
SA	9	16.6	16.6	100.0

54

09. I used the RS 16 Game for at least four hours during the semester.

SD	0	0	0	0
D	12	22.2	30.0	30.0
A	14	25.9	35.0	65.0
SA	14	25.9	35.0	100.0

40

No response 14

SD - Strongly disagree

D - Disagree

A - Agree

SA - Strongly agree

Scale	<u>n</u>	Relative frequency (%)	Adjusted frequency (%)	Cumulative adjusted frequency (%)
10. It was difficult to find time to work on the RS 16 Game on the computer.				
SD	3	5.6	5.6	5.6
D	25	46.3	46.3	51.9
A	16	29.6	29.6	81.5
SA	10	18.5	18.5	100.0

54

11. I never used the RS 16 Game.				
SD	33	48.5	48.5	48.5
D	21	30.9	30.9	79.4
A	0	0	0	79.4
SA	14	20.6	20.6	100.0

68

SD - Strongly disagree D - Disagree
A - Agree SA - Strongly agree

Scale	<u>n</u>	Relative frequency (%)	Adjusted frequency (%)	Cumulative adjusted frequency (%)
-------	----------	------------------------------	------------------------------	---

12. I found the RS 16 Game fairly simple to operate.

SD	0	0	0	0
D	2	3.7	3.8	3.8
A	29	53.7	55.8	59.6
SA	21	38.8	40.4	100.0

52

No response 2

13. I think that we should have had more instruction time on
how to use the RS 16 Game.

SD	17	31.5	31.5	31.5
D	29	53.7	53.7	85.2
A	7	13.0	13.0	98.2
SA	1	1.8	1.8	100.0

54

SD - Strongly disagree

D - Disagree

A - Agree

SA - Strongly agree

Scale	<u>n</u>	Relative frequency (%)	Adjusted frequency (%)	Cumulative adjusted frequency (%)
-------	----------	------------------------------	------------------------------	---

14. I found the written instructions to be adequate for operating the RS 16 Game.

SD	0	0	0	0
D	2	3.7	3.7	3.7
A	36	66.7	66.7	70.4
SA	16	29.6	29.6	100.0

54

15. The Media Center staff was very helpful.

SD	2	5.5	3.8	3.8
D	13	24.0	24.5	28.3
A	28	51.8	52.8	81.1
SA	10	18.5	18.9	100.0

53

No Response 1

SD - Strongly disagree

D - Disagree

A - Agree

SA - Strongly agree

Appendix Q

Calculation of χ^2 of Question 5 of Initial and Exit
Questionnaires for Research Question 2

Question 5	SD	D	A	SA	
Initial	13 (20)	35 (32.5)	14 (10.5)	3 (2)	65
Exit	27 (20)	30 (32.5)	7 (10.5)	1 (2)	65
	40	65	21	4	130

Note: $df = 3$, $p < .05 = 7.81$; $\chi^2 = 8.61$.

Appendix R

Composite of Responses to Interview Questions from
Students Participating in Religious Studies
Computer Assisted Instruction

Interview Key on Attitudes

Subject	Negative Rel. Studies	Negative Computer	Positive Rel. Studies	Positive Computer
A.	x	x		
B.	x	x		
C.	x	x		
D.	x	x		
E.	x			x
F.	x			x
G.	x			x
H.		x	x	
I.			x	x
J.			x	x
K.			x	x
L.			x	x

RS 16 Game Format (Bible Baseball)

01. How often during the semester have you used the RS 16 Game?

A. Only to prepare for the third test.

- B. I used it before every test, I used it a lot.
 - C. One time.
 - D. Used it before each test.
 - E. Twice.
 - F. Twice.
 - G. Before each test.
 - H. In preparation for each test.
 - I. In preparation for all three tests.
 - J. Off and on, maybe twice.
 - K. Used it before each of the tests.
 - L. Before each of the tests.
-

02. When you did not use the RS 16 Game, what conditions kept you from doing so?

- A. Time, the disk assignment and the tests were about the same time and I felt that I had to study the book and my notes.
- B. N/A
- C. No time.
- D. N/A
- E. Time, there was just not enough of it.
- F. No time
- G. N/A
- H. N/A
- I. N/A
- J. Laziness or other tests.

K. N/A

L. N/A

03. Did you enjoy using the game format? Why? Why not?

- A. I enjoyed it when I had someone else to work it with, the game was too slow at times.
- B. It was kind of fun for me.
- C. Yes, the game was different.
- D. Yes, but the questions began to repeat. Would have been better to have a list of questions.
- E. Yes, it was different and my friends were intrigued.
- F. I did like using the game, it was fun especially if there was someone else to play it with.
- G. It was different and fun and gave me an idea of what was going to be on the tests.
- H. I enjoyed it but the game was slow at times.
- I. Yes, initially, later on it became monotonous with the repetition of questions.
- J. Yes, I liked it.
- K. Yes, it was new and different, kind of fun.
- L. Yes, it was different and fun.

04. Did the RS 16 Game format help you to learn the material?

- A. Yes it did.

- B. It did help me to learn the material but I didn't do well on the tests, I just missed certain stuff that I didn't study too well.
 - C. No.
 - D. Yes, but I was going to study anyway.
 - E. It sure did.
 - F. Most definitely.
 - G. It sure did.
 - H. Definitely, it reviewed and also made me realize what I did not know.
 - I. Yes, it did.
 - J. Sure did.
 - K. I really didn't know what to look for on the tests so this was a big help.
 - L. I really think that I did learn the material.
-

05. What in your estimation was the value of the RS 16 Game for preparing for the examinations?

- A. Repetition of the material.
- B. Well, for me I didn't do too well, I guess that it helps with some of the objective questions.
- C. I didn't think that it was valuable.
- D. It could have been more efficient.
- E. The game really helped to review the material.

- F. Yes, it gave an idea of what was going to be on the tests. It helped more with the second test than the third.
- G. cf. 6, G.
- H. It was a good test in case you really thought you had the material down, this checked you out.
- I. It gave real questions.
- J. It lined up some of the stuff to look for on the tests.
- K. Know what to expect on objective side of the tests.
- L. Tested you on questions and it sure showed what you did not know.

Data Base Exercise (Exercise on the books of the Bible)

06. Were the results of your exams worth the time you put in on the game as preparation?

-
- A. No, I really did not do well on the exams.
- B. I did poor on the exams, maybe I would have done worse if I hadn't worked on the game.
- C. I don't think so.
- D. It helped but am not sure how much, maybe studying the book would have been just as good.
- E. Yes, they were.
- F. Yes.
- G. I really felt that I could use all the help that I could get and so the game was fine with me.
- H. Yes, I did well on the tests and the game had to help.

- I. Yes, but there could be even more questions.
 - J. Just ok, I should have worked more on the game.
 - K. I guess so but I haven't really ripped up the course.
 - L. Yep, I did well on the tests.
-

07. In your estimation, how valuable is the exercise on the list of the books of the bible? What are its strong points? What are its weak points?

- A. It really helped to learn the material, especially the message part.
- B. It really is tough when we have a lot of books to do, it helped me a little and it was sort of fun finding out some of the stuff about the books.
- C. It helped review the material one more time.
- D. Helped me to learn a lot but much of it was busy work.
- E. You see the material in your reading, cover it again in class, and then you work with it on the computer.
- F. The exercise helps with my attentiveness when I am reading the material, but I don't feel that is that helpful with regard to the test.
- G. At first I could see no tie in between the computer and religious studies but as the course progressed and I worked on this exercise, I began to see how they related and it definitely helped me.

- H. A weak point is that I am a poor typist and it took time and that made me think it was too much work for what I got out of it.
 - I. It was good for me, it helped to learn the material.
 - J. I found a large time commitment necessary.
 - K. It helped me to keep the books straight.
 - L. It really helps to get a perspective on the books.
-

08. Did the exercise on the books of the Bible help you to learn the material?

- A. The quotes did help me to remember the books.
 - B. Yeah, it helped with the material but I still didn't do that great on the tests.
 - C. Yes.
 - D. None of the questions were on the test or many were not.
 - E. Yes, it did.
 - F. Yes.
 - G. Yes, it really did.
 - H. Yes, it helped but as I said the time was too much.
 - I. Yes, especially the dates for the books.
 - J. Yes, I had to absorb some of it.
 - K. I have no background and this helped keep everybody and all the books straight.
 - L. It certainly did.
-

09. What in your estimation was the value of the exercise on the books of the Bible in preparing for examinations?

- A. Am not sure because there seemed to be so much material.
 - B. cf. 08, B.
 - C. The message and the anecdote sections served as a trigger to remember the material.
 - D. It helped but I don't feel that it was necessary.
 - E. The quotations and the anecdotes really helped in recalling a particular book of the bible.
 - F. Little direct value, only long term learning.
 - G. I did not see a direct correlation with the tests because you never asked for answers directly from the data base but it did help me to know what to look for when I studied a particular book of the Bible.
 - H. Because you did not ask any verbatim information from the exercise, it was negotiable as far as being directly helpful for the examinations.
 - I. It helped me to recall information about each of the books.
 - J. It only helped me a little, didn't do well on tests so far.
 - K. It kept some order to a problem where things could have gotten confused real fast.
 - L. Good overview of the books of the Bible.
-

10. What aspect, if any, did you enjoy with the exercise on the list of the books of the Bible?

- A. I don't think that I really enjoyed it that much.
 - B. I liked it except when we had to do a lot of books, I used to wait until the last minute.
 - C. The quotations were fun to look up.
 - D. I didn't really enjoy it at all.
 - E. The computer made it neat and clean, the search for the quotations for the different books was fun.
 - F. I don't know that I found any aspect enjoyable, I really found it time consuming.
 - G. It was really enjoyable for me once I saw a connection with the class material.
 - H. I really didn't enjoy it.
 - I. I enjoyed the anecdotes the most, they were excellent for recalling material.
 - J. Didn't really enjoy it.
 - K. I like putting in the anecdotes and the quotes.
 - L. Probably the feeling of having a good grasp of the books.
-

Word Processing Exercise (Essay Questions on the Bible)

11. In your estimation, how valuable is the word processing exercise dealing with the essay questions? What are its strong points? What are its weak points?

- A. The essays were helpful because you could count on getting points on the tests if you prepared them well.
- B. Well, it sure gave an idea of what is important in the course.
- C. It was helpful since it tied up some of the points made in the reading and in class.
- D. This was really helpful, we touched on this material in class and some of it was always on the test, we also had other sample essays on the disk and this helped to get ready for the tests.
- E. This was a really good help for the test.
- F. I found a direct correlation between the essay questions and the tests, I really liked that part of the exercise. It seemed to me to be directly applicable to the test.
- G. This was a tremendous help for me in preparing for the tests.
- H. It really helped in preparation for the tests.
- I. The essays were a big help in organizing the material.
- J. It's strong point was knowing what to consider important in a section.
- K. It helps to line up some of the essay material before the tests.

L. I like the help the questions give on the points the teacher considers important.

12. Did the word processing exercise on the essay questions help you to learn the material?

A. Yes.

B. I got poor grades in the tests so I guess that it didn't help me that much.

C. Yes, definitely.

D. Yes, it sure did.

E. It definitely did help to learn the material.

F. It helped me to learn and remember the material.

G. It sure did!

H. It helped to learn the material and to summarize the main points of the unit.

I. Most definitely.

J. Yes, it did.

K. It had to.

L. It really helped to review the class material and put it into essay form.

13. What in your estimation was the value of the word processing exercise on the essay questions in preparing for examinations?

- A. The repetition which might occur with the questions on the test.
 - B. On the next test, I am going to have those questions down since some part of the questions always appears on the exams.
 - C. It was directly related to the test, it was a good preparation.
 - D. Good review and preparation.
 - E. It gave an idea of the questions that might be asked.
 - F. This exercise improved the quality of the essays.
 - G. I felt that the questions helped to summarize some of the more important points of the sections to be studied.
 - H. It forced you to put down ahead of time some important facts about the material. You already had an idea of how to express certain points about the material.
 - I. These were really helpful for the tests.
 - J. It lines up some of the important questions.
 - K. When you have to line up your thoughts and commit them to paper and then you see what someone else said you really know your stuff by test time.
 - L. It forces you to draw up the questions in case you need it for the test.
-

14. What aspect, if any, did you enjoy with the word processing exercise on the essay questions?

- A. I am an ok typist and this was easy for me.
 - B. The computer is kind of fun, it's sure a lot easier than typing it out on a regular typewriter.
 - C. I am a good typist and it was easy work to do.
 - D. It was more interesting and more creative than the data base, it was a motivator since it was directly related to the tests.
 - E. It was enjoyable, I really liked the computer.
 - F. cf. 15, F.
 - G. I really like computers and so it was all fun for me and so much easier than typing a paper.
 - H. I didn't enjoy it but it did help to learn the material.
 - I. I really enjoyed learning how to use this part of the computer.
 - J. I liked knowing that the work was going to help me.
 - K. It was easy, I am a good typist.
 - L. Am comfortable with computer work and it sure is easier than writing a paper.
-

15. Does the computer make it easier to work with the questions or add another level of difficulty?

- A. It's much easier than working on a regular typewriter.

- B. For me I guess that it was easier than a typewriter, so in that way it was an advantage.
- C. Not more difficult since it is easier than a regular typewriter.
- D. Not really easier, it would have been easier to just write it out. There is limited computer facilities and I would write out my answers beforehand.
- E. If anything, it made it easier.
- F. The computer was easier than a typewriter and I enjoyed moving the material around on the screen, it was quicker and easier than a typewriter.
- G. For me it sure made it easier.
- H. For me it added another level of difficulty.
- I. I am glad for the opportunity to be introduced to the computer, I have used it for my other classes.
- J. Thought it made it rather easy.
- K. For me it sure made it easier.
- L. Makes it easier overall, only problem is timing out time in computer room.

Overall Questions

16. If you had it to do over again, would you have selected this section of this course if you knew about the computer assignments?

-
- A. No.
 - B. I probably would have.

- C. I am not afraid of computers so I would not worry about them. I would have taken the course.
- D. No.
- E. Yes, I would.
- F. Maybe not since my schedule as a commuter is really tight.
- G. cf.17, G.
- H. That's a hard question, probably not, because of the time involved.
- I. Yes.
- J. Probably would.
- K. Sure, it just took some time getting used to the computer.
- L. Sure I would.
-

17. How much more did you learn as a result of using the computer in this course than if the course did not have the computer exercises?

- A. Probably not much!
- B. I think that the computer really helped me and the assignments really helped my grade.
- C. Much more now that I look back.
- D. Hard to say, because I did do the work. Essay questions were definitely helpful. The rest of the work is doubtful.

- E. Definitely learned more since I feel that I spent more time with the material as a result of the computer.
- F. I felt that the computer work was like homework, it did not give me the opportunity to procrastinate, I was definitely more prepared for the tests as a result of using the computer.
- G. I learned a lot more since I felt at ease with the computer and it helped me.
- H. It definitely helped me to learn, the time was the negative factor.
- I. I feel that the game helped me to learn about 10% more and the other exercises about 15% overall.
- J. It really helped me.
- K. I think that the computer gave me an edge.
- L. The computer organized a lot of the material.

18. What were your feelings about computers when you began this course?

-
- A. Hated them.
 - B. I really don't like them.
 - C. Negative at best.
 - D. Hostile since I already had two classes where the computer was introduced artificially without notice. Don't like the Apple Program, need more demonstration of how to do it, 'hands on;' our class demonstration was inadequate.

- E. Ok.
 - F. I was scared and I had a bad attitude toward computers.
 - G. I am comfortable with computers and once I saw the connection with the coursework, everything went very well.
 - H. I am comfortable with computers.
 - I. I was very positive and interested but I knew nothing.
 - J. I felt ready to work with them.
 - K. Scary, but I thought that I could handle them.
 - L. Optimistic and ready.
-

19. What are your feelings now?

- A. The fear is gone.
- B. Better I guess, but I don't want to go down to the computer room for a while.
- C. I feel ok about them.
- D. Overcome the technical problems.
- E. Fine.
- F. Much better now, in fact, we are getting a computer at home.
- G. I still feel the same.
- H. About the same.
- I. Great, just fine.
- J. Pretty much the same.
- K. I proved I can handle it.
- L. The same.

20. If there has been any change, to what do you attribute this change?

- A. The fact that I have to work with the computer and did not have any choice.
- B. No big change, I understand computers better but that doesn't make me like them any more than before.
- C. Getting comfortable with the computers.
- D. The computer still appears artificial, I may never have to use it again. Feel a waste to learn so much about this computer when I am not going to use it in the future.
- E. The comfortableness with the computers.
- F. Practice on the computer, realized that it would not break when I worked on it.
- G. N/A
- H. N/A
- I. Becoming comfortable and learning about the computers.
- J. I don't think there has been much change.
- K. I liked the class and the computer stuff really helped me.
- L. N/A

21. What were your feelings about religious studies courses when you began this course?

- A. Not too jazzed.

- B. I didn't really look forward to this course. This was my first course in religious studies, I am a transfer student and I intend to transfer back east after this semester so I could have done just as well without this course.
- C. Enthusiastic to say the least.
- D. Interested but taking it because I have to, wouldn't take it as an elective.
- E. I was not really too enthusiastic.
- F. I was interested, I felt that I was ready to learn.
- G. They are requirements for graduation and so I have to take them.
- H. I had 12 years of private school, and so I felt comfortable coming into a course like this.
- I. Rather positive and motivated.
- J. I feel pretty good.
- K. Apprehensive, I have waited to take religious studies because I have no background.
- L. I felt like I would do well, I was pretty optimistic.
-

22. What are your feelings now?

- A. I feel lousy since I have not done well in this course up to this point.
- B. cf. B, 21.
- C. Just ok.
- D. Same.

- E. As the course went on, I began to feel that I was in charge of my own learning and that I had every opportunity to do well.
 - F. I am glad that I have taken this course.
 - G. I feel good about this course since I really worked hard and did a good job and have a sense of accomplishment.
 - H. Much the same, I did pretty well in the course.
 - I. The same, maybe even more positive since I feel as though I have learned a lot.
 - J. Ok, I wish I were doing better.
 - K. Great, this was fun.
 - L. Am glad I took the course.
-

23. If there has been any change, to what do you attribute this change?

- A. This course was much harder than I expected.
- B. No big change, I am looking forward to going back east now.
- C. Course is harder than I expected and my last test was a disaster.
- D. No change.
- E. I think that the material was made easier by the use of the computer and that relaxed me about the course and the tests.
- F. There has been no change with how I regard religious studies.

- G. I relaxed about the coursework since I was comfortable with the computer even though I was late with one assignment. This course just grabbed me at a good time and I was ready for it, so I enjoyed it. The timing was right.
 - H. No big change.
 - I. The computer really helped me to be organized this semester.
 - J. I really need to work harder during the rest of the semester.
 - K. I really worked hard on this course and so I did pretty well.
 - L. Just more positive about it.
-

24. Would you recommend this course to another student?
Why? Why not?

- A. Warn the students about the computer and the student can go and get an easier teacher and go for the good grade.
- B. Yeah I might, if the guy was willing and ready to do some work.
- C. Yes, I would.
- D. Yes, because I like the instructor and if they know about the computer and had the time and interest.
- E. Yes, if they were aware of the computer.
- F. I would recommend it if the individual was motivated to learn and willing to commit some time to the course.

- G. Sure I would recommend it if they wanted a good course on the Bible.
- H. Sure, if they were aware of the computer assignments.
- I. Sure, this course deals with the whole Bible and most of us don't know much about the Old Testament.
- J. I think I would.
- K. Sure, you want to learn, you will.
- L. Yes, I would recommend it, you have to learn in this course.
-

Appendix S

Kuder-Richardson formula 21 for the Pretest and Posttest

Pretest.

$$\begin{aligned}
 KR\ 21 &= \frac{k}{k-1} \times 1 - \frac{M(k-M)}{k(SD_x)^2} \\
 &= \frac{25}{24} \times 1 - \frac{16(25-16)}{25 \times 13.15} \\
 &= 1.04 \times 1 - \frac{144}{328.75} \\
 &= 1.04 \times 1 - .438 \\
 &= 1.04 \times .584
 \end{aligned}$$

 KR 21 = .584 (reliability coefficient)

Posttest.

$$\begin{aligned}
 KR\ 21 &= \frac{k}{k-1} \times 1 - \frac{M(k-M)}{k(SD_x)^2} \\
 &= \frac{25}{24} \times 1 - \frac{21(25-21)}{25 \times 7.125} \\
 &= 1.04 \times 1 - \frac{84}{178.125} \\
 &= 1.04 \times 1 - .47 \\
 &= 1.04 \times .53
 \end{aligned}$$

KR 21 = .55 (reliability coefficient)

Appendix T

Drill and Practice Sample Questions

The following are sample questions on the books of the Bible which were used with the Drill and Practice exercise modeled on the game of baseball. These questions are taken from the first unit of the course.

01. "Bible" is derived from what language?
A) Hebrew B) Aramaic C) Greek D) Latin
02. For a Jewish person, the Bible contains:
A) 24 books B) 66 books C) 72 books D) 73 books
03. What term best describes the writers of the biblical books?
A) Author B) Editor C) Translator D) Publisher
04. The first book of the Bible is:
A) Genesis B) Exodus C) Numbers D) Judges
05. The human hero of most of the Torah:
A) Adam B) Abraham C) Moses D) Joshua
06. The father-in-law of of Moses was:
A) Jethro the Midianite B) Ramses II
C) Zipporah D) Gershom
07. The Pentateuch is:
A) first 4 books B) first 5 books
C) first 6 books D) first 8 books
08. The ten commandments are also known as:
A) monologue B) Sermon on the Mount
C) Golden Calf D) decalogue

09. How many plagues were visited on Pharaoh and the Egyptians?
A) 3 B) 6 C) 10 D) 12
10. 'Not" a literary tradition:
A) Yahwist B) Eloist C) Jehovah D) Deuteronomic
11. The scapegoat ceremony occurs on:
A) Yom Kippur B) New Year's Day
C) Moses' birthday D) Covenant Day
12. The book of Deuteronomy was discovered in 621 B.C. by:
A) Manasseh B) Joshua C) Josiah D) Ruth
13. This biblical book derives its name from a census:
A) Exodus B) Numbers C) Leviticus D) Deuteronomy
14. This book is known as the "second law:"
A) Exodus B) Leviticus C) Numbers D) Deuteronomy
15. This book repeats the Decalogue of Exodus 20:
A) Leviticus B) Numbers C) Deuteronomy D) Joshua
16. The "lex talionis" is:
A) the first commandment B) amnesty
C) an "eye for an eye" D) scapegoat
17. This book is the speeches of Moses:
A) Exodus B) Leviticus C) Numbers D) Deuteronomy
18. All New Testament writers were Jewish except:
A) Paul B) Mark C) Matthew D) Luke
19. The legend of the 'Septuagint" refers to:
A) Prophecy B) Biblical translation
C) 70 Gods D) Creation narratives

Appendix U

Data Base Model for the Books of the Bible

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TITLE:  The title of the book of the Bible.
AUTHOR:  Some books' authors are "unknown."
DATE OF EVENTS:  When did the events described occur?
DATE OF COMPOSITION:  When was the final version completed?
TITLE MEANS:  What is the meaning of the title?
LITERARY GENRE:  Poetry, theological narrative, song, etc.
CHARACTERS:  Who are the main characters of the book?
MESSAGE:  What is the main message of the book?
QUOTE:  A quotation from the book, please include citation.
LANGUAGE AND LENGTH:  Original language and how many chapters
ANECDOTE:  Note a memorable happening or person in this book.
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TITLE:  Genesis
AUTHOR:                                     To
DATE OF EVENTS:                             be
DATE OF COMPOSITION:                         filled
TITLE MEANS:                                 in
LITERARY GENRE:                              by
CHARACTERS:                                  students.
MESSAGE:
QUOTE:
LANGUAGE AND LENGTH:
ANECDOTE:
=====

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Appendix V

Word Processing Questions

Models of the questions which the students were required to answer as part of their word processing exercise.

Unit 1

- A. Why is the Exodus the most important event of Jewish History?
- B. What does the Exodus celebrate?
- C. How is the Exodus celebrated?
- D. To what celebrations in your own culture or religion can the Exodus be compared?

Unit 2

- A. Identify the "Four Covenants" presented in Hebrew history; with whom are the "Covenants" made and what does each "Covenant" symbolize?
- B. What is distinctive about the Covenant Theology of the Hebrews when it is compared to other "theologies?"
- C. Who are the greatest exponents of "Covenant Theology" in the Scriptures? Why?

Unit 3

- A. What is a "gospel?"
- B. From what sources did the "gospels" arise?
- C. At what time and in what Christian era did the "gospels" surface?

D. What or who is the most important "reality" presented in the "gospels?"

Unit 4

- A. As you trace the writings of "second" and "third" generation Christianity, in what way do concerns and issues change?
- B. To what phenomena do you attribute these changes?
- C. What are the far reaching affects of these changes and in what way do these changes impact our lives today?

Appendix W

Syllabus for Introduction to Biblical Studies

Religious Studies 16

Spring 1986 Sections 1 & 2

Objectives of this course.

Students will become familiar with the books and authors of the Old and New Testaments along with the principle themes and personages. This course will provide exposure to the tools and aids necessary to reading the Scriptures in an informed manner. There will also be an emphasis on the role of the Bible in contemporary religious thought and worship.

Texts (These are to be brought to class.)

The Bible: New American Bible, Jerusalem Bible, Revised
Standard Version or New English Bible

Understanding the Bible by Stephen L. Harris

Course Requirements.

1. All readings should be completed in accord with the class calendar. Students are expected to arrive for class prepared to discuss the materials assigned. Class participation will be important and therefore the readings for class should be completed according to the schedule you receive.

2. Role will be taken each class since attendance is considered necessary for the accomplishment of the material covered in class. Lateness for class is frowned upon. The maximum number of absences is 6. Experience has shown that students with multiple absences do not perform well in this class or in the written examinations. If you exceed 6 absences you will be expected to drop the class.

3. There will be four examinations during the semester including the final, each examination will cover a unit of designated material. The final is not cumulative.

Attendance at scheduled exams is mandatory.

4. Each student will be required to do certain assignments with the assistance of an Apple IIe computer in the University's Media Center located in Room 107 on the ground floor of De Sales. Special sessions to assist you in the performance of these assignments will be held next week during regular class time in the Media Center. This will enable you to become familiar with the material which you will need for doing the assignments. Students in the past who have participated in these assignments have not found them to be particularly difficult. Once you have received an explanation of the assignments, you will probably experience little difficulty. If you do have some difficulty, help is readily available to you. All you need to do is to ask.

5. Grading will be accomplished by averaging the examinations and the computer assignments. A 93-100, B 85-92, C 76-84, D 70-75, F below 70.

CLASS CALENDAR

NOTE: Numbers in parenthesis indicate chapters and verses in the Bible which are to be read, e.g. (Gn 1-9) means chapters 1 to 9 in the book of Genesis. Numbers in brackets indicate pages in your Harris text which are to be read, e.g. [1-28] means pages 1 to 28 in Harris.

Wednesday, January 29 Introduction

- Friday, January 31 PART 1 Questions about the Bible
[1-28]
- Monday, February 3 Questions about the Bible (Cont'd)
- Wednesday, February 5 Computer Day REPORT TO DE SALES 107
- Friday, February 7 PART 2 History and Geography of
Near East [31-45]
- Monday, February 10 PART 3 The Torah: Genesis (Gn 1-9,
11-22) [46-60]
- Wednesday, February 12 Genesis (Cont'd) (Gn 24-33, 35,37-50)
- Friday, February 14 Exodus (Ex 1-6, 11-14, 19-20, 32)
[60-67]
- Monday, February 17 Leviticus, Numbers (Lv 16, 19;Nm
12-16,22-24) [68-73]
- ALL DISKS MUST BE TURNED IN TODAY FEBRUARY 17
- Wednesday, February 19 Deuteronomy (Dt 5, 19, 25:5-10)
[74-78]
- Friday, February 21 EXAMINATION
- Monday, February 24 Former Prophets: Joshua (Josh 3,
5-7, 24) [79-84]
- Wednesday, February 26 Judges (Jg 2:11-23, 13-16) [85-89]
Samuel (1 Sam 3, 8-10, 16-17;
2 Sam 7:12-18, 11-12) [89-95]
- Friday, February 28 Kings (1 K 1-2, 9:1-9, 12, 18-19;
2 K 18-23) [96-106]
- Monday, March 3 Latter Prophets: Major and Minor
Isaiah (Is 6, 7:13-17, 11, 40,
42:1-9, 49:1-6, 50:4-9,
52:13-53:12) [106-120]

- Wednesday, March 5 Jeremiah & Ezekiel (Jer 1, 31:31-33, 36; Ez 1-2, 18, 37) [121-131]
- Friday, March 7 Minor Prophets: (Hos 1-3, 11; Amos 5) [131-133, 136-138]
- ALL DISKS MUST BE TURNED IN TODAY, MARCH 7
- Monday, March 10 Minor Prophets: (Jonah 1-4; Micah 5-6) [139-142]
- Wednesday, March 12 EXAMINATION
- Monday, March 17 PART 5 The Writings: Wisdom & Hebrew Poetry, (Job 1-3, 42; Psalms 23, 150, 110, 74, 44, 137, 22) [152-164]
- Wednesday, March 19 Wisdom & Hebrew Poetry: (Proverbs 8, 31; Festival Scrolls: Ruth 1-4; Ecc 1-2) [165-174]
- Friday, March 21 Apocalyptic Literature: (Daniel 1-6) [179-187]
- Wednesday, April 2 Work of the Chronicler: (Ezra 1, 7; Neh 2, 8, 13) [188-192]
- Friday, April 4 PART 6 Extracanonial Works: (Tobit 1 Wisdom of Solomon 8; Eccl (Sirach) 3, 6, 30; 1 Macc 1-2) [197, 201-222, 243-245]
- Monday, April 7 PART 7 Intertestamental [246-258]
- Wednesday, April 9 PART 8 New Testament [263-272]
- Friday, April 11 Matthew (1, 2, 5, 17, 25) [272-284]
- Monday, April 14 The Gospel of Mark (1-16) [285-296]
- Wednesday, April 16 Luke (1, 2, 6, 10, 11, 15) [297-301]
- Friday, April 18 John (1, 4, 11, 13) [302-310]

ALL DISKS MUST BE TURNED IN TODAY, APRIL 18

Monday,	April 21	Review Day
Wednesday,	April 23	EXAMINATION
Friday,	April 25	Acts (1-3, 7, 9-10, 15) [311-315]
Monday,	April 28	Paul and the Letter Form, [316-321]
Wednesday,	April 30	Romans (1-4, 8 [321-324]
Friday,	May 2	I Corinthians 1-3, 11:17-13:13; 15 Galatians 2-3; Ephesians 2; Philippians 2; Colossians 1; 1 Thessalonians 5) [325-338]
Monday,	May 5	Pastoral Epistles: 1 Tim (1, 3; 2 Tim 4; Philemon) [340-346]
Wednesday,	May 7	Hebrews & Catholic "General", Epistles: James (1-5; 1 Peter 2; 2 Peter 3; 1 John 4:7-21) [346-358]

ALL DISKS MUST BE TURNED IN TODAY, MAY 7

Friday,	May 9	Christian Apocalypse: Revelation (1, 13-14, 17, 21) [358-361]
Monday,	May 12	LAST DAY OF CLASS - [362-364]

ALL DISKS MUST BE TURNED IN TODAY, MAY 12

NOTE: The disks which you were given at the beginning of the semester must be turned in since they constitute a part of your grade, no grade can be assigned until this disk has been turned in with the completed work upon it.

Appendix X
Compilation of Volunteers' Responses
to Initial Questionnaire

The purpose of this questionnaire is to determine your background in formal religious studies and your general attitude toward religious studies courses. Several statements also concern your experience with computers and computer assisted instruction. Please answer these questions frankly and honestly.

Student # Teacher's Name

Please use the following scale for your responses:

SD = Strongly disagree D = Disagree
 A = Agree SA = Strongly agree

SD	D	A	SA	
0	0	1	6	01. I think it is important for a person living in today's world to have some knowledge of the Bible.
0	0	1	6	02. I think that I will do well in this course if I apply myself.
0	2	1	4	03. I have always done well in religion classes.
0	0	3	4	04. I look forward to this class and learning more about the Bible.
5	2	0	0	05. If I didn't need three units of credit I definitely would not be taking this course.

Please use the following scale for your responses:

SD = Strongly disagree D = Disagree
 A = Agree SA = Strongly agree

- | SD | D | A | SA | |
|----|---|---|----|---|
| 2 | 4 | 1 | 0 | 06. I am confident in my knowledge of the books of the Bible as I begin this course. |
| 0 | 1 | 6 | 0 | 07. I can identify or associate most of the major characters of the Bible as I begin this course. |
| 2 | 4 | 0 | 1 | 08. Right now I feel I could research a passage from the Bible correctly. |
| 2 | 5 | 0 | 0 | 09. When I discuss or argue about the Bible I am very sure of my own information. |
| 1 | 2 | 3 | 0 | 10. I am able to offer my opinion confidently on what a section of the Bible means. |

Circle the appropriate response:

11. Which of the following best describes your experience with computers?
- 0 A) I have never operated a computer
 - 0 B) I have only played computer games
 - 4 C) I have had some experience with using computers
 - 3 D) I have had experience writing computer programs

Circle the appropriate response:

12. Which of the following statements best describes your attitude toward computers used in connection with a religious studies course:

- 0 A) I really do not like computers.
- 0 B) I would rather not be bothered with computers.
- 2 C) I would be open to it.
- 5 D) I think it's an interesting idea.

13. Which of the following best describes your experience in formal religious education programs?

- 1 A) none at all
- 1 B) less than six years of religion in school or in a Religious Education Program
- 1 C) six to eight years of religion in school or in a Religious Education Program
- 4 D) nine to twelve years of religion in school or in a Religious Education Program

14. Which of the following best describes your college religious studies experience?

- 5 A) this is my first course in college level religious studies
- 2 B) this is my second course in college level religious studies
- 0 C) this is my third course in college level religious studies
- 0 D) this is my fourth or fifth course in college level religious studies

Appendix Y

Compilation of Volunteers' Responses
to Exit Questionnaire

The purpose of this questionnaire is to evaluate your experience of this course during the past semester.

Student # Teacher's Name

Please use the following scale for your responses:

SD = Strongly disagree

D = Disagree

A = Agree

SA = Strongly agree

SD	D	A	SA	
0	0	4	3	01. Knowledge of the Bible is important for a person living in today's world.
0	1	4	2	02. I have done well in this course because I have worked hard on the material.
0	0	4	3	03. I should get a good grade in this course.
0	0	4	3	04. This course helped me to learn more about the Bible than I expected.
5	2	0	0	05. In the final analysis this course gets me three units of credit and that's all that is important to me.
0	0	3	4	06. I know much more about the books of the Bible now than when I began this course.
0	0	3	4	07. I know much more about the characters of the Bible than I did before this course.

Please use the following scale for your responses:

SD = Strongly disagree

D = Disagree

A = Agree

SA = Strongly agree

SD D A SA

0 2 5 0 08. I believe that this course equipped me
to research any passage of the Bible
with confidence.

0 3 3 1 09. I believe that I could be confident in
a discussion or argument on the Bible as
a result of this course.

0 2 5 0 10. I now possess the skills to speak about
the meaning of a passage of the Bible
with confidence.

Please respond only to those statements which are applicable
to you.

SD D A SA

Not Applicable 11. I had never operated a computer before
this course and I am glad that I had the
opportunity.

4 3 0 0 12. I still do not like computers.

Not Applicable 13. I am glad that I was required to use
the computer with this course.

0 0 0 7 14. I am glad that I volunteered to use
the computer with this course.

0 0 3 4 15. I would be confident in taking another
course which had computer assignments
as a part of the course.

Appendix Z
Volunteer Students' Evaluation
of the RS 16 Game (Drill & Practice)

"RS 16 GAME" refers to the Baseball game used in preparation for the examinations. Please do not confuse it with the Appleworks Exercise on books of the Bible.

Please use the following scale for your responses:

SD = Strongly disagree D = Disagree

A = Agree

SA = Strongly Agree

SD	D	A	SA	
0	0	4	3	01. I felt as though the RS 16 Game was a good preparation for the examinations.
0	3	4	0	02. I think that I would have done better on the tests if I had put more time in on the RS 16 Game.
0	0	3	4	03. The RS 16 Game demonstrated to me the large amount of material contained in the books of the Bible.
0	0	3	4	04. The RS 16 Game helped me to learn more about the many characters and events contained in the Bible.
7	0	0	0	05. I would have preferred that the course not have this type of RS 16 Game.
0	0	1	6	06. I was glad to have the opportunity to experience the computer in this mode.
0	0	0	7	07. Overall the RS 16 Game was a positive experience.

Please use the following scale for your responses:

SD = Strongly disagree D = Disagree

A = Agree

SA = Strongly Agree

SD	D	A	SA	
0	0	0	7	08. There was usually space in the Media Center to work.
0	0	2	5	09. I used the RS 16 Game for at least four hours during the semester.
4	3	0	0	10. It was difficult to find time to work on the RS 16 Game on the computer.
6	1	0	0	11. I never used the RS 16 Game.
0	0	0	7	12. I found the RS 16 Game fairly simple to operate.
7	0	0	0	13. I think that we should have had more instruction time on how to use the RS 16 Game.
0	0	3	4	14. I found the written instructions to be adequate for operating the RS 16 Game.
0	0	3	4	15. The Media Center staff was very helpful.

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