A Comparison of Computer-Generated Advising and One-to-One Advising for Community College Students

Chris G. Zichterman

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A COMPARISON OF COMPUTER-GENERATED ADVISING
AND ONE-TO-ONE ADVISING
FOR COMMUNITY COLLEGE STUDENTS

by

Chris G. Zichterman

A Dissertation
Submitted to the
Faculty of The Graduate College
in partial fulfillment
of the
Degree of Doctor of Education

Western Michigan University
Kalamazoo, Michigan
August 1980

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I also acknowledge the impact of the people who have related with me as counselees and students over the past decade. The incremental force of their interactions with me has more to do with where I am as a professional today than any other single force. I have dedicated my professional services to them and they have returned the good, measure for measure. I thank them en masse, and I will take to my grave the memory of Lynn Newhof, Darrel Block, Nancy Legget, Hassan Al Dulijan, and Hajos Kafil.

I acknowledge the close, unfaltering support of Barbara, Lori and Tom; my parents and sister and brother; and my solid Dutch relation. I would have splintered long ago had not the home front been so consistently solid; I love all of you.

And finally I acknowledge the continued presence of my Maker; He formed me in the beginning, and by His grace, I will see Him at the end.

Contrary to my frequent posture, I am not a self-made man, and I happily share my successes with all of you.

Chris G. Zichterman
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CHAPTER 1

INTRODUCTION

Perhaps college advisors can improve the quality of academic advising by using computers to provide routine information. Certainly, helping students gather, organize and use information is an important advising function (Clark, Gelatt & Levine, 1965), but often the transmittal of accurate information breaks down because of high student-advisor ratios, because of the complexity of academic and vocational information, and because college advisors may be primarily trained to counsel or teach--functions which involve the exchange of information--but not in the routine format required in the advising session. If a partnership can be formed between advisors and computers, similar to the partnerships in medicine, business and scientific research and exploration, the student may receive the needed sensitivity of the human interaction and receive exact information from the computer specifically tailored to his or her needs. Several computer guidance systems have been developed and will be detailed later in this chapter under the heading "Review of Selected and Relevant Literature," and systematic evaluations of these programs show them to be valuable tools for guidance counselors (Harris, 1970; Impellitteri, 1968).
Significance of the Present Study

The present study field tested ADVISOR, a counselor-designed computer system used to advise community college students. ADVISOR differs from most existing systems in four important ways, and thus, the significance of the research is directly related to these differences and questions raised by them but not answered in the available literature.

First, most existing systems are designed for use by junior high and high school students; ADVISOR is designed for use by community college students with the mean age of approximately 30. Second, most existing systems are designed to increase the career development skills of users who have not yet made long-range vocational choices; ADVISOR is designed to provide accurate academic and program information to users who have made career decisions and can identify their current skill levels. Third, because most existing systems are designed for general career development, they can be created by large organizations and used at a variety of sites; ADVISOR produces information specific to one site and although the procedure may be transportable, the actual information supplied by ADVISOR is limited to one community college. Fourth, the users of existing computer guidance systems are computer-sophisticated, that is, they are initiated to computer procedures prior to the actual guidance process. ADVISOR users are given a brief, five-minute introduction and begin using the terminal immediately.
In summary, ADVISOR differs from most other computer guidance systems in that it provides academic information to adult community college students who have already made career choices, but are uninitiated to computer use.

Thus, the significance of this study rests not in the sophistication of the computer program, nor in the portability of ADVISOR, nor in the measurable career development of ADVISOR users. Instead, this study provides information to answer the general question: Can interactive computer systems be designed for specific guidance tasks so that students can receive accurate academic information: More specifically, the study compared computer-assisted advising with one-to-one advising using four measures. They are:

1. Student satisfaction as indicated by response to a fifteen item questionnaire mailed to the participants after the conclusion of the first semester. The development of the questionnaire is detailed in the method chapter and the instrument is included in Appendix A.

2. Compliance with academic advice as identified by comparing the list of advised courses given each student with the courses that student actually chose for the first semester.

3. Completion of academic schedules as identified by the grade reports of each student at the end of first semester.

4. Performance as identified by each student's grade point average at the end of the first semester. It should be

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noted that both the completion and the performance measures do not include compliance as a factor. Completion and performance were found by examining the final grade reports on all the courses student registered for, not those courses recommended during the advising process. However, in the discussion section, the data gathered on both completion and performance will be compared with the data gathered on compliance.

The study also compares the satisfaction levels of the following:


6. Students who used ADVISOR and did not return during the semester to seek person-to-person advising with students who used ADVISOR and did return during the semester to seek person-to-person advising.

This study, and similar studies of the coordination of computer systems and guidance personnel, are significant at this time because of the lack of such research. Computer guidance systems have been in existence for more than a decade, and although extensive developmental work has occurred to assure that the systems are internally consistent (that is, when button A is pushed, message A is activated), little experimental research has been conducted related to the impact of such guidance systems on
students. Bohn (1969) underscored the need for field testing in his study of Educational and Career Exploration System (ECES) at Montclair High School.

In the development of a system there comes a time when the strength of the logic, the completeness of the programs and routines, the comprehensive nature of the data base, the foolproof nature of the equipment, and even its appeal when used in the laboratory, are no longer sufficient to justify the system. This is the time for field trial, when the question asked is, Does it work? (p. 29).

As recent as 1976, the need was again expressed by Chapman in his introduction to Counselor's Handbook for System of Interactive Guidance and Information (SIGI).

Although many years of research and experience have gone into the basic theory, our knowledge of what students do at the terminal, how SIGI may affect them, and how counselors can best take advantage of it is very limited. The little we know is based on a pilot study with about thirty students who interacted with an earlier version of SIGI over a period of two months. After that study was completed, the entire script was rewritten. Furthermore, the constraints of time and the experimental situation did not permit us to work with counselors at our pilot study college. Therefore, as the reader may imagine, there is much that we do not know concerning the way students react to SIGI, how it may fit into the counseling program, how counselors can best help their students with SIGI, when counselors should intervene and when they should keep out, and much more. Our ignorance may exceed our knowledge. (p. IV).

Again, the significance of the study is that it provided information on the effectiveness of computer guidance systems designed by staff counselors at a time when computerized guidance systems have been developed but not adequately field tested. This study attempts to evaluate selected important variables identified as satisfaction, compliance, performance, and completion in order to provide a reference point for further research.
Statement of the Problem

The purposes of this study are: (1) to compare the effectiveness of computer-generated advising with one-to-one advising; (2) to assess the effect of program choice on satisfaction with both advising processes; and (3) to compare the level of satisfaction of students who used only ADVISOR with those who used ADVISOR and returned at some time during the first semester for one-to-one advising.

The first purpose of the study is to compare computer advising with one-to-one advising, using four measures. The first measure is student satisfaction as expressed by student responses to a paper-and-pencil survey following the first semester after receiving the advising. The second measure is student compliance in choosing classes identified during the advising process. The third measure is student performance--grade point average--during the first semester following advising. And the fourth measure is the percentage of registered courses completed by students in each group. The reader should note that both grade point averages and completions percentages used, as a base, the courses the student registered for whether or not those were "advised" courses. Therefore, it is recommended that these measures not be isolated from the compliance measure.

A second purpose of the study is isolation of pertinent characteristics which may make persons more receptive to one advising process or another. Students involved in the study were...
pursuing either business careers such as Marketing and Administration or they were pursuing office careers such as Accounting, Data Processing, and Secretarial Science.

The study tests two hypotheses related to these career areas. According to Ward, Cunningham, and Wakefield (1976) these two career areas attract different personalities. Because "business careers" such as management and marketing are social and enterprising careers according to Holland's (1970) categories and because accounting, data processing and secretarial work are conventional careers, many of which require the use of computer terminals, it was hypothesized that students choosing "business courses" would be more satisfied with one-to-one advising and students choosing office careers would be more satisfied with the computer process.

A third purpose of the study is to compare the level of satisfaction of students who used both processes with those who used only the computer advising process. Bohn (1969) found in his field test of ECES that those students who used both the computer and person were more satisfied than those who used only the computer process. This study attempts to replicate those findings with the advising rather than the career decision-making tasks of ECES and with community college students rather than the junior high and high school students of the ECES study. The ECES study provided information helpful in deciding whether ECES could stand alone without the counselor. Likewise the present study will
provide information helpful in deciding whether systems like ADVISOR can stand alone without a person acting as an advisor.

Hypotheses

There are seven hypotheses; four related to effectiveness, two related to program choice and satisfaction, and one related to return visits and satisfaction. In the first six hypotheses, Group A represents the students who use ADVISOR, the computer process. Group B represents the group of students who were advised by a person. For the seventh hypothesis, R represents the group who had return visits, N represents the group who did not return.

Hypothesis 1

Student satisfaction, an important variable in other field studies of computerized guidance systems (Bohn, 1969; Price, 1974), is the most important variable in this study. It is used as the dependent variable in the hypotheses 1, 5, 6, and 7. The development of the instrument used to measure satisfaction is described later in the methods section. The assumption is that student satisfaction of the guidance process is an important measure of effectiveness:

1. Students in group A will be equal to or greater than students in group B in the amount of satisfaction expressed for the advising process.
Hypothesis 2

Student compliance was not discovered as a variable in a review of the literature probably because most existing systems do not focus on this advising outcome. The second hypothesis assumes that a student demonstrates the value he or she places in the advice by the degree of compliance to the advice.

2. The probability that the students in group A will comply with advice is equal to the probability that the students in group B will comply.

Hypotheses 3 and 4

Hypotheses 3 and 4 are based on the assumption that there should be no difference in the academic performance of students because of the type of advice. It was further assumed that the quality of advice, that is, the accuracy and clarity of the information, appropriate placement in sequential courses, and the matching of program to expressed student needs, affect student performance. Initially, measurement of this variable was proposed by using grade-point averages at the end of the semester. However, because many students choose to drop courses which they are failing so that they can maintain high grade-point averages, this study also used course completion as a criterion of student performance.

3. The probability that group A will complete the courses for which they register is equal to the probability for group B.

4. Mean grade point averages earned by students in group A will be equal to or greater than the mean grade point averages earned by students in group B.
Hypotheses 5 and 6

Hypotheses five and six begin the search for personal characteristics which may be more amenable to a particular type of advising. Again, because the business careers such as management and marketing are social and enterprising careers, and because accounting, data processing and secretarial work are conventional careers, it was hypothesized that students choosing business careers would be more satisfied with the one-to-one process, the students choosing office careers would be more satisfied with the computer process.

5. Students who choose business careers will be more satisfied with the one-to-one advising than the students who choose office careers.

6. Students who choose office careers will be more satisfied with the computer advising process than students who choose business careers.

Hypothesis 7

In Bohn and Super's study of ECES, students were more satisfied with a combination of computer and person advising than they were with computer advising alone (1969). This study attempts to replicate those findings in a community college setting.

7. Students who use ADVISOR, then return during the semester for an appointment with a person, will be more satisfied with the advising process than those who used only ADVISOR.
Statement of Null and Alternative Hypotheses

For each of these seven hypotheses the null and alternative hypotheses are as follows:

1. The null hypothesis for student satisfaction is:
   \[ H_{OS} : \mu_{AS} - \mu_{BS} \geq 0 \]
   where: \( \mu_{AS} \) = the population mean for satisfaction of the computer-advised students.
   \( \mu_{BS} \) = the population mean for satisfaction of the one-to-one advised students.
   The alternative is: \( H_{1S} : \mu_{AS} - \mu_{BS} > 0 \).

2. The null hypothesis for student compliance is:
   \[ H_{OC} : P_{ij} = P_i \cdot P_j \]
   where: \( i \) is the classification of advising processes and \( j \) is the classification of compliance levels.
   The alternative is: \( H_{1C} : P_{ij} \neq P_i \cdot P_j \).

3. The null hypothesis for student completion is:
   \[ H_{OCE} : P_{ij} = P_i \cdot P_j \]
   where: \( i \) is the classification of advising processes and \( u \) is the classification of completion levels.
   The alternative is:
   \[ H_{1CE} : P_{ij} \neq P_i \cdot P_j \]
4. The null hypothesis for grade point average is:

\[
H_0 : \mu - \mu > 0
\]

\[OG \quad AB \quad BG\]

where: \( \mu \) = the population mean for grade point averages of the computer-advised students

\( \mu \) = the population mean for grade point averages of the one-to-one advised students.

The alternative is:

\[
H_1 : \mu = \mu < 0
\]

\[1G \quad AG \quad BG\]

For each of the first four hypotheses, a significance level of .4 was chosen to reduce the probability of type II error.

5. The null hypothesis for student satisfaction with one-to-one advising is:

\[
H_0 : \mu = \mu
\]

\[OSB \quad SB \quad SO\]

where: \( \mu \) = the population mean for business students' satisfaction with one-to-one advising.

\( \mu \) = the population mean for office students' satisfaction with one-to-one advising.

The alternative is:

\[
H_1 : \mu \neq \mu
\]

\[1SB \quad SB \quad SO\]

6. The null hypothesis for student satisfaction with ADVISOR is:

\[
H_0 : \mu = \mu
\]

\[OSA \quad SB \quad SO\]

where: \( \mu \) = the population mean for business students' satisfaction with ADVISOR.

...
where: \( \mu = \) the population mean for office students' satisfaction with ADVISOR.

The alternative is:

\[ H : \mu \neq \mu \]

\[ \text{SA} \quad \text{SB} \quad \text{SO} \]

7. The null hypothesis for return-visit students is:

\[ H : \mu = \mu \]

\[ \text{OR} \quad \text{R} \quad \text{N} \]

where: \( \mu = \) the population satisfaction mean for the R students who had return visits

\( \mu = \) the population satisfaction mean for the N students who had no return visits.

The alternative is:

\[ H : \mu \neq \mu \]

\[ \text{JR} \quad \text{R} \quad \text{N} \]

Definition of Terms

For this study the key terms are "advising," "student satisfaction," "student compliance," and "student completion." They are described here. Also important are terms like "computer-generated advising" and "one-to-one advising" which are given more extensive definitions in Chapter Two.

Advising. Advising in this study means (1) communicating accurate, reliable academic information as described by Tyler (1961) and (2) recommending student activities to clarify competency levels like "To more clearly identify your typing speed, take the typing test in room 60," and recommending which courses should be chosen from for the first semester, which should be
taken later. It is important to note that advising does not include activities of vocational or personal counseling.

Student satisfaction. Student satisfaction is the degree to which a student will affirm or reject the advising process responding to a paper-and-pencil survey administered seven months after the first semester. The development of the survey is described in Chapter II and the survey itself appears in Appendix H.

Student compliance. Student compliance is the degree to which the students follow the academic plans given during the advising processes in registering for first semester classes. Students "comply" if they register for courses recommended during the advising process.

Student completion. Student completion is the number of courses completed during the first semester subtracted from the courses for which the student registered. Completion is classified in three levels: "High" for the students who completed all of the courses for which they registered; "Moderate" for the students who completed some, but not all; and "Low" for the students who completed none of the courses for which they registered.

A Review of Selected and Relevant Literature

This review summarizes four computer processes which were developed to provide career guidance assistance. The development and basic structure of each computer processes are included, and, where available, field tests of selected sections of the processes.
are reviewed.

All four of the processes were developed with the intent of aiding students in career decision making; two of the processes are structured to also aid students in course choice.

A major objective of school counselors is to provide individualized aid to help each student develop his or her academic plan (Clark, Gelatt, Levine, 1965). Frequently, this objective is not fully satisfied because of information-handling problems. Two such problems are (1) the fallibility of the advisor and student in memorizing, associating, and selectively recalling educational facts, and (2) the inability of the advisor and student to devote sufficient time, patience, and energy to performing the enormous number of clerical steps involved in relating academic programs to the career choice and competencies of the student. Computer-assisted academic advising may reduce these deficiencies considerably.

Since the mid-1960's, several projects have emerged which have attempted to tie together exploration, simulation, and information retrieval with computer technology. One is the work of Tiedeman, who developed the Information System for Vocational Decision Making (ISVD) at Harvard University (1967). Another is the Computerized Vocational Information System (CVIS) sponsored by IBM and developed by Super and Myers of Teachers College, Columbia University, working with Minor of IBM (Minor, Myers, and Super, 1969). Two other important projects are the Educational...
and Career Exploration System (ECES) (Harris, 1968), and more recently the System of Interactive Guidance and Information (SIGI) developed by Educational Testing Service under the guidance of Katz (1976).

ISVD, developed by Tiedeman and colleagues at Harvard University, is an instructional program designed to teach students how to make decisions (Tiedeman, 1967). Tiedeman's system forms the basis of much of the work done in computer-assisted counseling. The three primary sections of ISVD include information about educational, military, and vocational opportunities. Each user is expected to form personal bases for preferences as he or she explores the files. ISVD also includes two teaching modes; one which teaches users about the concepts of personal development and deals with (1) the psychology of becoming purposeful, (2) decision-making, (3) psychological attributes and educational, military, and occupational decisions, and (4) any need instructions for the use of the three primary data files. The other mode is a decision-making game in which the user makes decisions both for simulated persons and for himself or herself. Finally, ISVD includes a predictive framework which allows the user to predict the harmony of different occupations with his or her educational and psychological characteristics.

According to Tiedeman, the main goal of ISVD is that the user would develop a sense of "agency," that is, the user would feel in control of his or her choices. Tiedeman saw the importance of
transfering the MONITOR, the weighing and selecting capability of
the machine, to the user who, with the internalized MONITOR,
would be able to make future decisions.

Unfortunately, ISVD did not become operational soon after
its development. Development and implementation of computer-
assed guidance systems requires extended financial support,
either from the private sector, like IBM or ETS, or from state or
federal governments. Super explained (1970):

To seek to develop in ISVD a natural-language rather than
a multiple-choice-language system (as in ECES) was to
undertake to do the work of a decade or more in the brief
life-span of contemporary project funding. The result is
that, after ISVD had reached the laboratory stage, was
being debugged, and still required considerable further
development by persons thoroughly familiar with the work
to date, its grant support expired. It was not yet ready
for real field trial, and it greatly needed this before
being ready for practical use. (p. 121).

However, Tiedeman provided groundwork in two important ways;
first, his theoretical framework--especially his insistence on
preserving the "agency" of the person--is valuable for subsequent
developers; and second, his practical experience pointed out the
need for extended financial support..

The Computerized Vocational Information System was developed
by Harris through a grant from the Illinois Board of Vocational
Education. Harris developed CVIS on site at Willowbrook High
School, Willowbrook, Illinois. The vocational information is
partitioned according to Roe's classification grid which is explained
to the students in a classroom situation. Each student then
interacts with the computer in two ways; first, the student analyzes
his or her own academic performance with the computer acting as a check. (For an example of this checking process, see Appendix B). Second, after the student has identified his academic level, the student enters his or her interest category and training level. This identifies a cell of Roe's grid and the computer lists all the occupations within that cell. From this list the student chooses which occupations he or she wants to explore. The computer then lists 50 word definitions from Encyclopedia of Careers (Harris, 1969).

A spin-off of CVIS is called "DISCOVER". In the DISCOVER system, students can choose from four accessing strategies: values, interests and related competencies, school subjects, and working conditions. Each of these strategies lead the students to specific cells in Roe's grid as in CVIS, but DISCOVER contains extended educational requirements, beginning income information, personal satisfaction items, four-year colleges, and community colleges (Harris, 1969).

As a part of CVIS Price developed a computer assisted course selecting process (1974). He compared the effectiveness of the process with traditional one-to-one advising in helping high school students select appropriate classes. To measure effectiveness he selected student grade point averages and the number of course changes students made between the time they received advising and the time they actually signed up for classes. The results of Price's study revealed no significant differences in
The Educational and Career Exploration System (ECES) was developed by IBM psychologists under the leadership of Minor with the collaboration of Super and Meyers of Teachers College, Columbia University. ECES has its theoretical basis in the vocational development theory of Super (1957) which identifies stages an individual passes through as he or she matures. During the growth and exploration stages, the individual is engaged in learning about self and trying new experiences to determine the kind of person he or she wants to become. ECES deals primarily with this exploratory stage.

The process begins with a self-concept section. In this section the student identifies academic accomplishments, aptitudes, and interests. The computer compares the input with information from school files. If a discrepancy occurs, the computer points it out and asks the student to resolve it by entering new information or discussing the discrepancy with a counselor. Once the discrepancy is resolved, the student begins exploring different information. According to Super (1957) the student accesses vocational information by identifying:

1. His or her personal preferences for working with people, data, or things.
2. The kind of work conditions that are most appealing to him or her.
3. The minimum educational level which he or she expects to complete.
Based on these, the computer searches a data base of 1600 occupations and selects those which match the student's profile. These are presented to the student in brief form. After reading the list the student can change the list of identifiers and explore more occupations. The student can explore various occupations in depth and discover educational requirements to a degree of compatibility with their profiles and related occupations. The student is also presented with a work sample to determine student satisfaction with work environment and duties. The student can focus further and discover educational requirements, working conditions, growth potential, and salaries.

According to Minor, the system upgrades the work of the counselor (1968):

The system should enable the counselor to work at a higher level of individualized and diagnostic problem-solving with each student, since the students should be aware of and better prepared to deal with personal problems of educational and vocational planning. The system should help the counselor identify students who may need immediate personalized attention because of unrealistic planning. The counselor should therefore be able to devote more of his time to professional counseling activities and less time to maintaining and operating a general educational-occupational information library.

ECES was field tested at Montclair High School and systematically evaluated by Bohn. One hundred fifty-six students used the system. The results show how the system was used, who used the system, and trends in student reactions. Reactions to the system were also obtained from the students' parents, school counselors, and teachers (Bohn & Super, 1969). These are excerpts from the evaluation:
The general hypothesis was that, as a result of ECES experience, the experimental students would score higher than the control students on the measures of vocational maturity. It was recognized, however, that a mere three-month trial might not prove long enough to affect such a characteristic. Although there were some differences, the general hypothesis was not supported.

Students were generally positive about their experience with ECES. They found ECES helpful in their educational planning; it helped make them aware of educational and occupational alternatives, as well as of important factors in occupational decision.

The students expressed a preference for a guidance program that involves both ECES and counselors.

In students' reactions, ECES is seen as more helpful to the students who typically have least information on which to base future plans, specifically, the under-classmen, the blacks, and the non-college-bound students. It may be that computer-assisted guidance is most appropriate for and will have the most impact on students who come from families of low socio-economic levels and have limited opportunity for encountering and discussing educational and occupational information in their homes and families.

The System of Interactive Guidance and Information (SIGI) was developed by Educational Testing Service under the guidance of Katz. Both CVIS and ECES were developed for high school students; SIGI, on the other hand, was developed for community college students. According to Educational Test Service 28 institutions were licensed users of SIGI as of September 1979 (Katz, 1979).

SIGI consists of six subsystems: VALUES, LOCATE, COMPARE, PREDICTION, PLANNING, and STRATEGY. The first three are useful to the person who is exploring career choices according to his or her values, and who is comparing the features of one occupation with another. Like CVIS and ECES, SIGI has the student in control of this process, preserving for the student the right to
make choices and avoiding simple trait matching. According to Super (1970), the student using SIGI not only collects pertinent information on jobs, but also learns how rearranging his or her values affects his or her career choice.

The PREDICTION subsystem is an attempt to show the students how successful they will be in preparing for a selected career at a community college. Unlike the first three subsystems, PREDICTION is institution specific; that is, information is collected at the community college to predict how successful students with varying aptitudes will be in "key" introductory courses within that community college's program. The process of collecting institution specifics takes about two years.

The fifth subsystem, PLANNING, also is institution specific. It shows the student the community college program which the student must complete to prepare for his or her selected career. This both allows the student to further confirm career choices and informs students of the courses which should be selected the first semester. This course list is usually identical to the course list in the college catalog.

The sixth subsystem, STRATEGY, prepares the student for reentering SIGI. Once a student completes STRATEGY, he or she becomes an "initiate" rather than a "novice." An "initiate" may use SIGI again and access any of the other five subsystems rather than beginning at VALUES and proceeding through the subsystems to PLANNING.
In summary, the ISVD, developed by Tiedeman and colleagues, was designed to teach students how to make decisions by teaching them concepts of personal development and by training them in decision-making techniques. Although ISVD did not become operational, Tiedeman provided guidance for other designers.

The main objective of CVIS developed by Harris is not to teach students decision-making but to help students explore occupational information. Using CVIS and a spin-off system called DISCOVER, students can explore various occupations, extended educational requirements, beginning income information, personal satisfaction items, four year colleges, and community colleges. Important to this study is the work of Price (1974) who developed a system within CVIS to aid students in course selections. He then field tested the computer-assisted advising comparing its effectiveness with one-to-one advising and found no significant difference between the processes.

Like CVIS, ECES helps students explore occupational information. Based on Super's (1957) vocational development theory, ECES provides information after they identify personal preferences, working conditions, and minimum educational level expected. ECES was field tested with one hundred and fifty-six high school students and found that although hypothesis related to vocational maturity could not be supported, students were generally positive about ECES.
Using SIGI, students not only collect occupational information but also learn how rearranging their values affect their career choices. SIGI was developed specifically for the community college student and includes a subsystem, PLANNING, within which the student, having decided upon a career, selects coursework at his or her specific college.

Because each of the four computer assisted guidance processes have been developed recently, extensive field testing is not yet available. Also absent from the literature are field tests of systems developed by practicing counselors for specific guidance tasks at their institutions. Price's work (1974) is a notable exception. Essentially this study is an attempt to replicate Price's study in a community college setting using the following criteria for effectiveness: satisfaction with the process, compliance with the advising, completion, and performance. The role of the ADVISOR within the guidance process is most similar to the role of PLANNING within SIGI in that students using both ADVISOR and PLANNING have stated career choices and use the ADVISOR or PLANNING to select appropriate courses at a specific community college.
CHAPTER II

METHOD

ADVISOR and the Field Study

The computer-assisted advising system (ADVISOR), developed at Kalamazoo Valley Community College, compares most closely with the PLANNING subsystem of SIGI. In fact, that subsystem was studied carefully along with the entire SIGI system by a Kalamazoo Valley Community College task force prior to the inception of ADVISOR. Like PLANNING, ADVISOR serves two functions: first, it helps the student reassess his or her career choice, and second, it identifies the classes the student can choose from for the first semester. Instead of producing the standard program as listed in the college catalog, ADVISOR identifies the courses in three sections as determined by the student's expressed competencies. The three sections are: courses which can be taken first semester, courses which can be taken first semester but should be taken after first semester, and courses which have prerequisites.

Like CVIS, ADVISOR was developed by staff counselors in response to locally expressed needs. The questions that the creation of ADVISOR attempted to answer are: Is there an alternative to one-to-one advising which students who have indicated a specific career choice can use to identify their
courses, allowing the advisor free to spend time with students who have not indicated specific career choices, and, can this alternative be applied during peak demand periods, like the months immediately preceding registrations in August and December, and, can computer-assisted advising be as effective as one-to-one advising?

The main goal of ADVISOR is accurate academic advising of students who already have made career decisions. Career advising is provided at the community college through one-to-one counseling and through a career advising course. To complete CVIS, ECES, or SIGI the student spends three or four hours, sometimes much longer, at the terminal; to complete ADVISOR, the student spends twenty minutes. There are also dramatic differences in the costs of providing a major service like CVIS, ECES, and SIGI and the costs of providing a system like ADVISOR. One concern is common: Can the computer help a student make decisions and academic plans or is the career decision-making and academic advising process so complicated and personal that only another person can help?

The screening process is described later in the "Subjects" section. The students were randomly assigned to two groups. Students in Group A interacted with a computer terminal to obtain their academic plans while students of Group B met with an advisor to obtain their plans. After receiving their plans, students in both groups were instructed to register for classes.
Students of both groups A and B were free to return for more advice during the semester and were also free to use any other college service. The students of Group A who returned for additional advice were recorded for comparison with those in Group A who did not return. Upon completion of the first semester, the students were surveyed and the records checked to identify selected aspects of the personal and computer assisted advising processes.

The field test process is similar to the process used by Price (1974) who compared the course advising of CVIS with one-to-one advising. Price found that high school students who selected their courses with the assistance of the computer received equally high grades and made no more course changes than did those students who selected their courses in a 30-minute individual counseling session with their counselor. In computing course changes, Price compared the student schedules prepared during the advising process in February with those that the students actually used for fall enrollment. The differences between Price's study and the field test of ADVISOR were the following: 1) The subjects in Price's study were high school students; the subjects in the field test of ADVISOR were community college students. 2) Price's subjects were initiated to the larger CVIS system before using the selection process while subjects of the ADVISOR used ADVISOR alone. 3) In addition to compliance and grade point averages, the field test of ADVISOR used satisfaction and completion
as criteria. 4) And finally, Price selected an alpha of .01 while in the field test of ADVISOR, an alpha of .4 was chosen to reduce the probability of type II error, accepting an incorrect null hypothesis.

Field Setting

Kalamazoo Valley Community College is a midwestern, urban, community college located in southwestern Michigan, Kalamazoo County. Out of an enrollment of approximately 6,000 total students, 2,600 are full-time and 3,300 are part time. There are 3,200 women and 2,700 men. The college has an open-door admissions policy, admitting anyone with a high school diploma and anyone over 18 years of age. Admissions counselors provide counseling services to students who do not have a stated career choice, and recommend that those students who are undecided and need further counseling take a one credit hour Career Decision Making Course. Students who have a stated career goal are referred to decentralized program counselors who have the responsibility of helping students further specify their career choice, identify skill levels, develop plans, and select a group of courses which can be taken during the first semester. The program plan is a list of all the courses the student is required to take given their individual career choice. Most new students request program planning during the weeks immediately before fall classes. This produces a higher demand for advising than the program
counselors can meet using the conventional one-to-one format. Group advising was attempted but because of the variety of course selections within programs, group advising was abandoned as too confusing.

ADVISOR was designed to provide accurate, individualized, academic advising to new students who had selected business or office careers. These two career areas, served by one program counselor, had an enrollment of about 1,000 students with a full-time equated count of 350.

Subjects

During August, 1976, ninety students were identified as "decided" students within the business area. Students who participated in the study were those students who: 1) selected business courses and were referred to the business unit; 2) were "new" students, that is, they had not attended KVCC or another college; and 3) could identify a specific career area within business, such as accounting, business administration, data processing, marketing, or secretarial science. In summary, students who participated were business students who indicated they had already made career choices, but did need to know the courses they would have to take, as determined by their program choices and competency levels.

These students were identified by two processes. First, the students were directed to the business unit by a general
admissions process which included a college application and an interview with an admissions counselor. Second, when the students called for an appointment, they were screened by the secretary for Business and Office Careers to identify those who were "new" students who had already selected a specific area within business.

Each student who met the requirements was then given an appointment and included on a numbered list. The type of treatment (computer assisted or one-to-one advising) each student received was determined by the following method: As students were identified by the secretary to be new "decided" students they were then added to Group A and Group B on an alternating basis; the first assignment was made on the basis of a coin toss. The reader is advised that although this process of assignment is expedient in a field test, it does not result in true randomization. If two friends came for a counseling appointment, the second would not have an equal chance to be assigned to the same group as the first. The researcher recognizes this as a possible contaminant. However, it could be reasoned that separating the two friends into different groups may actually be a positive factor in securing relatively equivalent groups.

One-to-one procedures

The one-to-one advising procedure included the following
basic activities:

1. Identification of the student's program choice;
2. Identification of student's competency levels through the student's self appraisal; and,
3. A listing of the courses the student needs to complete the program with advisor's suggestions of which courses to choose from first.

Usually the procedure took between 15 and 30 minutes, and ended when both the advisor and the student affirmed the list of courses by signing the program plan form (see Appendix C).

The one-to-one procedure was structured to include only advising and not therapeutic or decision-making activities, other than those related to choosing specific courses. If a student requested therapeutic or decision-making counseling, he or she was asked to make another appointment and the results of the academic advising for that student were not included in the study. The referral of students seeking more than advising was designed to limit the meaning of advising to the three basic activities. Two students wanted counseling and their cases are reviewed in Chapter IV.

Computer Terminal Procedure

The computer program was designed to replicate the basic advising activities used in the one-to-one process. Because most of the students were unfamiliar with computer terminals, a technician gave each student brief instructions on terminal procedures. In addition, the technician handed the student
information sheets which augmented the on-line program. One sheet detailed alternatives to the general education courses (Appendix D), the other told the student what steps to take next, i.e., registration, financial aids, veteran assistance, etc. (Appendix E).

The technician was a secretary who had been trained in computer usage and worked closely with the programmer to key in the coded information. She greeted each student assigned to the computer method, described the process, handed out the information sheets, explained the mechanics, and when the student completed the program, the technician logged out the program. While the student worked at the terminal, the technician was nearby, and would resolve any technical problems that occurred.

Usually, the procedure lasted about 20 to 30 minutes, with the computer connect time usually between 10 and 15 minutes. At key points during the program, the terminal print-out asked the student if he or she chose to see an advisor instead of continuing with the program. If the student chose to leave the terminal, that fact was recorded and the student was referred to the advisor, who recorded why the student chose to discontinue working with the terminal. If a student continued at the terminal, the first print-out was a list of courses which the student needed to complete his or her chosen program.
Apparatus

A remote Western Union Data Services Company teletype terminal with a standard keyboard was used. The terminal was connected to a Digital Equipment Corporation (DEC) computer, a PDP 10 located at Western Michigan University. The program was a branching, interactive design which asked the student questions regarding specific career choices and perceived competency levels. At key points in the program, the student was asked if he or she chose to continue working at the terminal. If the student continued working at the terminal, the output was a list of required courses dependent upon the student's program choice and stated competency levels.

The list of courses was divided into three sections: (1) courses to choose from for the first semester, (2) courses which could be taken the first semester, but preferably would be taken after the first semester, and (3) courses which had specific prerequisites.

After the list of courses, the students were given various messages which related to the program choice and which told the student what to do next. (A sample printout is included in Appendix F.) The program was made on site; the counselor for business wrote the logic flow charts and the copy, and an undergraduate student at Western Michigan University did the programming.
Data collection

Data were collected in two ways. First, an instrument was designed to collect attitudinal information concerning the level of student satisfaction with the processes. Second, information concerning student compliance, student completion, and student performance was collected from student transcripts following the first semester.

Although several instruments exist to measure student satisfaction with counseling processes, no instrument was found which would measure the satisfaction of both groups (those who used the computer and those who were academically advised by a person). Therefore, the instrument for this study was developed by using appropriate sections of various instruments and modifying them specifically to meet the measurement requirements of the study. A panel of counselors, administrators, and research technicians at Kalamazoo Valley Community College assisted in developing the final instrument. Such a process not only produced an instrument which was reacted to by several professionals, but also created an atmosphere of involvement and cooperation among the principal decision-makers at the college. (A copy of the instrument and the accompanying memo are included in Appendices A and G.)

Selected items of the following instruments were used: the Likert scale section of the "Semantic Differential Instrument for Student Evaluation of Community College Counseling," developed

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at Moraine Valley Community College, Palos Hills, Illinois (Hecht, 1976); the Advisement Attitude Scale, Department of Counseling and Personnel, Western Michigan University (Betz, 1976); and the on-line "CVIS User Reaction Form," from the Computerized Vocational Information System Evaluation Manual (Harris, 1976).

The resultant instrument was field tested with 25 students and was revised by a panel of research technicians. The final instrument and a letter explaining the survey, Appendix H, were sent to all students who participated in the experiment and a second copy of the instrument and a second copy of the letter were sent to those who did not respond to the first mailing. Previous surveys at the test site yielded 35% return from such procedures; the percentage of students responding to the mailings for this experiment was 47%. Although 47% is a high return rate for this test site, the reader is advised that more students in the experiment did not complete and return the survey than did. Two factors may allay this concern; first the researcher knows of no cause for a difference in levels of satisfaction between the students who did not return the survey from Group B, and second, the number of respondents from both groups is similar - 20 responded from Group A, 23 responded from Group B.

Information on the other three main variables was collected from student transcripts. "Compliance" was operationally defined as that percentage of a student's program which was
recommended by the advising process. "Completion" was that percentage of the student's program which he or she was able to complete. And "performance" was the student's grade-point average.

**Experimental design**

The experimental design employed was the "randomly divided post-test only design" identified by Campbell and Stanley (1963). According to Campbell and Stanley, random assignment of subjects satisfies all aspects of internal validity; however, the reader should be cautious when considering the external validity of the experiment. First, the experiment was limited to community college business students who did not seek career counseling. Second, the experiment was limited to one academic year, and there may be reason to suspect that results, especially the attitudinal measure of the results, may be dynamic, rather than static, because of the increasing exposure of the population to computer functions and terminology. Third, the experiment is limited to only one computer program, ADVISOR, and to one business counselor. Although efforts were made to standardize both procedures, results may be different with a different computer program and a different counselor or set of counselors. And finally, the reader should be reminded that the subjects constitute a total population and not a sample. Technically, a sampling is achieved by randomly assigning subjects to treatments, but the inferences drawn are drawn to a population of other
randomly assigned subjects from the same population, not to a larger population such as all "decided" business community students. Although these technical concerns should not be ignored, the investigator is aware of no major difficulties in replicating the experiment in other areas.

It is also important for the reader to note that because the intent of the study is to test whether the computer advising is equal to or better than one-to-one advising, a .4 level of significance was chosen for the first four hypotheses to reduce the probability of a type II error, accepting an incorrect null hypothesis (Glass & Stanley, 1970). Usually a critical value of .1, .05, or .001 is chosen to reduce the probability of type I error, accepting an incorrect alternative hypothesis. In a one-tail t test this creates a critical region on one side of a t distribution. Figure 1.

![Figure 1. t distribution with critical region set to reduce type I error.](image)

The purpose of setting this critical value is to assure that the
scores are significantly different before support is given to an alternative hypothesis.

In this study the theoretical hypotheses for Satisfaction, Compliance, Completion, and Academic Performance is that ADVISOR scores will be equal to or greater than one-to-one scores. In each case this is the null hypothesis, and the critical region is set in such a way to reduce the probability of accepting these null hypotheses incorrectly. Thus the $\alpha$ is increased to .4 creating a much larger region. Figure 2.

Figure 2. $t$ distribution with critical region set to reduce type II error.

And $t$ scores must fall outside the region in order to support the null hypothesis.

Similar arguments can be made for $\chi^2$ distributions even though the shape of the graph is different when $DF = 1$ or 2 as is the case for the Compliance and Completion hypothesis, Figure 3. Another difference between the $t$ distribution and the $\chi^2$ distribution is that the $\chi^2$ distribution has no negative
scores because they are eliminated by the squaring calculation.

Figure 3. $\chi^2$ distribution $DF = 1, 2$ with critical region set to reduce type II error.

Therefore, the reader is advised that to support the null hypotheses one, two, three, and four, $\chi^2$ scores and $t$ scores must be less than, not greater than, $\alpha$. 

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CHAPTER III

THE RESULTS

Nonparametric statistical procedures with chi-square scores were used to analyze data collected on compliance and completion variables. Compliance data was recorded in two categories—compliance and non-compliance; with non-compliance subdivided into students who registered and those who did not register; completion data was recorded in three categories—high, moderate, and low. In order to use as sensitive a test as possible, parametric statistical procedures with t-scores were used to analyze data collected on performance and satisfaction variables. It was assumed that grade-point-average and Likkert scale data are interval data. To test the hypotheses one, two, three, and four which stated that the ADVISOR scores would be equal to or greater than the one-to-one scores, a critical value of .4 was chosen to reduce the probability of type II error. To test hypotheses five, six, and seven a critical value of .1 was chosen to reduce the probability of type I error.

In this chapter each of the seven hypotheses is revised and the results related to each hypothesis are reported. Each hypothesis is restated prior to reporting the relevant data, and whether the hypothesis should be accepted or rejected is indicated. Although most interpretations of the results are reserved for Chapter IV, some analyses of the results follow the first four
hypotheses.

Hypothesis 1: Satisfaction

Students in group A will be equal to or greater than the students in group B in the amount of satisfaction expressed for the advising process.

TABLE 1

Mean Satisfaction Scores for Groups Using ADVISOR and One-to-One Advising

<table>
<thead>
<tr>
<th>Group</th>
<th>Type</th>
<th>Size</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A</td>
<td>ADVISOR</td>
<td>20</td>
<td>3.64</td>
<td>.508</td>
</tr>
<tr>
<td>Group B</td>
<td>One-to-one</td>
<td>23</td>
<td>3.52</td>
<td>.526</td>
</tr>
</tbody>
</table>

N = 43; t = .7473, df = 42

The results support this hypothesis and the alternative hypothesis can be rejected. The mean satisfaction score of the 20 students of group A who returned the survey was 3.64 and of the 23 students of group B who returned the survey, 3.52. The value needed to support the satisfaction hypothesis is less than, or equal to, .225. The results show a score of .7473, well below the critical value of .225.
Hypothesis 2: Compliance

The probability that the students in group A will comply with advice is equal to the probability that the students in group B will comply.

TABLE 2

Comparison of Compliance of Groups Using ADVISOR and One-to-one Advising

<table>
<thead>
<tr>
<th></th>
<th>Complied</th>
<th>Did not comply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A</td>
<td>26 (57%)</td>
<td>20 (43%)</td>
</tr>
<tr>
<td>Group B</td>
<td>34 (76%)</td>
<td>11 (24%)</td>
</tr>
</tbody>
</table>

N = 91; \( \chi^2 = 3.67 \); df = 1

The results do not support this hypothesis. Twenty-six students of group A complied with their plans, 20 did not. Of the 20 in group A that did not comply, 11 did not register for any classes. In group B, 36 students complied and 11 did not. Of the 11 in group B that did not comply, 6 did not register for any classes. The critical value needed to support the compliance is less than, or equal to, 1.58, df = 1. The results show \( \chi^2 = 3.67 \).
Hypothesis 3: Completion

There are equal probabilities between group A and B in completion levels - high, moderate, and low.

<table>
<thead>
<tr>
<th></th>
<th>High</th>
<th>Moderate</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A ADOVISOR</td>
<td>19</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>(53%)</td>
<td>(25%)</td>
<td>(22%)</td>
</tr>
<tr>
<td>Group B One-to-one</td>
<td>21</td>
<td>12</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>(55%)</td>
<td>(32%)</td>
<td>(13%)</td>
</tr>
</tbody>
</table>

N = 74; $\chi^2 = 1.22; df = 2$

The results do not support this hypothesis. Of the 36 students of group A who registered for credits, 19 completed all of their credits, 9 completed some, but not all, and 8 completed none of the credits for which they registered. Of the 38 students of group B who registered for credits, 21 students completed all of their credits, 12 completed some, but not all, and 5 completed none of the credits for which they registered. The critical value needed to support the completion hypothesis is less than, or equal to, .201. The results show $\chi^2 = 1.22$, df = 2.
These data do not support the completion hypothesis and the alternative hypothesis cannot be rejected. However, a comparison with the results of the compliance hypothesis shows these results to be less dramatic. An analysis of the completion percentages shows that the two groups are comparatively close. Unlike the compliance results, the completion results would not support at the .10 level the hypothesis that the probability that students of group B will complete the credits for which they register is greater than the probability that students of group A will complete the credits for which they register.

Hypothesis 4: Academic Performance

Students in group A will be equal to the students in group B in performance as expressed by grade-point-averages.

TABLE 4

Grade Point Averages for Groups Using ADVISOR and One-to-one Advising

<table>
<thead>
<tr>
<th></th>
<th>Size</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A</td>
<td>36</td>
<td>2.40</td>
<td>1.430</td>
</tr>
<tr>
<td>Group B</td>
<td>38</td>
<td>2.51</td>
<td>1.258</td>
</tr>
</tbody>
</table>

N = 74; t = .3533, df = 73

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The results do not support this hypothesis and the alternative hypothesis cannot be rejected. The mean grade-point-average for the 36 students who registered for credits in group A was 2.40 and for group B, 2.51. The critical t value needed to support the academic performance hypothesis is less than, or equal to, .254. The results show $t = .3533; \text{df} = 73$.

Hypothesis 5: Program Choice and Satisfaction with One-to-one Advising

Students who choose business careers will be more satisfied with the one-to-one advising than the students who choose office careers.

| TABLE 5 |

Mean Satisfaction Scores for Business and Office Students Using One-to-one Advising

<table>
<thead>
<tr>
<th>Size</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business Students</td>
<td>11</td>
<td>3.57</td>
</tr>
<tr>
<td>Office Students</td>
<td>12</td>
<td>3.48</td>
</tr>
</tbody>
</table>

$N = 23; t = 4.32; \text{df} = 22; \alpha = .10$

The results do not support this hypothesis and the null hypothesis cannot be rejected. The 11 business career students who used the one-to-one process had a mean satisfaction score of 3.57, which was higher than the mean satisfaction score of

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3.48 of the office career students who used the one-to-one process. This difference was not significant at the .10 level.

Students assigned to the computer process were given the option to discontinue the process and receive academic advice from a person. Two students chose not to use the computer and were given appointments with a counselor; their data were not counted.

Hypothesis 6: Program Choice and Satisfaction with ADVISOR

Students who choose office careers will be more satisfied with the computer advising process than students who choose business careers.

TABLE 6

<table>
<thead>
<tr>
<th></th>
<th>Size</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office Careers</td>
<td>15</td>
<td>3.59</td>
<td>.535</td>
</tr>
<tr>
<td>Business Careers</td>
<td>5</td>
<td>3.80</td>
<td>.425</td>
</tr>
</tbody>
</table>

N = 20, t = .8055; df = 19; α = .10

The results do not support this hypothesis; in fact, the mean satisfaction score of the business career students who used
ADVISOR was higher than the mean satisfaction score of office career students. The null hypothesis that there is no difference cannot be rejected.

**Hypothesis 7: Return Appointment and Satisfaction with ADVISOR**

Students who use ADVISOR, then return during the semester for an appointment with a person, will be more satisfied with the advising process than those who use only ADVISOR.

**TABLE 7**

<table>
<thead>
<tr>
<th></th>
<th>Size</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Returning</td>
<td>6</td>
<td>3.94</td>
<td>.409</td>
</tr>
<tr>
<td>Did not return</td>
<td>14</td>
<td>3.51</td>
<td>.504</td>
</tr>
</tbody>
</table>

N = 20; t = 1.828; df = 19, α = .10.

The results support this hypothesis. Of the 20 people who used ADVISOR, 6 returned at some time during the semester for an appointment with a person. (By comparison, of the 23 who initially used the one-to-one process, 6 returned.) The satisfaction score of those who returned after using ADVISOR was 3.943; the score of those who did not return was 3.516. This difference is significant at the .10 level, df = 19.

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Conclusions

In summary, the results support the hypothesis on satisfaction, but do not support the hypotheses on compliance, completion and academic performance. Also, the results do not support the hypothesis concerning program choice and satisfaction with ADVISOR, or program choice and satisfaction with one-to-one advising, but they do support the hypothesis concerning return appointments with a person and satisfaction with ADVISOR. As stated in Chapter II, students assigned to ADVISOR were informed before logging into the computer at several points during the running of ADVISOR that they could discontinue the process and elect to be advised by a person. Two people who were assigned to ADVISOR elected one-to-one advising instead; one reacted negatively to using the terminal, the other wanted personal counseling along with academic advising. Both were given appointments with a counselor. In addition, seven people made, but did not keep appointments; four had been given appointments with a counselor, three with ADVISOR. These nine people were not included in the study and others were assigned in their places.
CHAPTER IV

DISCUSSION

A Review of the Study

Ninety-one (91) community college students participated in this study of academic advising. They were randomly assigned to two advisement processes; one, a computer terminal process which produced academic advice based on each student's career choice and competency levels, and the second, a person who performed the same function. Students who participated in the study were new students at Kalamazoo Valley Community College who had indicated business or office career choice. Both the computer assisted advising, called ADVISOR, and the one-to-one advising produced a list of courses which each student would need to complete his or her program. After receiving the lists the students registered for their first semester courses. A semester later the students were surveyed and their records checked to determine the results of each process. The study focused on four main dependent variables: satisfaction, compliance, completion and performance. For the purpose of this study satisfaction was operationally defined as the level indicated by students on a fifteen (15) item pencil and paper survey completed after the close of the first semester. For each variable it was hypothesized that the computer process would equal or exceed the one-to-one
process in effectiveness.

In addition, it was also hypothesized that students who had chosen business careers rather than office careers would like the person process better because their occupational choice was more related to people than data. Conversely, it was hypothesized that students who had chosen office careers rather than business careers would be more satisfied with the computer process because their occupational choice was more related to data than people. A final hypothesis was related to Bohn's and Super's (1969) extensive evaluation of the ECES System. The hypothesis was that students who used both the computer and the person would be more satisfied than those who used only the computer.

Parametric procedures with t scores were used with the satisfaction and completion measures while nonparametric procedures with chi square scores were used on compliance and completion measures. The results showed the satisfaction score of those who used the computer was equal to the satisfaction score of those who were advised by the person. Because the hypothesis was that the computer process was equal to or better than the person process, the alpha for the study was set at .4, comparable to an alpha of .1 in a conventional, directional study. The results collected on the satisfaction survey showed a higher satisfaction score for students using the computer. These results supported the hypothesis that students, at least "decided" business students, can be equally satisfied with computer-generated academic advising.
The results on compliance were different. As previously noted, compliance was defined to mean that percentage of the student's chosen courses which were recommended by the advising process. The results on the compliance variable did not support the hypothesis that the computer process was equal to or better than the person process. In fact the data supported the alternative hypothesis on compliance if alpha is set at .10. That hypothesis is that Group B using one-to-one advising will be more likely to comply with the advice than Group A using ADVISOR.

Neither the results on completion, which was the percentage of the student's program he or she was able to complete once he or she registered for it, nor the results on performance, which was the student's grade-point-average, supports the hypothesis that the computer process was equal to or better than the person process. However, the results were far less dramatic than the results on compliance. On completion, for example, 53% of the computer-advised students had a "high" completion score, meaning that they completed all of the courses for which they registered. This was opposed to 55% of the person-advised students who had a "high" completion score. "Moderate" ranks for those who completed some, but not all, of the courses for which they registered showed that 25% of the computer-advised students received a "moderate" rank, as opposed to 32% of the person-advised students. And finally, "low" ranks for those students who completed none of the courses for which they registered showed that 22% of the
computer-advised students received a "low" rank, as opposed to 13% of the person-advised students. These results show that the actual scores on completion were higher for the person-advised students; however, this difference is less dramatic than the difference on compliance.

Similarly, the results on the performance variable, grade-point-averages, did not support the hypothesis that computer-advised students would have a mean grade-point-average equal to or greater than the mean grade-point-average of the one-to-one advised students. The mean grade-point-average for computer-advised students was 2.40; the mean grade-point-average for one-to-one advised students was 2.51. Again these results do not support the hypothesis, but they are not as dramatic as the results on the compliance variable.

In summary, satisfaction scores support the hypothesis that computer-advised students are equally, or more, satisfied with their academic advising than person-advised students. On the other hand, compliance scores do not support the hypothesis that the probability that computer-advised students will comply with their academic plans is equal to, or greater, than the probability that person-advised students will comply with their plans. In fact, the data supported the alternative hypothesis on compliance if alpha is set at .10. That hypothesis is that Group B using one-to-one advising will be more likely to comply with the advice than Group A using ADVISOR. And finally, the results on completion
and performance do not support the hypothesis related to equality or superiority of computer advisement. However, the results are not as dramatic as the compliance results.

The findings on the secondary hypotheses show that business students are more satisfied with the computer-generated advising and more satisfied with person-generated advising than office students are with either process. The results comparing the satisfaction of students who used both the computer and the person for advice with the satisfaction of students who used only the computer show that the students who used both processes were more satisfied. The mean satisfaction score for the students who used both was 3.94, while the mean satisfaction score of the students who used only the computer was 3.51. These results were significant at the .10 level. The reader is advised that the impact of the data on the last three hypotheses is reduced because of the small sample sizes. This is of increased concern in the last two hypotheses where the groups are of disproportional size. For hypothesis 6, only five business career students responded compared with 15 office career respondents; and for hypothesis 7 only six returned compared with 14 who did not return. In addition to the questionable representation the small sizes, the disproportional groups undermines the appropriateness of the t test. One of the requirements of the t test is that the two groups be equal.

The reader is further advised that after reviewing the surveys and the records of the students involved in the experiment,
the researcher could identity no variable or variables other than
the two treatments which could have caused the results of this
study.

An Interpretation

The most important findings in this study are those related
to student compliance and student satisfaction. What makes the
compliance and satisfaction findings important is that they
support the satisfaction hypothesis and do not support the
compliance hypothesis. Although students were as satisfied with
computer-generated advising, they complied more with one-to-one
advising. In effect, the study indicates that future studies on
the effectiveness of computer-generated advising should include
the compliance factor. Students receiving advice from the person
complied with that advice more than students who received their
advice from the computer. Yet, students who received their advice
from the computer had a satisfaction score greater than the score
of those who received their information from a person. Students
may be as satisfied with computer-generated advising, but more
compliant with person-to-person advising. And the compliance
data shows that of the 46 students who used ADVISOR 11 students,
or 24%, did not register at all. This compares with six out of
45, or 13%, of the students who used one-to-one advising and did
not register. The difference in the percentage of no-shows is an
important finding in this study. It seems to indicate that
students, at least students in this situation, are more inclined to enroll if they receive academic advising from a person rather than from a computer.

The reader is advised that the particular type of student involved in this study may strongly affect these satisfaction-compliance findings; the only students considered in the study were those who self-selected themselves into the decision category--that is, they claimed that they had already made career decisions and simply needed to know the classes they would need to complete their programs. Perhaps to this type of student the one-to-one process is meddlesome, or at least cumbersome; he or she wants a simple transaction, like the motorist with correct change choosing the automated toll booth in preference to the toll booth enclosing a change-making person. Tiedeman (1967) insists that the students develop a sense of agency, which he describes as a sense of being one's own agent in the decision-making process. Perhaps the business students who participated in the study had already reached a level of agency and, consequently, were more inclined to control the information-giving process by pushing the controls of the terminal.

This study seems to indicate that satisfaction and compliance are not tied to each other. Let us suppose that further study shows that decided students are, in fact, equally satisfied, but less compliant, with computer-generated advice. Then the main barrier for a computerized advising system is that students are
less compliant to such advice. If further study shows that students are less inclined to follow the advice produced by the computer, and if that reduced compliance is unacceptable to colleges, then counseling staffs either must abandon partnerships between advisors and computers or must design the partnership in such a way that there is not reduction in compliance. The findings of Bohn (1969) show that students who received advising from both a computer and a person were more satisfied than the students who used only the computer. Perhaps compliance would increase if some human contact would occur in the advising process.

Although this study was not designed to test this hypothesis, a review of the findings shows that students who used both the computer and the person were more compliant than those who used only the computer or only the person. A more regulated study would clearly identify at least three processes: computer-generated advising, person-generated advising, and a combination; and would measure satisfaction and compliance of students randomly assigned to each of the three processes.

The students who refused the computer process also illustrate the need for the presence of the person as well as the computer.

Students assigned to the computer process were given the option to discontinue the process and receive academic advice from a person. Two students chose not to use the computer and were given appointments with a person. These were not counted in the data mentioned in Chapter III; however, it may be helpful to
describe each of those situations in order to more clearly present the need for two processes.

The first to decline the computer process was a middle-aged male, a real estate salesman who wanted to upgrade his skills at the community college. He had an immediate, strong, negative reaction to using a computer, even though his occupation calls for frequent use of computer-generated information. He claimed that using a computer in such situations was a waste of taxpayer's money. He refused to even begin the process and was given an appointment with a person in order to make his academic plans. Later in the interview with the person, he seemed eager to talk, not only about the courses he needed to upgrade his skills, but also about what upgrading his skills meant to him. He wanted to talk about how he felt when he was confronted with college graduates in the business world. His return to school was motivated, not so much by his need for better skills and more money—he seemed satisfied with his income; rather, his attending college was motivated by his need for higher status. This motivation may have influenced his rejection of computer generated advising.

The second person's situation was similar in some important ways.

The second person to decline the computer process was a middle-aged, single woman. She had known the counselor for a long time, and, like the realtor, she had a hidden agenda. Although her church had a strong position against divorce, she had chosen to
divorce her husband and support herself. She saw the community college as a source of the training she would need to survive. Her need for academic advice was coupled with a need for conversation. In an interview she did not express a need for counseling; she simply needed to explain why she was attending college. She needed no personal attention other than to know a person listened to her. The resulting academic advising was the same. No intensive therapy took place. She seemed to need to explain her rationale for attending college in order to hear and integrate the academic advice.

These two cases emphasize the need for having a person available to assist those students who, for some reason, not always an easily articulated reason, choose not to receive information from a computer.

Although the findings concerning completion and performance do not support the hypothesis, an examination of the actual difference between the score of the two groups on these variables shows that both the completion scores and the performance scores are very close for both groups. Although these variables do not statistically show equality of the two processes, these variables are less of a concern than the compliance variable. Similarly, the findings related to program choice show nothing more than perhaps business career students may be more inclined to indicate satisfaction than office career students, regardless of the type of advising.
Once more, the reader is reminded of the limitations of this study. Although there is no reason to believe that the students at Kalamazoo Valley Community College are different than the students of any other urban community college, the study was restricted to one school, to new business and office students, and to students who identified themselves as having made career choices. In addition, the study used one counselor and one computer program. When the study is replicated, a wider variety of students should be used; also more counselors with different styles and perhaps a variety of computer programs. Even the print speed of the terminal could be an important variable. Many students who are bored with the slow, ten-character terminal may be more satisfied with a thirty-character terminal or a cathode ray tube.

Although the study is a pilot test, the main function of which is to identify areas of further research and not to support or refute programs, this study does suggest that a combination of computer-generated advising and person-generated advising may be more effective than either process by itself.

Not only was this research limited in terms of location and participants, but also in terms of time, the study took place during the 1976-77 academic year. Because the attitude of the participants is an important part of satisfaction and compliance, and because the attitude of the general population toward computers is changing rapidly, the results of similar studies
conducted currently or in the future might have different results. That is not meant to discourage further research.

If college counseling staffs intend to use computer resources to help manage the increasing complexity of advisement information, it is vital that thorough research be continued to verify that students respond positively to the new partnership.
REFERENCES

Betz, R. "Advisement Attitude Scale." An instrument field tested at Counseling and Personnel Department. Western Michigan University, Kalamazoo, Michigan, 1976.


APPENDIX A

ACADEMIC ADVISING SURVEY

Before you began taking classes last August, you received an academic plan either from the computer terminal or from the academic advisor. Please help us evaluate this advising process by filling in the form and by mailing it in the enclosed, stamped envelope. Your name will not be identified with the results.

1. What is your program area (check one)?
   - Accounting
   - Data Processing
   - Business Administration
   - Secretarial Science
   - Marketing
   - Two-year transfer program

2. Have you met with your academic advisor (program counselor) since last August?
   - YES   - NO

3. If you have met with your advisor since last August, please identify the reason(s). You may check more than one.
   - to obtain more information about plan
   - to change plan
   - to discuss second semester choices
   - to discuss difficulty with class or classes
   - to discuss personal problem affecting school work
   - other

4. If you have not met with your advisor since August, please identify the reason(s). You may check more than one.
   - satisfied with August plan
   - decided not to go to college
   - did not bother to make an appointment
   - the advisor was not available when I needed help
   - other

Please evaluate the academic advising process by placing an "x" in the appropriate box to the right.

1. My academic plan is easy to read.

2. I can tell from my academic plan which courses to choose from first.

3. I can tell from my academic plan which courses I cannot take until I have first completed other courses.

(over)
4. After academic advising, I knew how to balance my academic load with other things in my life which take time.

5. The college is meeting my needs for academic advising.

6. The academic advising process gave me enough consideration to my abilities.

7. The academic advising process gave enough consideration to my experience.

8. The academic advising process gave enough consideration to my interests.

9. I felt comfortable during the advising process.

10. If I had a problem in one of my courses, I would feel free to see my advisor (program counselor).

11. I think my advisor (program counselor) knows my name.

12. If a friend of mine wanted to know what courses to take for a business or office career, I would recommend the same academic advising I had.

13. If I wanted to change my program, I would return to the academic advising office.

14. If I had a personal problem which interfered with my school work, I would feel free to see my academic advisor (program counselor).

15. A person who goes through the academic advising process has an easier time selecting courses than the person who uses only the college catalog.
## APPENDIX B

### CVIS CHECKING PROCESS

#### QUESTIONS

1. Choice of occupation is related to your ability to learn. Try to remember how you did on the last tests you took. If you can't remember, I'll help you. How do you think you did compared to students of your grade level in the nation?

   1. Top Quarter
   2. Second Quarter
   3. Third Quarter
   4. Bottom Quarter

2. Grades in school are also related to your vocational choices. Think about your semester grades in all subjects since you entered Willowbrook and indicate where you think you stand in relation to the rest of your class on grade average.

   1. Top Quarter
   2. Second Quarter
   3. Third Quarter
   4. Bottom Quarter

#### POSSIBLE COMPUTER REACTIONS

1. Good show! You have a good memory!

2. Whoops! The last tests you took placed you in the _ _ _ quarter. You may want to check this out with your counselor.

1. You're right. You may ask your counselor for your exact grade point average and rank if you'd like to.

2. (a) Maybe you forgot about some of your semester grades. Actually you are in the _ _ _ quarter of your class. Talk this over with your counselor if you'd like to.
   (b) I have a pleasant surprise...
3. Work can be fun if it's interesting to you. The occupations in my memory are divided into eight broad areas of interest. I'm going to give you the whole list again and ask you to choose one interest area which you wish to explore today.

1. Service
2. Business contact
3. Organization
4. Technology
5. Outdoor
6. Science
7. Cultural
8. Arts and Entertainment

4. Keeping in mind your abilities and interests, select the amount of education and job training you are planning immediately after high school.

1. No further training after high school.
2. Some training (2-6 months) after high school.
3. Trade school (6-18 months) or apprenticeship.
4. Technical school (6-18 months) or junior college technical program (2 years).
5. Four years of college.
6. Advanced degrees beyond college.

O.K. message. The plan you have chosen seems fine.

or

The plan you have chosen seems fine based on your ability as measured by tests. At this time your grades are not as high as your ability predicts they could be.

Minor discrepancy: Your record indicates that you could undertake a higher level of education than you have chosen. You may wish to discuss this with your...
counselor. You may, however, look at the jobs in the category you have chosen.

or

The level of education you have chosen may be quite difficult for you unless your grades begin to improve in high school. You may want to discuss this with your counselor. You may, however, look at the jobs in the category you have chosen.

Major discrepancy: Your choice puzzles me somewhat. I've compared it with your high school record and the two don't seem to match. The best way to clear up this problem would be to see your counselor.
<table>
<thead>
<tr>
<th>GENERAL EDUCATION COURSES</th>
<th>MAJOR/TECHNICAL/SPECIFIC COURSES</th>
<th>FOR ELIGIBILITY, MUST HAVE 40 HOURS FRESHMAN YEAR BEFORE REGISTERING FOR FRESHMAN SEMESTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGLISH</td>
<td></td>
<td>iona 68 7 821 9 10</td>
</tr>
<tr>
<td>POLITICAL SCIENCE</td>
<td></td>
<td>iona 68 7 821 9 10</td>
</tr>
<tr>
<td>PHYSICAL EDUCATION</td>
<td></td>
<td>iona 68 7 821 9 10</td>
</tr>
<tr>
<td>MATH/SCIENCE</td>
<td></td>
<td>iona 68 7 821 9 10</td>
</tr>
<tr>
<td>SOCIAL SCIENCE</td>
<td></td>
<td>iona 68 7 821 9 10</td>
</tr>
<tr>
<td>HUMANITIES</td>
<td></td>
<td>iona 68 7 821 9 10</td>
</tr>
</tbody>
</table>

| TOTAL CREDITS | 1                                                                 |

| RELATED SUBJECTS ELECTIVES |
|---------------------------|------------------|

| TOTAL CREDITS | 1                                                                 |

GENERAL COMMENTS

REVISED PROGRAM PLAN

IN INITIAL PROGRAM PLAN
APPENDIX D

GENERAL EDUCATION REQUIREMENTS

ASSOCIATE OF APPLIED SCIENCE DEGREE (not intended for transfer)

BUSINESS AND OFFICE CAREERS

The General Education component of your program is designed to give you basic knowledge, skills, and values in common with other educated members of society. The following are the General Education requirements for the Associate of Applied Science degree:

<<English: Before enrolling in a one hundred level English course, such as 108 or 101, (or higher), you should complete the English evaluation which is given in Room 41 of Redwood Hall. If the results of the evaluation say that you should take an English course in the 095 to 098 range, you should do so before enrolling in a one hundred level course (or higher). Usually the 095-098 courses can be applied to your degree requirements. It's wise to take the English evaluation early in your program, because reading and writing skills are required in most college courses. You must take at least 6 credits of English at the one hundred level (or higher). You may choose ENG 108 and 212; or ENG 108 and 109, or ENG 101 and 102. (See the back of the catalog for course descriptions). If you don't choose ENG 212 to meet your English requirement, you may choose it as an elective.

<<Political Science: You must choose three credits from the following courses: PSI 100, PSI 101, PSI 102, +20 222.

<<Physical Education: You must choose two credits from the following courses: LEI 101, LEI 201.

<<Math/Science: You must choose at least one of the following courses: BIO 100, CHM 100, PHY 100, MTH 098, MTH 100, BUS 102, +20 124, +20 125. If you do not choose BUS 102 to meet your Math/Science requirement, you must choose it as an elective.

<<Social Science: You must choose at least one of the following courses: ECO 201, ECO 202, SSI 101, HRY 100, HRY 101, HRY 102-3, HRY 206, HRY 207, HRY 208,
HRY 210, HRY 211, HRY 212, HRY 220. If you are in an accounting, business or marketing program and do not choose ECO 201 to meet your Social Science requirement, you must choose it as an elective.
## APPENDIX E

**BUSINESS AND OFFICE STUDENTS**

**WHAT DO I DO NEXT?**

Please read this information carefully!

<table>
<thead>
<tr>
<th>What are the things I have to do to enter College?</th>
<th>First, you must be admitted. Second, if you want a degree or certificate (or simply want course information) you go through a program counseling interview. And finally, you register for classes.</th>
</tr>
</thead>
<tbody>
<tr>
<td>How am I admitted?</td>
<td>Admissions is the process of getting on the college books by handing in a completed blue application form and records of your previous education (if requested). Admissions may also involve a one-to-one interview with an admissions director, especially if you have not decided which general area of the college you want to enter. The admissions office is 3024.</td>
</tr>
<tr>
<td>What is program counseling?</td>
<td>Program Counseling is the process of selecting a specific career goal and constructing a program plan (a list of courses you need to reach your goal). You can obtain a detailed program plan at the computer terminal. This will supply you with all the information you need for a standard program in a business or office field. Usually this will be enough to prepare you for registration. If for any reason this standard plan does not meet your needs, you may make an appointment with your program counselor to discuss your individual concerns. Simply contact the secretary at 3014 or call 375-5000, ext. 311.</td>
</tr>
<tr>
<td>What do I do to register?</td>
<td>Registration is the process of selecting courses for a semester and paying for them. You may pay with cash, check, Master Charge, or Financial Aids voucher. To register you will need a class schedule which is</td>
</tr>
</tbody>
</table>
distributed about a month before each registration. Class schedules are distributed in the Kalamazoo Gazette, or you may pick them up at the college. You must attend (or have a friend attend in your place) an on-campus, scheduled registration. Bring your class schedule, list of desired courses, social security number, and your means of paying.

Your cost will be determined by the number of credits you choose and by the location of your home. A resident of the community college district pays $15.00 per credit hour; those outside the district pay $30.00 per credit hour; out of state students pay $45.00 per credit hour.

No. However, if you intend to register for an English course, you must take the English evaluation given in Room 41 of Redwood Hall.

Other tests are available to help you make wise course elections. The Aptitude Test for Programming Personnel, available from the secretary at 3014-B, will give you information about your ability to do computer programming. The typing test, available in room 60 of Redwood Hall, will help you select the appropriate typing course. And the math test, available in room 41 of Redwood, will help you select the appropriate math course.

You may hold a job while taking classes, but you should adjust your class load accordingly. I recommend the following in terms of class loads and employment hours.

<table>
<thead>
<tr>
<th>Class load for a regular 16 week semester (Semester hours)</th>
<th>Workload (Hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-17</td>
<td>15 or less</td>
</tr>
<tr>
<td>12</td>
<td>24 or less</td>
</tr>
<tr>
<td>9</td>
<td>32 or less</td>
</tr>
<tr>
<td>7</td>
<td>40 or less</td>
</tr>
</tbody>
</table>
If you want to take more than eighteen hours during a semester, you should see me first.

The Student Personnel Office located in room 3024 provides financial aid counseling, veteran administration counseling, academic advising for transfer students, a placement service, a review of transcripts from schools, and international student counseling. In addition, please take advantage of our beautiful pool and library, and enjoy the good food at reasonable prices from our cafeteria!

My name is Chris Zichterman and I hope you enjoy your stay at the college. You can make an appointment with me by contacting my secretary at 3014-B or by calling 375-5000, ext. 311. Good Luck.
APPENDIX F

ADVISOR SAMPLE PRINT OUT

W.M.U. 603 VM KI10 14:28:09 TTY47 SYSTEM 595
PLEASE LOGIN OR ATTACH

.LOGIN
JOB 35 W.M.U. 603 VM KI10 TTY47
#77630,77630
PASSWORD:

QUOTA = $ 50.00 ADD. = $100.00 APPROX. BAL. = $ 55.65
1429 28-FEB-77 MON

ON TUESDAY MORNING MARCH 1, 1977 THE COMPUTER WILL NOT BE
AVAILABLE BETWEEN THE HOURS OF 3:00 and 8:30 A.M. FOR MAINTENANCE.

AS OF FEBRUARY 9, ALL USERS FILES NOT ACCESSED SINCE DECEMBER
9 WERE TRANSFERRED TO MAGNETIC TAPE AND PURGED FROM THE DISK SYSTEM.

FOR A LISTING OF THE COMPUTER CENTER HOURS TYPE:
.TYPE SYS: HOURS OR CALL 383-4006

.RUN BIZNEX

PLEASE TYPE YOUR NAME
BARBARA SAULA

YOUR SOCIAL SECURITY NO. (EX. 999563457)
281445364

YOUR PHONE NO. (EX. 9871234)
3450935

JUST TO CHECK AND SEE THAT THERE ARE NO ERRORS IN THE INFORMATION
YOU HAVE PROVIDED

YOUR NAME BARBARA SAULA
YOUR S.S.# 381445364
YOUR PHONE # 3450935

IS ALL THIS INFORMATION CORRECT? PLEASE ANSWER BY
TYPING YES OR NO
YES
THIS COMPUTER TERMINAL WILL TELL YOU WHAT YOU NEED TO KNOW ABOUT THE COLLEGE COURSES YOU NEED FOR A CERTIFICATE OR A DEGREE IN YOUR CHOSEN AREA. IN ADDITION IT PROVIDES AN EXAMPLE OF HOW THE COMPUTER CAN BE USED. SIMPLY ANSWER THE QUESTIONS AS HONESTLY AS POSSIBLE AND THE TERMINAL WILL WORK FOR YOU. IF AT ANY TIME THE COMPUTER DOES NOT MEET YOUR NEEDS PLEASE CONTACT ME, CHRIS ZICHTERMAN PROGRAM COUNSELOR FOR BUSINESS AND OFFICE STUDENTS. AT THE COMMUNITY COLLEGE, BUSINESS AND OFFICE CAREERS ARE DIVIDED INTO SIX GENERAL AREAS. PLEASE TYPE IN THE AREA WHICH INTERESTS YOU MOST.

A. BUSINESS ADMINISTRATION  
B. MARKETING  
C. FOOD SERVICE MANAGEMENT  
D. ACCOUNTING  
E. DATA PROCESSING  
F. SECRETARIAL

PLEASE ANSWER BY TYPING A, B, C, D, E, OR F? F

F. VERY GOOD. THE COLLEGE OFFERS A TWO-YEAR SECRETARIAL PROGRAM AND A ONE-YEAR SECRETARIAL PROGRAM. IN EITHER PROGRAM A PERSON MAY SPECIALIZE IN LEGAL, MEDICAL, OR ADMINISTRATIVE ASSISTANT. PLEASE SELECT THE ONE WHICH COMES CLOSEST TO MEETING YOUR INTERESTS.

1. A ONE-YEAR SECRETARIAL PROGRAM.

2. A TWO-YEAR SECRETARIAL PROGRAM.

3. I HAVE NOT DECIDED WHETHER I WANT A TWO-YEAR PROGRAM OR A ONE-YEAR PROGRAM.

4. THESE SELECTIONS DO NOT MEET MY INTERESTS AND I WOULD LIKE TO SELECT SOME OTHER AREA OF BUSINESS.

PLEASE MAKE YOUR SELECTION (1-4)? 2

F2A. THE TWO-YEAR SECRETARIAL PROGRAM INCLUDES SECRETARIAL SKILL COURSES, RELATED BUSINESS COURSES AND GENERAL EDUCATION COURSES. THERE ARE FIVE TWO-YEAR PROGRAMS. PLEASE SELECT THE ONE WHICH COMES CLOSEST TO MEETING YOUR INTERESTS.

1. THE GENERAL SECRETARIAL OPTION IS DESIGNED TO PREPARE A PERSON FOR WORK IN BUSINESS, GOVERNMENT AND PROFESSIONAL FIRMS.

2. THE MEDICAL OPTION IS DESIGNED TO PREPARE A PERSON FOR WORK IN THE OFFICE OF A PHYSICIAN, DENTIST, OR IN A HOSPITAL, NURSING HOME, PHARMACEUTICAL INDUSTRY, GOVERNMENT AGENCY OR OTHER HEALTH AGENCY.
3. THE LEGAL OPTION IS DESIGNED TO PREPARE A PERSON FOR WORK IN A LEGAL OFFICE.

4. THE ADMINISTRATIVE ASSISTANT OPTION IS DESIGNED FOR THE PERSON WHO HAS HAD SECRETARIAL EXPERIENCE AND WHO DESIRES TO UPGRADE HIS/HER SKILLS.

5. THE BUSINESS EDUCATION OPTION IS DESIGNED FOR THE PERSON WHO WANTS TO EVENTUALLY EARN A FOUR-YEAR DEGREE AND TEACH BUSINESS SUBJECTS IN HIGH SCHOOL.

MAKE YOUR SELECTION 1 - 5

WHICH OF THE FOLLOWING LEVELS BEST REPRESENTS YOUR SHORTHAND ABILITY?
1. LESS THAN ONE YEAR OF SHORTHAND EXPERIENCE AT THE HIGH SCHOOL LEVEL.
2. COMPLETED ONE YEAR OF HIGH SCHOOL SHORTHAND MORE THAN THREE YEARS AGO.
3. SUCCESSFULLY COMPLETED ONE YEAR OF HIGH SCHOOL SHORTHAND WITHIN THE PAST THREE YEARS.
4. SUCCESSFULLY COMPLETED TWO YEARS OF HIGH SCHOOL SHORTHAND.

PLEASE ANSWER BY TYPING 1 2 3 OR 4?

WHICH OF THE FOLLOWING LEVELS BEST REPRESENTS YOUR TYPING ABILITY?
1. LESS THAN 45 W.P.M. (LESS THAN ONE YEAR OF HIGH SCHOOL TYPING)
2. 45 W.P.M. TO 55 W.P.M. (ABOUT ONE YEAR OF HIGH SCHOOL TYPING COMPLETED)
3. MORE THAN 55 W.P.M. (TWO OR MORE YEARS OF HIGH SCHOOL TYPING COMPLETED)
4. UNCERTAIN OF TYPING ABILITY

PLEASE ANSWER BY TYPING 1 2 3 OR 4?

WHICH OF THE FOLLOWING REPRESENTS YOUR BOOKKEEPING ABILITY?
1. NO HIGH SCHOOL OR COLLEGE BOOKKEEPING COURSE COMPLETED
2. BOOKKEEPING COURSE COMPLETED BUT DESIRE TO TAKE A SIMILAR COURSE AT K.V.C.C.
3. HIGH SCHOOL BOOKKEEPING COURSE OR ITS EQUAL COMPLETED.

PLEASE ANSWER BY TYPING 1 2 OR 3?

WHAT follows IS your PROGRAM PLAN. IT CONTAINS ALL of THE COURSES WHICH YOU SHOULD TAKE AT THIS COLLEGE.
FOR THE FIRST SEMESTER PLEASE CHOOSE FROM THESE COURSES.

<table>
<thead>
<tr>
<th>COURSE NO.</th>
<th>TITLE</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 101</td>
<td>BUSINESS PRIN. &amp; PRACTICES</td>
<td>3</td>
</tr>
<tr>
<td>BUS 102</td>
<td>MATH FOR BUSINESS AND INDUSTRY</td>
<td>3**</td>
</tr>
<tr>
<td>BUS 207</td>
<td>HUMAN RELATIONS</td>
<td>3</td>
</tr>
<tr>
<td>ENG 108</td>
<td>COMMUNICATIONS I</td>
<td>3**</td>
</tr>
<tr>
<td>SEC 204</td>
<td>RECORDS MANAGEMENT</td>
<td>3</td>
</tr>
<tr>
<td>SEC 208</td>
<td>OFFICE MACHINES</td>
<td>3</td>
</tr>
<tr>
<td>PSI 102</td>
<td>STATE AND LOCAL GOVERNMENT</td>
<td>3**</td>
</tr>
<tr>
<td>LEI 101</td>
<td>BASIC CONCEPTS IN HEALTH &amp; PE</td>
<td>2**</td>
</tr>
<tr>
<td>SEC 103</td>
<td>INTERMEDIATE TYPEWRITING</td>
<td>3</td>
</tr>
<tr>
<td>SEC 105</td>
<td>SHORTHAND I</td>
<td>4</td>
</tr>
<tr>
<td>SEC 203</td>
<td>SECRETARIAL PROCEDURES</td>
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</tr>
</tbody>
</table>

YOU MAY ALSO CHOOSE FROM THESE COURSES FOR THE FIRST SEMESTER, HOWEVER I RECOMMEND THAT YOU TAKE THEM AFTER THE FIRST SEMESTER.

<table>
<thead>
<tr>
<th>COURSE NO.</th>
<th>TITLE</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECO 201</td>
<td>PRINCIPLES OF ECON. I</td>
<td>3**</td>
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</table>

YOU MUST COMPLETE SOME OF THE COURSES ABOVE BEFORE YOU GO ON TO THESE COURSES.

<table>
<thead>
<tr>
<th>COURSE NO.</th>
<th>TITLE</th>
<th>CREDITS</th>
<th>MUST COMPLETE FOLLOWING CLASSES</th>
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<tbody>
<tr>
<td>SEC 104</td>
<td>ADVANCED TYPEWRITING</td>
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<td>SEC 103</td>
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<td>SEC 150</td>
<td>SECRETARIAL PRACTICUM</td>
<td>4</td>
<td>SEC 103</td>
</tr>
<tr>
<td>SEC 206</td>
<td>SHORTHAND IV</td>
<td>4</td>
<td>SEC 103</td>
</tr>
<tr>
<td>SEC 211</td>
<td>MACHINE TRANSCRIPTION</td>
<td>4</td>
<td>SEC 103</td>
</tr>
<tr>
<td>SEC 106</td>
<td>SHORTHAND II</td>
<td>3</td>
<td>SEC 101</td>
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<tr>
<td>SEC 205</td>
<td>SHORTHAND III</td>
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<td>SEC 101</td>
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<tr>
<td>ENG 212</td>
<td>BUSINESS COMMUNICATIONS</td>
<td>3**</td>
<td>ENG 108</td>
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<td>CREDITS TO BE DETERMINED</td>
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<tr>
<td></td>
<td>WITH PROGRAM COUNSELOR</td>
<td>1</td>
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</table>

TOTAL CREDITS 62

PLEASE NOTE THAT SEC 101, 103, 208 ARE TAUGHT THROUGH THE OFFICE CAREERS LAB. EACH COURSE REQUIRES THAT YOU SPEND NINE HOURS PER WEEK THROUGH THE REGULAR 16 WEEK SEMESTER. THEREFORE, YOU TAKE NO MORE THAN ONE OF THESE LAB COURSES IN A SEMESTER.

**THESE ARE GENERAL EDUCATION REQUIREMENTS, THEY CAN BE REPLACED BY THE COURSES FROM THE LIST WHICH YOU CAN PICK UP FROM MRS. MARY GOSWICK IN THE COUNSELING OFFICE.
THIS STANDARD PLAN MAY BE GOOD FOR YOU THROUGH YOUR STAY AT THE COLLEGE OR YOU MAY WANT TO REVISE IT WITH YOUR COUNSELOR TO MEET YOUR SPECIFIC NEEDS. IF YOU WANT TO TALK TO A COUNSELOR ABOUT TRANSFER PROGRAM, YOU CAN CONTACT THE ADMISSIONS OFFICE AT THE COLLEGE, ROOM 3024, PHONE 375-5000, EXT. 346. IF YOU WANT TO TALK TO A COUNSELOR ABOUT A ONE OR TWO YEAR BUSINESS OR OFFICE PROGRAM, CONTACT THE PROGRAM COUNSELING OFFICE, ROOM 3014, PHONE 375-5000, EXT. 311. IN ADDITION, THESE COUNSELORS ARE AVAILABLE TO DISCUSS MORE GENERAL CONCERNS THAT YOU MAY HAVE ABOUT ATTENDING COLLEGE. TO FIND OUT WHAT TO DO NEXT, PLEASE PICK UP THE INFORMATION SHEET FROM MRS. MARY GOswick AT ROOM 3014B.

END OF EXECUTION
CPU TIME: 3.39  ELAPSED TIME: 13:59.67
EXIT
During the coming academic year I will field test the computer assisted advising system designed for business and office students. The main thing that I want to know is how satisfied are students with the computer process compared with the counselor process. I will field test the system with business and office students who:
1) Have not attended KVCC or another college before, 2) Want a one or two year program at KVCC, 3) Can identify their program area (eg. Accounting, Business Administration, Data Processing, Marketing, or Secretarial Science), and are willing to participate in the field test. From this population, students will be assigned to either the computer process or the counseling process by the flip of a coin. Then, after they have their plans and after they register, students will respond to the attached survey.

Please study this tentative survey instrument carefully to see if it gets at this question: Are students satisfied with the program planning process? Make any comments which you feel will improve the instrument and return it to me.

I am also asking a group of business and office students to comment on the survey.

After I collect all the comments, Tom Boynton, Chuck Feasley, and Nancy Woods will help me with successive drafts to assure that the instrument is technically sound.
I appreciate your comments because I like you to be involved in what I am doing and because it's hard for me to think of all the right items.

Thank you for your help.

CZ:dmk
cc: Tom Boynton
     Chuck Feasley
     Nancy Woods
Dear Business Student:

The Business and Technical Unit of Kalamazoo Valley Community College is evaluating the effectiveness of its academic advising services. The Unit needs your help. You received your academic plan during August of 1976. How effective was the process for you? Please answer by completing the enclosed form and mailing it in the self-addressed envelope.

Your response is important. We have contacted a small number of students—less than 100; therefore, your response is important. Please fill in the form and mail it today. Thank you.

In no way will your name be identified with the results. Please be free to answer honestly.

Again, thank you for your assistance.

Sincerely,

M. L. McWilliams
Assistant Dean of Instruction
Business and Technical Unit

bs