A COMMUNITY COLLEGE EVALUATION
OF DISCOVER AND VIRGINIA VIEW

by

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in partial fulfillment of the requirements for the degree of

DOCTOR OF EDUCATION

in

Counseling and Student Personnel

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The purpose of this study was to evaluate a computer-assisted career information delivery system (CIDS), Virginia VIEW, with a computer-assisted guidance system (CAGS), DISCOVER, at a Virginia community college using parts of Shealy's 1982 evaluation model patterned on the National Occupational Information Coordinating Committee's specifications. User impact, user satisfaction, and economic efficiency components were studied.

Screened volunteers in this five-week unstructured study were randomly assigned to four treatment groups of 25 students each: (A) Virginia VIEW; (B) Virginia VIEW and DISCOVER; (C) Control, wait for five weeks before using DISCOVER or VIEW; and (D) DISCOVER. Program completers (A=17), (B=18), (C=19), and (D=20) took the Career Development Inventory (CDI) developed by Super and the Career Decision Scale (CDS) developed by Osipow as pre- and post-test instruments. Counseling assistance was available at all times upon request and records were kept on CIDS/CAGS User Logs. Student Planning and Counselor's Observation Logs were also kept.
Based on the pre- and post-test results of the CDI and CDS, students did not differ in the affective, behavioral, and cognitive areas of career development and decision making at the end of five weeks (user impact). Students did not differ in their opinions (user satisfaction) of the information development, information delivery, or user service components of the two systems. Results on economic efficiency revealed that Virginia VIEW was less expensive per student user, while DISCOVER was less expensive per student hour of use.

There were no clear differences in the three areas evaluated by this study between Virginia VIEW or DISCOVER. It was recommended that Shealy's model be used again to evaluate the Interactive Virginia VIEW against DISCOVER and SIGI. Further research was also recommended in the use of the weekly Quantitative and Qualitative Student Career Planning Log.
I would like to acknowledge the support of my Chair, Dr. Carl McDaniels, not once but twice, for I was ABD for several years. He was willing to explore a topic near to him, Virginia VIEW, without knowing the outcome of the results.

Similarly, I would like to thank the other members of my committee who have been equally helpful and supportive of my efforts in completing the doctoral program. They are Dr. Tom Hunt, under whom I had the first official class in my program; Dr. Marty Gerstein, who is one of the fathers of the VIEW system and who encouraged me to explore this topic from day one; Dr. Larry Weber, who put me on the right road to understanding evaluations with the "Brinkerhoff" books; Dr. Don Creamer, the "Dean" of college student personnel work at Virginia Tech; and Dr. Bob Horton, who started the program with me as a fellow student and who is now my professional colleague at a sister institution, Wytheville Community College.

In addition, I would like to thank those professionals in our field who took the time to write and talk with me concerning the topic:

- of the VPI & SU Summer Scholars Program;
- of ACT;
- of ETS;
- of Florida State University;
- of Pennsylvania State University;
- of University of Virginia;
McCormac of NOICC; and and of Virginia VIEW. These people are truly professional and this is why we have a strong profession.

Likewise, I would like to thank for her expert typing and knowledge of word processing. I am also grateful to for teaching me the "nuts and bolts" of writing a dissertation.

Lastly, I would like to thank my wife, , who encouraged me to return to school for my Ed.D. after being ABD for so long. She believed in me and my abilities when I doubted myself. THANKS.
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CHAPTER I
INTRODUCTION

One of the principal missions of the department of student affairs in any community college is assisting students in the making of realistic and satisfying career plans (Dassance, 1987). Students, prospective students, and citizens of the service region often come to a community college's career planning and placement center expressing a need for assistance in making their decisions concerning career and lifestyle choices. What is this need? Which career-intervention tool(s) might best be used in meeting that need?

The following scenario of career counseling intake and assessment procedures might be used in answering these questions and in assisting the students. Though it is simplistic, it is said that the best way to find out what people would like to do is to ask them. Therefore, one way to start the initial counseling session would be to ask the students questions like: (a) What would you like to tell me about yourself? and (b) What brought you to career counseling? The need may be discovered almost immediately. The student may only need occupational information as Hoppock (1976) suggested. This information could be provided by a computer-assisted career information delivery system (CIDS) or by a computer-assisted guidance system (CAGS). The system(s) of
choice would depend upon which system was the most effective, efficient, and acceptable as the result of an evaluation of those systems. It might also be learned at this time that the student may only need educational information which might come from using a CIDS, CAGS, and/or college catalogue. The counselor could then observe whether the occupational and educational information helps the student move from an undecided-decisive (+,−) quadrant to the decided-decisive (+,+) quadrant as illustrated in Figure 1 (Matre & Cooper, 1984).

Sometimes instead of movement from one quadrant to another as in the above paragraph, the counselor through questioning might learn that the student is anxious about making any decision. A counselor might then recommend the taking of a short test on the CAGS called the Career Decision Scale (CDS) (Osipow, Carney, Winer, Yanico, & Koschier, 1976). Using the results of the CDS the students might be placed in quadrant three concerning career decision making, decided-indecisive (−,+)(Figure 1), whereupon the counselor might recommend that the students use a CAGS module designed to aid them in improving their decision-making skills. Finally, the results of the CDS may be used to place the student in the undecided-indecisive quadrant (−,−)(Figure 1). For this reason, the counselor might have suggested to the student the taking of the Career Development Inventory (CDI) (Super, Thompson, Lindeman, Jordaan, & Myers, 1981) in an effort to
Figure 1 The Orthogonal Axes Representing the Decided-Undecided State and Decisive-Indecisive Trait of Career Decision-Making
identify other career development needs. After the results of this assessment are known from the CAGS printout, a specific career-intervention program might be outlined for the student. The above model is somewhat similar to that of Harris-Bowlsbey (1986) where appropriate career-intervention use of CIDS and CAGS are presented (Table 1).

Problem Statement

The problem for counselors in using a computer-assisted career information delivery system in the above, or any other scenario for that matter, is that its use in career counseling situations has never been fully evaluated (Shealy, 1982). As Garis and Harris-Bowlsbey (1985) pointed out, an evaluation of CIDS is necessary to see if it will contribute to similar student gains in the areas of career decision making and development as the use of CAGS as a career-intervention tool.

Shealy's (1982) model (Figure 2) is the only theoretical model developed for evaluating CIDS and CAGS using NOICC guidelines. However, the model she developed is yet to be used. Therefore, the problem for this study is to make operational the Shealy model in the evaluations of a CIDS, Virginia VIEW, and a CAGS, DISCOVER for College and Adult Learners.

As users of CIDS and CAGS, counselors need to know if their tools for delivering career information and for career
Table 1

Steps of the Career Guidance Model in Relation to Information and Guidance Model

<table>
<thead>
<tr>
<th>Steps</th>
<th>Other (curriculum, parents, work, experience, etc.)</th>
<th>Computer-based Information Systems</th>
<th>Computer-based Guidance Systems</th>
<th>Counselor (one to one and/or group)</th>
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<tr>
<td>1. Development of readiness for career planning, information, and decision making.</td>
<td>XX</td>
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<tr>
<td>2. Acquisition of relevant self-data.</td>
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<td>--</td>
<td>XX</td>
<td>XX</td>
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<tr>
<td>3. Translation of self-data into occupational alternatives.</td>
<td>--</td>
<td>X</td>
<td>XX</td>
<td>XX</td>
</tr>
<tr>
<td>4. Acquisition of relevant information about identified occupations and related educational programs.</td>
<td>--</td>
<td>XX</td>
<td>XX</td>
<td>--</td>
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<tr>
<td>5. Acquisition and/or development of decision-making skills.</td>
<td>XX</td>
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<td>XX</td>
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Table 1, continued

Steps of the Career Guidance Model in Relation to Information and Guidance Model

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<th>Steps</th>
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<th>Counselor (one to one and/or group)</th>
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<tr>
<td>6. Reality-testing of favored alternatives.</td>
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<td>XX</td>
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<tr>
<td>7. Implementation of choice.</td>
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<td>XX</td>
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XX = Primary responsibility.
X = Secondary responsibility.

**Figure 2** CIDS Comprehensive Model for Use in Evaluation: A Guide for Planning Career Information Delivery System Evaluations by Application of the CIPP Model with Program Components Evaluated by Multiple Data Sources
counseling intervention are working as advertised with their students. Do the students like and learn from using the tools? Are the taxpayers getting their money's worth?

Research Questions

In particular, the following research questions were studied in an effort to solve the above problem:

1. In a test of the effectiveness of interventions in the assisting of community college students in their career decision making and career development, did the use of DISCOVER for College and Adult Learners produce significantly greater gain scores on the World of Work, Knowledge of Preferred Occupations, Career Planning, and Career Exploration subtests of the Career Development Inventory, and on the Certainty and Indecision subscales of the Career Decision Scale than did the use of Virginia VIEW or a combination of DISCOVER and Virginia VIEW?

2. In a test of user acceptability with community college students, did DISCOVER for College and Adult Learners rate higher than Virginia VIEW as a career-intervention tool when measured by a user questionnaire based upon NOICC guidelines?

3. In a test of the efficiency of time and money use at the community college level, did DISCOVER for College and Adult Learners use more time and the institution's money
than Virginia VIEW or a combination of Virginia VIEW and DISCOVER as measured by the Virginia VIEW/DISCOVER User Log? Time and money efficiency were used to examine VIEW and DISCOVER separately and in combination as career information delivery and career intervention tools.

Procedures for the Study

A brief overview of the evaluation procedures which were used in answering the three research questions is presented below with a more thorough explanation presented in Chapter III. Students, prospective students, and citizens seeking career development counseling took part in an intake interview. As with the scenario they were asked to tell something about themselves and why they came for career counseling. At that time, those students who requested occupational and/or educational information were assisted in obtaining the information requested. Students who expressed a request or showed signs of needing social, personal, or academic counseling were not asked to take part in the study but were provided with the appropriate services. Students who had a reading problem as the result of low academic achievement in the past, or a learning disability, or a hearing impairment were not asked to take part but were provided with the appropriate adaptive career planning
services. The clients who became part of the study's resource pool were selected on the basis of needing and being able to benefit from career counseling services.

The evaluation program was explained only to those students who passed this initial screening. At that time students were asked if they would commit themselves to a five-week study of Virginia VIEW and DISCOVER involving taking the CDI and the CDS as pre- and post-assessments. They were also asked to maintain a career planning log during the program and to answer a questionnaire at the end of the five-week study. The student volunteers who agreed to participate in the study were randomly assigned to one of these three groups: DISCOVER for College and Adult Learners only; Virginia VIEW only; and DISCOVER and Virginia VIEW. The control group was composed of those students who were willing to wait five weeks before using DISCOVER and Virginia VIEW. The control group was assigned at those times during the academic year when a person could go without career planning for five weeks and then still have time to complete a career planning program before registration began for the next term. A true wait-list control group could not be randomly assigned as the college requires its personnel to give service to those requesting it. Despite this one problem in random assignment, this study conformed to those recommendations for the selection of real subjects and the assignment of treatments
by Oliver and Spokane (1988). A Virginia VIEW/DISCOVER user log was maintained by the evaluator during the study.

The study was conducted at New River Community College in the Career Planning and Placement Center beginning in January, 1988, and continued until 100 screened volunteers had agreed to participate in the five-week career intervention program. Twenty-five students were assigned to each of the four groups. Each student was given the CDI and CDS at the beginning of the five-week intervention period. They were also given a folder containing a copy of their invitation letter, an explanation sheet of NRCC Career Development Services, and five career planning logs. At that time, the assigned CIDS and/or CAGS was explained to each student. Students were advised that they had unlimited use of their system. They also were advised to make appointments to avoid unnecessary waiting and/or if they wanted to see a counselor before, during, or after using their respective system. They were encouraged to read other material and to conduct information interviewing. Students in the wait-list control group received an explanation of the books, videos, and tests which were available to them during the five-week waiting period. They were also encouraged to conduct information interviewing.

Students were contacted at the start of the fifth week by phone or letter that the evaluation program in which they had agreed to participate was about to end. Each person was
encouraged to make an appointment for the retaking of the CDS and CDI and the completion of the questionnaire regardless of what they had done during the five-week study. All retesting of students took place during the sixth week of the program. This was also true for students who completed their use of the CIDS and CAGS earlier, as well as for students who had not completed their career planning process. The students in this group were advised that only the evaluation study period had expired and that their career planning program would continue until they were satisfied with their career plans. The results of program evaluation and individual test results were available to participants in May, 1989.

Need for the Study

Evaluations of CIDS and CAGS have not kept pace with their development and widespread use. This is especially true of impact evaluations of the effects of systems upon the career development process of clients. Shealy (1982) and NOICC/SOICC Directory of CIDS Evaluation (1986b) showed that the impact on students has almost been completely ignored in studies. For example, Byron (1983) found that people from lower socio-economic groups were more satisfied with Virginia VIEW than people from higher socio-economic groups. Hedrick (1985) discovered that users were generally satisfied with the Virginia VIEW career accessing strategy. Both Taylor (1987)
and staff of Virginia VIEW itself through a self study (Watts & McDaniel, 1989) found that a high percentage of the people who used Virginia VIEW rated it as a good to excellent source of information. One reason that a user impact evaluation of Virginia VIEW is needed is because one has not been conducted during its first ten years of operation. Bhaerman and Campbell (1986) describe an impact evaluation as one aimed at determining program results and effects on individuals.

DISCOVER for College and Adult Learners has been researched and evaluated more than Virginia VIEW, but still more studies are needed before the findings can become definitive. The first field testing of DISCOVER using the Career Development Inventory (Rayman, Bryson, & Bowlsbey, 1978) proved to be inconclusive. The Garis study at Pennsylvania State, after which this study was patterned, compared the impact of DISCOVER in the following groups: (A) DISCOVER only; (B) counseling only; (C) DISCOVER and counseling; and (D) wait list control. Garis (1982) reported positive affective scores but not cognitive scores when using the CDI to evaluate DISCOVER's impact. Marin (1984), using the Assessment of Career Making (Occupation subscale) and the Career Decision Scale to evaluate DISCOVER II, concluded that it was effective for adults regardless of their decision making style. Roselle (1984) found a positive relationship between persons' level of intellectual development and their experience with DISCOVER. More recently, Allen (1987)
concluded that CAGS intervention using DISCOVER with either group or individual counseling improved students' scores significantly on the CDS. The use of DISCOVER as a career-intervention tool showed similar positive effects in career self-efficacy and decision making of undergraduate students (Fukuyama, Probert, Neimeyer, Nevill, & Metzler, 1988). In a national study of the use of DISCOVER and the System of Interactive Guidance and Information (SIGI), Sampson, Shahnasarian, and Reardon (1988) found that both the software-based factors and the institutional-based factors did not significantly impact the use of the systems themselves. They suggest further testing of the theoretical assumptions that underlie both systems. Niles and Garis (1988), in their presentation before the Virginia Counselor Association, underscored the need for additional research on the effectiveness of DISCOVER with other career intervention tools and with other student populations. This study, like the Niles and Garis study, used the 1987-88 versions of DISCOVER for College and Adult Learners (ACT, 1987).

Taylor (1987) reported that 92% of the community colleges were using Virginia VIEW and that 70% of users considered it to be good or excellent as a tool for helping students. The same report stated that there were 11 DISCOVER software packages in use in the community colleges with an overall rating of 3.7 on a 5-point scale. The State Council of Higher Education in Virginia, after studying the state's public two-
year and four-year college and university career planning and placement offices, called for more use of computer software programs in these offices.

Limitations

The major limitation of this study is that these systems are constantly being changed and updated by their developers. The Interactive Virginia VIEW was introduced at NRCC in January, 1989. The VIEW used in this study was on microfiche. ACT is developing an International DISCOVER System in 1989 for marketing in countries other than the United States (Harris-Bowlsbey, 1989). With the work and leisure connection (McDaniels, 1989), it will be only a short time until information on leisure must be added to the CIDS and CAGS. The profession needs another Shealy to develop an evaluation model for the videodisc.

Definition of Terms

Career Information Delivery Systems (CIDS) are usually computer based in the accessing and storing of large files of data on occupations. They are usually characterized by the addition of local labor market information. According to Harris-Bowlsbey (1986), they usually do not allow the user to store personal information or to access personal evaluations.
on-line. They do not teach career decision making or career planning concepts on-line. These systems are often produced and distributed statewide by the publicly financed SOICC and are free of any direct costs to the user. They are often multi-media in approach including computer, print, film, and telephone hotline.

Computer-Assisted Guidance Systems (CAGS) are usually characterized by their ability to store user records along with the large national data files. Many CAGS can now be adapted for the storing of state and local job market information. A user can usually take personal evaluations or learn about career development concepts on-line (Harris-Bowlsbey, 1986). These systems are often produced and distributed nationally by profit-making or non-profit-making educational service oriented businesses.

Evaluation has been defined by Ralph Tyler as "the process of determining to what extent the educational objectives are actually being realized" and more recently by the Joint Committee for Evaluations as "the systematic investigation of the worth or merit of some object" (Brinkerhoff, Brethower, Hluckyi, and Nowakowski, 1986c).

Organization of the Study

Chapter I provides a scenario of an intake and assessment for career counseling which might take place in any community
college career planning and placement office in the United States. Without questioning, many counselors use CIDS and CAGS as career-intervention tools, not realizing that they have not been thoroughly evaluated for their contributions to student gains in the career planning process. The scenario establishes the need for the evaluation study of CIDS and CAGS. The scope of the research questions and study procedures follow the scenario. The chapter concludes with a definition of the terms and an overview of the total study.

Chapter II then follows with a recent look at the student outcomes assessment trend and at Shealy's study. The third section updates the reader as to what has been done in evaluation studies since Shealy finished her work in 1982. Sections four and five provide the reader with general information on recent developments with CIDS and CAGS and specific information on Virginia VIEW and DISCOVER for College and Adult Learners. Section six provides the reader with specific information on the CDS and CDI as assessment instruments. The final section will look at the Ethical Standards for using CIDS and CAGS as career-intervention tools.

Chapter III presents details of the evaluation design to be used in answering each of the three research questions. Tables are used to show how the data will be collected and analyzed. With this information in a form which can be
visualized, the entire research methods and procedures should be more understandable.

Chapter IV contains the results of the evaluation. With question 1 there is comparison of the CDS and CDI results from the four groups. Question 2 has the community college student reaction to using Virginia VIEW and DISCOVER. Qualitative and quantitative data from both the student and counselor are examined with question 3. Chapter IV concludes with a triangulation of the results.

In Chapter V general conclusions concerning the use of Virginia VIEW and DISCOVER as career-intervention tools in the community college are drawn from answering questions 1, 2, and 3. Recommendations concerning the use of Virginia VIEW and DISCOVER in the Virginia Community College System are made based upon those conclusions. Chapter V is followed by a list of references cited in this study and appendices of all related material used in the evaluation.
CHAPTER II
REVIEW OF THE LITERATURE

The literature review for this study is tangent to many topics. College student outcome assessment is tied to student affairs programming which includes career planning. The evaluation of career-intervention tools, Virginia VIEW and DISCOVER, is therefore a small part of evaluating career planning programming and even a smaller part of evaluating the student affairs program. The literature review for this study will be systematized in moving on a continuum from the general to the specific in each one of the above areas.

College Student Outcomes Assessment

The mission statement for the Student Affairs Departments of most community and four-year colleges and universities includes a statement saying that assistance will be provided to students in the development of career and educational plans. To carry out this and other missions, most colleges also have a statement involving the planning, implementing and evaluating of programs and services (Dassance, 1987). Following the lead of other states like Florida and the Southern Association of Colleges and Schools (SACS), the Commonwealth of Virginia through its State Council on Higher Education (SCHEV) has required all of its public colleges,
such as New River Community College (NRCC), to develop college assessment plans (NRCC, 1987). Universities like James Madison are developing affective and cognitive assessment plans to measure long-term career development beyond the student's first job (Menard, 1987). Longwood College's goal is to measure development in four areas, including careers. Longwood, like this study at NRCC, is using the Career Decision Scale as an outcomes measure for their career-intervention programs (Moore, 1988). These are only echoes of the national call for impact evaluations placed by Commission VI, Career Counseling and Placement, and Commission IX, Assessment for Student Development, in the former's Winter newsletter (O'Dell, 1989).

**Shealy's Model**

Shealy (1982) developed "A Guide for Planning Career Information Delivery System Evaluations by Application of the CIPP Model with Program Components Evaluated by Multiple Data Sources" (Figure 2). She prepared her model only after studying the national status of career information delivery system evaluations. She carefully correlated the NOICC published evaluation criteria with the existing state evaluations. As the results of her study, she found that some program components had been neglected, that some data sources had not been identified, and that no plans had been made for
using the results from most of the completed studies. With a uniform, national model, it was hoped that the results would not only be used in the state where the study was conducted, but also across the nation. This would be true generally, even if different evaluation strategies were used to implement the model (Shealy, 1982).

The proposed model called for both current and longitudinal studies of CIDS. Data on the organization structure, information development, information delivery, user services, economic efficiency, and user impact would be collected from users, user site personnel, and administrators. Shealy chose Stufflebeam's Context, Input, Process, Product (CIPP) model (Figure 3) after doing a brief review of the literature though she said all models would work. With the CIPP model, an evaluator could choose to look at the goals, designs, activities, and/or results of the CIDS. Decision makers often need to make critical decisions at various stages during the life of the project.

Recent Studies and Evaluations

Harris (1972) stated the following was already known about students using computerized systems: they learned the systems quickly; they liked using the systems; they thought that they were better able to make career decisions; and they stated that they knew more about themselves and occupations
<table>
<thead>
<tr>
<th>DELINEATING</th>
<th>INPUT (Designs)</th>
<th>PROCESS (Activities)</th>
<th>PRODUCT (Results)</th>
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<td></td>
<td>Clarify the questions and evaluation criteria.</td>
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<tr>
<td>OBTAINING</td>
<td>Clarify how the data will be collected, organized, and analyzed.</td>
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<tr>
<td>APPLYING</td>
<td>Clarify what reports having what contents will be provided to what audiences through what communication channels.</td>
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(Shealy, 1982, p. 78)

Figure 3 Overall Evaluation Design Matrix (CIPP Model)
as the result of using the systems. A decade later Sampson, Shahnasarian, and Maddox (1984) reflected that current literature on the impact of computer-assisted guidance systems showed: students still like to use the systems; students are more confident about their abilities to make career decisions; and students have increased their knowledge about self and the world of work. They continued the call for evaluations to confirm these findings.

One of the first works of this period on measuring students' outcomes in the area of career planning and decision making for counseling and evaluation was a book edited by Super (1974). In his chapter from the above book, Hilton (1974) states the difficulty in evaluating is defining the objectives of the career intervention in behavioral terms. He also stated that career maturity measures should be supplemented by measures of career planning and decision making competencies. A second work of this period was Shealy's search for an evaluation model for CIDS. She (1982) found that NOICC had established CIDS evaluation guidelines. Nevertheless, there was little uniformity among those states completing evaluations. This was the reasoning behind the development of her model for using multiple data sources.

A field study with DISCOVER as the intervention tool was completed by Garis (1982) in the Career Development and Placement Center at Pennsylvania State University. Students seeking career counseling were randomly assigned to one of
four treatment groups: (a) one-to-one counseling only, (b) one-to-one counseling and DISCOVER, (c) DISCOVER alone, and (d) no-treatment for five weeks. The Survey of Career Development (SCD), Confidence and Progress in Educational/Career Planning, Career Development Inventory (CDI) and a behavior log were used to measure progress in educational/career planning. The dependent variables were measured by the Survey of Career Development and Confidence and Progress in Educational/Career Planning. The results indicated significant progress in educational/career planning for all three treatment groups. The Career Development Inventory also indicated a statistically significant (p<.01) treatment group effect in the affective areas of Career Planning and Career Exploration but not the cognitive areas of Decision Making, Working Information and Knowledge of Preferred Occupation. Post hoc comparisons of Part I, hours of career library use, and of Part II, career resource contacts, as recorded on the Behavior Log, indicated that the DISCOVER and DISCOVER/counseling groups means were significantly higher than that of the no-treatment control group (Garis & Harris-Bowlsbey, 1985). In the "For Further Research" section of their report was the second catalyst for this study, where they asked if computer-based information systems would have produced positive effects similar to those produced by the computer-assisted guidance and information
system. Therefore, this evaluation study is a partial replication of the Garis (1982) study.

The evaluation variables for computer applications suggested by Sampson et al. (1984) were very similar to NOICC but were not spelled out into such detail. They suggested evaluating information development, information delivery, user services, economic efficiency, and user impact, but NOICC had also called for the evaluation of the organization and management structure. On the other hand, Sampson and associates suggested that the evaluation should gather more demographic information on the clients and their reasons for using the system. Again, they left it up to the evaluator to decide upon which evaluation model and measurement tools to use with the evaluation. Two years later, the Council for Advancement of Standards for Student Services/Development Programs (CAS) set their program guidelines. With these guidelines CAS (1986) called for systematic and regular evaluations of each functional area to determine if the educational goals and student needs were being met. Without specifying a method, they stated the evaluation should include both quantitative and qualitative measures.

Studies and evaluations completed during the second half of the 1980s have added to the knowledge already obtained concerning the impact of computer-assisted systems upon students' career development and career decision making abilities. CHOICES did increase student commitment to the
career decision making process as measured by Assessment of Career Decision Making (Pinder & Fitzgerald, 1984). Tempestini (1985) used the CDI and CDS to study the effects on career development of the Career Directions and the Career Exploration microcomputer programs. Software program plus counseling did have positive effects upon current decision making. That same year, Viar (1985) studied the effects of SIGI with community college students at Dyersburg State and found it to be cost effective in terms of personnel time. In an implementation evaluation of Connecticut CONSIDER/GIS, Thompson and LaRochelle (1985) found that the system was meeting the user's needs for high-quality, low-cost career information. Nocella (1985) found the use of DISCOVER with a counselor follow-up interview did not significantly change the career development outcomes as measured by the CDI. Search and Learn and MicroVIEW treatment intervention failed to statistically improve the career maturity profiles as measured by the CMI (Hobart, 1985). Grant's (1985) research indicated that SIGI did significantly affect three specific barriers to career indecision as measured by the CDS. Another dissertation (McCartan, 1986) revealed that "alterable" variables such as interaction with faculty and work experience, rather than career centers and computer-assisted systems, aided students more in their career decision making according to the results of 63 semi-structured interviews completed with community college students.
In 1986, New York State Occupational Information Coordinating Committee, along with New York State Education Department, commissioned a study to identify a New York State model for a computer-based career information delivery system or systems to meet the needs of its citizenry and the objectives of its education curricula. The five-step evaluation included: (1) The Information Validation Survey where state and national professionals validated the information components and design considerations which should be included in the system; (2) The Survey of User Satisfaction where principals, counselors, students, and parents expressed their opinions concerning strengths and weaknesses of the CIDS in use; (3) The site visits where counselors gave additional thoughts about the uses of the systems; (4) The Request for Information where vendors supplied current component arrangements and costs; and (5) The demonstration of career information delivery systems to the System Review Panel where vendors presented a demonstration of the software before a review panel (Bloch & Kinnison, 1986). Five major vendors completed the evaluation process (Bloch & Kinnison, 1988): C-LECT from Chronicle Guidance Publications, Inc.; CHOICES from Canada System Group; DISCOVER from American College Testing; Guidance Information System (GIS) from Houghton Mifflin; and the National Career Information System (CIS) from the University of Oregon.
Since 1986, Bloch and Kinnison (1989) have refined the CIDS rating system used in the New York State study where now any system could be measured against the criteria in areas of comprehensiveness, accuracy, and effectiveness. Comprehensiveness would be determined by a checklist of information components, design considerations, support and training materials against those supplied by vendors. Accuracy in their evaluation scheme would be determined by independent evaluation of the occupational and educational information printouts from the systems. Effectiveness would complete their triangulation and would be measured by a system review panel using a rating booklet (Bloch & Kinnison, 1989). The Bloch and Kinnison rating system conforms closely to NOICC's 1980 guidelines for evaluating CIDS with the exception of the omission of the user impact component and longitudinal effects studies.

Allen's (1987) study did show a significant difference in gain scores on the CDS for students receiving assistance from both DISCOVER-plus-group counseling and DISCOVER-plus-individual counseling. The DISCOVER ONLY and the control groups did not show a significant change in the level of decidedness. In a second study (Alston, 1987), the dependent variable was again career indecision. It showed that physically limited college students who used DISCOVER were not significantly different from other physically limited college students in their level of career indecision.
In 1988 Fukuyama et al. studied career self-efficacy and vocational indecision as the two dependent variables in their work with DISCOVER. DISCOVER proved to have a positive effect on career decision making using the CDS in sampling the impact on lower division college students. Niles and Garis (1988) also used CAGS with first- and second-year university students. They found that the scores on the Indecision Scale of the CDS decreased for those students using either SIGI or DISCOVER. Their research also indicated that there was not additional significant gain scores when the CAGS was used with a career planning course.

In a different type of study, Sampson, Shahnasarian, and Reardon (1987) found that the three highest needs of the user site staff of SIGI and DISCOVER in a national survey were: specific strategies for working with returning adults; identification of instruments to be used in evaluations; and in-service training. The current evaluation study of VIEW and DISCOVER may add some insights on these three needs. This national evaluation of DISCOVER and SIGI also fails to examine the user impact component of CIDS. In addition to the reports above on the institutional and software comparison of SIGI and DISCOVER, the Clearinghouse for Computer-Assisted Guidance Systems has completed a set of bibliographies and abstracts (1985) and a differential cost analysis of the two systems (Sampson, Domkowski, Peterson, & Reardon, 1986). They considered six things in their comparison evaluation: user
friendliness, information for decision-making, the theoretical bases of the decision processes, support materials, differential cost analysis, and limitations. They assumed the systems to be equal in their impact on students. The documentation analysis of SIGI and DISCOVER is very similar in nature to the New York State evaluation of the list of features analysis.

A recent comparison of SIGI-PLUS and DISCOVER for Adult Learners in a group career guidance situation found the computer-assisted groups had significantly greater gain scores on the Career Development Scale and My Vocational Situation than the non-computer-assisted groups (Gilman, 1987). He also found that the SIGI-PLUS produced slightly greater gain scores than DISCOVER. Malay (1987) compared the results of a vocational interest inventory UNIACT taken with paper and pencil, micro-computer, and mini-computer formats and found no significant differences in the outcomes. UNIACT is the interest inventory on the DISCOVER for Adult Learners program. In a career intervention program using DISCOVER to promote college retention (Bauer, 1988) it was found that the DISCOVER users were more congruent with their college environment according to the Holland code. There were no dropouts from either the experimental or comparison groups; therefore, the effect on college retention could not be tested. In an earlier study (Heer, 1986), Holland's theory on congruence did not hold for undecided students moving toward a more congruent
major. Students in this study were not exposed to DISCOVER. In the latest status report on computer-assisted career guidance systems in United States four-year institutions of higher learning, it was learned that a person was more likely to find SIGI-PLUS in a larger, public institution and DISCOVER in a smaller, private institution (Snodgres, 1988).

Oliver and Spokane (1988) in a meta-analysis of career counseling outcomes revealed that individual counseling produced more client gain per hour than any other intervention method, but that this was also the most costly method at $20.69 an hour. The cost of computers as a treatment was not calculated, as only three computer studies had been completed to their specifications. This is only one of several findings from their study of 240 treatment-control comparisons resulting from 58 career-intervention studies with over 7,000 clients. Comparisons with this meta-analysis on career intervention outcomes can be made in many areas: number of subjects, number of treatments, number of outcomes measured, number of treatment hours, and effect size. This and other comparisons are possible because this evaluation of Virginia VIEW and DISCOVER follows the recommendations of Oliver and Spokane (1988) including: student selection based upon their counseling goals expressed during intake; the selection of actual subjects who have sought career counseling; the random assignment of subjects to treatment groups; and an accounting of all subjects including non-completers. They also suggest
measuring outcomes in three areas: career decision making, effective role functioning, and user satisfaction. Research question number 1 using the CDS will measure gains in career decision making. The CDI will be used to measure effective role functioning as it will be used to measure progress or growth in educational/career planning. Research question number 2 will measure user satisfaction as an outcome. This evaluation will add time and cost efficiency as a third measure.

CIDS and Virginia VIEW

Career Information Delivery Systems became a legal reality with the passage of Section 161 of the Educational Amendments of 1976. This law, better known as PL 94-142, established the National Occupational Information Coordinating Committee (NOICC) and its state counterpart, State Occupational Information Coordinating Committee (SOICC), for the purposes of promoting the development and use of labor market information. A year later the Youth Act of 1977 also specified that the labor market information needs of the nation's unemployed youth (Flanders, 1988) should be met by NOICC. NOICC, basically an interagency committee, became operational the next year.

NOICC, through the SOICCs, developed a two-tier program with Occupational Information Systems (OIS) whose purpose is
to gather the labor market information, and Career Information Delivery System (CIDS) whose purpose is to deliver this information to the individual user (NOICC, 1987). The theoretical and philosophical concepts of career development and career decision making that were the basis of the above actions have been expressed in the following manner by a number of professionals. McCormac (1988) stated that career information was indispensable for career development. McKinlay (1988) reasoned that individuals would use the CIDS through various stages of their career development from career awareness through the job search. Accordingly, he felt that the realism of factual information would foster growth in the students' career maturity. Consequently, the students would become aware of their need to make a decision. No explicit attempt was made to teach students about career decision making or to help them learn more about themselves.

NOICC not only provided the SOICCs with federal funds for operating, but began to provide them with impact and performance evaluation criteria in 1979. With NOICC Memorandum 80-19 (cited in Shealy, 1982), a program component evaluation criteria was issued to the SOICCs. In 1981, the Association of Computer-Based Systems for Career Information (ACSCI) called for yearly evaluations of CIDS. The ACSCI covered the same six components but was less specific in details. A year later, a theoretical evaluation model for career information delivery systems was developed by Shealy
which conformed to the NOICC directive in every aspect. In her implications for further research, Shealy (1982) indicated that now is the time for actual implementation and field testing.

More recently NOICC (1986a, 1987, 1988) has focused its attention away from the CIDS themselves toward the integration of CIDS with guidance and institutional programs. The National Career Development Guidelines research and development project has been aimed at setting the standards for comprehensive career guidance and counseling programs to serve people of all ages by both educational and human service institutions. The National Guidelines have a product evaluation component which includes the measuring of career development outcomes across cognitive, affective, and psychomotor areas (NOICC, in press). These guidelines for measuring attitudes, skills, and knowledge are similar to the 1980 guidelines for measuring CIDS. Another NOICC initiative of late has been the Improved Career Decision Making Program (ICDM). This program is aimed at helping the professional counselor to understand and use labor market information through a series of workshops and a curriculum guide. With the addition of more substate labor market information on CIDS, this package and training program should ultimately help CIDS users.

Virginia VIEW is Virginia's Career Information Delivery System. VIEW (Vital Information for Education and Work) is
the same acronym associated with the first career information delivery system by microfilm which was developed by Gerstein and Hoover (cited in McDaniels, 1988). Like the Michigan Occupational Information System (MOIS) after which Virginia is patterned, its main delivery media is microfiche. These two states, along with Maryland and Arkansas, accounted for one-third of the 15,000 sites nationwide in 1986 (McGarvey, 1988).

The basic philosophy of Virginia VIEW is to reach the widest possible range of users with the occupational data needed for career decision making at no direct expense to the user. The users of Virginia VIEW appear to be satisfied with this arrangement and their results. Byron (1983) found the users of Virginia VIEW as a whole were satisfied with the system, felt it was a good use of their time as they did learn something from the experience. She also found that women tend to like Virginia VIEW more than men, the unemployed more than the employed, the less educated more than the educated, the lower income more than the upper income, and the experienced career planner more than the new career planner. Similarly, Taylor (1987) found a high ratio of user use and user satisfaction with the system. The latter report confirms Hedrick's (1985) finding of students' satisfaction with the career search accessing strategy used with Virginia VIEW.

A 1984 report (Snipes & McDaniels) showed 100% of the public community colleges in Virginia were using VIEW for the
third consecutive year. More recently, Virginia's community college counselors from around the state attested to Virginia VIEW use with the widest possible range of adult users in *The Community Service Catalyst* (Sullins, 1987). Horton (1987) of Wytheville Community College stated that Virginia VIEW was especially helpful with nontraditional-aged students' curriculum selection. Similarly, Hecklinger and Curtain (1987) at Northern Virginia Community College found that Virginia VIEW helped many of their students to confirm their tentative career direction without going through their extensive career and life planning program. Use of Virginia VIEW with special populations seems to be the rule rather than the exception at Virginia's community colleges. This is true at Thomas Nelson Community College where Virginia VIEW has been modified for use with hearing impaired and learning disabled students (Taylor & Gallager, 1987). Finally, Virginia VIEW has been used with enrollees in the Center for Single Parents and Homemakers at Southwest Virginia Community College (Opitz, Horton, & Chambers, 1987) and the Displaced Worker Program at J. Sargeant Reynolds Community College (Amburgey & Sanborn, 1987).

The 1987-1988 Virginia VIEW Evaluation was a two-stage evaluation with the first stage involving more than 700 counselors and vocational educators who attended the 1987 fall workshops in the state of Virginia. These people from the user site staffs completed a two-page survey on the
availability, utilization, and usefulness of Virginia VIEW. Ninety-eight percent of the user site staff found the total system to be useful or very useful. Most of the workshop participants reported the Career Search and the occupational microfiche files were the most utilized parts of the system. This group's only complaint was the lack of microfiche readers for group work (Watts & McDaniels, 1989).

Thirty-three community college counselors and educators made up 4.7% of the user site staff in attendance at the 1987 fall workshops. Seventy percent of them found the total system to be very useful, while 82.4% found the microfiche file and 66.7% found the Career Search to be very useful. Forty-seven percent of the community college user site staff used the Career Search with individual sessions, while almost an equal number, 44%, used the Career Search with both individual and group sessions. Career counseling with Virginia VIEW was provided by 62% of the community college counselors in both individual and group sessions, while 35% of the counselors provided only individual counseling sessions (Watts & McDaniels, 1989).

The second stage of 1987-1988 Virginia VIEW Evaluation involved over 2,500 student and adult users from almost 200 randomly selected sites. This one-page user survey focused on utilization and helpfulness of each part of the Virginia VIEW system. Over 80% of the students and adults who use the Career Search found the Career Search workbook easy to
understand. The same number found the Career Search process useful in clarifying their career options. Almost 100% of the users found the occupational files to be either very helpful or helpful (Watts & McDaniels, 1989).

The main conclusion of the 1987-1988 Virginia VIEW Evaluation was that Virginia VIEW was providing the students and citizens of the Commonwealth with the occupational and educational information which they needed for decision making. Watts and McDaniels (1989) concluded that the multi-media approach was providing an effective and useful career information resource for Virginians across a wide range of abilities and ages. Results of the self-study indicated that there were a sufficient number of IBM or IBM-compatible computers with hard disk drives at Virginia VIEW sites to warrant the development of an Interactive VIEW. The results from the study also indicated a need to continue the workshops and the specific information files.

One theoretical construct undergirding Virginia VIEW Career Search is the data, people, things concept (DOT, 1965). The theory is each job requires the worker to interact in varying degrees with data, people, and things on a job. Through a process of job task analysis the level of complexity has been determined and labeled in a number sequence with lower numbers representing the most complicated functions. Each job has a nine digit code number which identifies it, with the fourth digit representing the involvement with data,
the fifth digit representing the involvement with people, and the sixth digit representing the involvement with things. Question number one on the Virginia VIEW Career Search Worksheet relates to this idea.

Questions two through seven on the Virginia VIEW Career Search correspond closely to the six worker trait components of the Dictionary of Occupational Titles. This theory of worker traits was also validated through the process of job task analysis. Question two on the Career Search labeled "Areas of Work" is compatible with area three, interests. Interests in this case is defined as a preference for one type of work activity with a rejection of the opposite type of activity. Questions three and four of the Career Search relate directly to worker trait area five, physical demand. The former question relates to a person's ability to lift and/or carry light, medium, or heavy amounts, while the latter makes reference to other physical activities such as climbing, balancing, stooping, kneeling, reaching, handling, talking, hearing, and seeing. Career Search question five deals with only one aspect listed under worker trait area six, working conditions. The physical surroundings not only includes whether a job is inside, outside, or both, but also involves temperature, humidity, noise, vibrations, fumes, odors, and other occupational hazards. Worker trait component one dealing with the amount of training time needed to learn and perform the job duties parallels somewhat the desired
education level explored in question six. The table explaining the reasoning, mathematical, and language development level has been left out entirely with the Virginia VIEW Career Search. Question seven of the Search dealing with worker temperaments and area four of the worker traits, temperaments, come very close to matching each other. The reading level on Virginia VIEW has been lowered in order for a majority of users to benefit from its use. This plus the simplification of the Dictionary of Occupational Titles' Data, People, Things and Worker Trait Groups constructs has made the Virginia VIEW Career Search usable by almost everyone.

The Virginia VIEW Career Search is grounded in the trait and factor approach to career counseling. Occupational information is used by trait and factor theorists in aiding their clients to confirm, reject, or resolve career decision making choices. Trait and factor theorists also use occupational information as a motivational tool for additional career planning activities. Proponents of the trait and factor theory have included Frank Parsons, D.G. Patterson, E.G. Williamson, and Lofquist and Dawis. They believe the better the match between personal characteristics and job requirements, the better the chance for job satisfaction. Empirical research on the trait and factor approach has continued from World War I and World War II through today. Brown (1985) states that while trait and factor theory
explains only part of the variables of career choice, no other theory has been developed to replace it.

CAGS and DISCOVER

Harris-Bowlsbey (1986) has stated that a distinction needs to be made between the computer-assisted information system and computer-assisted guidance system and what each can contribute to the profession. In essence, how does a guidance and information system differ from an information system? Guidance and information systems generally assist the student directly, on-line, with self-assessment exercises, with the teaching of career development and decision making concepts, with national occupational and educational information, and then stores the students' record of activities completed (Harris-Bowlsbey, 1986). The development of guidance and information systems parallels that of information systems in many respects.

The 1960s saw the embryonic development of five different guidance and information systems. Tiedeman's attempt at computer-assisted guidance services, the Information Systems for Vocational Decisions (ISVD), was funded by the U.S. Office of Education and was done at Harvard University. Donald Super's work with computer-based guidance, on the other hand, was supported financially by IBM. His system was called Education and Career Exploration System (ECES). The third
guidance system which was done by a career guidance theorist was the System of Interactive Guidance and Information (SIGI). Martin Katz of the Educational Testing Service also began his work in 1966 (Sampson et al., 1984). His system is the only one of these three systems which is still operational today.

The guidance field practitioners were also at work during the same time frame of the 1960s and early 1970s with guidance and information systems. The work on Total Guidance Information and Support System (TGISS) with Tom Bartlett and the Computer-Assisted Career Exploration (CACE) with Joseph Impelleteri ended when the funding ceased (Garis & Harris-Bowlsbey, 1985). In the next paragraph of this chapter the metamorphosis of Jo Ann Harris' Computerized Vocational Information System (CVIS), an information system, into the DISCOVER system, a guidance and information system, will be discussed.

DISCOVER's metamorphosis took place between 1972 and 1976 under the direction of Jo Ann Harris-Bowlsbey. This early program was funded through the Illinois Division of Vocational and Technical Education, the U.S. Office of Education, and the IBM Corporation (Rayman et al., 1978). The earlier version had 21 modules with today's DISCOVER for Colleges and Adults containing 9 modules. Four basic theoretical constructs underpinned the new 4.02 and 4.10 versions of DISCOVER for Colleges and Adults. Module 2, the world-of-work map, is built on the work of Dale Prediger at American College Testing
(ACT, 1987). This occupational classification system of six Job Clusters and 23 Job Families links career information on 458 occupations with self-knowledge learned from the Unisex Edition of the ACT Interests Inventory of Module 3. The UNIACT Interest Inventory is based on John Holland's theory of careers. The six personality types and six work environments of Holland are thus linked back to the occupational information of Prediger. It is this link of individual interest and occupational information that provides the theoretical bonding for DISCOVER modules 1-7 (ACT, 1987).

Module 8, Planning Your Career, is built on Donald Super's constructs of the Career Rainbow. This introduces the student to the twin concepts of roles and life stages. When the stages of life change, the roles in life often change also. Secondly, when persons change the priority of their roles by changing the amount of time spent in each role, this changes their whole life. This is designed to help the student plan future career-life changes.

Module 9, Making Transitions, is built on the theoretical basis of Schlossberg's Transition Theory. She looked at the mini-stages within Super's maxi-stages and stated that change or transition in life was normal. Schlossberg and Bowlsbey (cited in ACT, 1987) developed an on-line "thermometer" for helping measure readiness for change. Support then is provided to the student with the teaching of coping skills to
help the individual make the transition successfully with a minimum amount of stress.

Instruments

The validity of the CDI has been correlated with the affective and cognitive scales of the CMI for their relationship with career development measures. The CDI and CMI cognitive scales correlated higher with each other than they did with their own affective scales. The CDI was also studied with non-career development measures on both the Iowa Tests of Educational Development (ITED) and the Differential Aptitude Test (DAT). There was, in these cases, a higher correlation with the CDI's cognitive scales than with the affective scales. The case for construct validity of the CDI scales, both the affective and cognitive, as it appears in the Technical Manual (Thompson & Lindeman, 1984) is sound.

Punch and Sheridan (1985) completed a four-test fit of the Australian version of the CDI and found that CDI had sound psychometric properties but recommended a few changes. Their sample involved 680 students divided into four groups: lower and upper secondary male and female students. In using the Item-Trait Interaction Test and the Standardized Residual Test, they found the one attitudinal dimension resulting from the combining of Career Planning and Career Exploration into Career Development-Attitudes was not unidimensional and should
be treated as two separate constructs. This study will keep them separate. They also recommended the deleting of several test items because of reverse grade or sex biases. A few other items were deleted because the threshold of responses like a good deal and a great deal were not consistent. The cognitive part of Decision Making and World-of-Work was found to be unidimensional. They concluded the CDI measured three separate factors: Career Planning, Career Exploration, and Information and Decision Making.

Other reviewers like Jo-Ida C. Hansen (1985) have not been as kind in their reviews of the CDI. Hansen, writing at the time when the Career Development Inventory, Volume 2: Technical Manual should have already been published, found that a lack of psychometric data in the User's Manual prevented her from recommending its use. In a short postscript after receiving an in-press copy of the Technical Manual, Hansen found some of the subtest validity scores were so low that she warned against their use. She also concluded that correlations scores between the CDI scales and the Differential Aptitude Test Battery supported the two factor model, attitudinal and cognitive. The Australian review stated that there were three different factors and not two.

Hilton (1982) commented in his review about the long (thirty years) developmental nature of CDI. The norming group for the College and University Form (CU) used in this study involved approximately 4,000 students from ten different
institutions including community colleges. Hilton (1982) stated one of the major problems of the validation process is the choosing of the criterion by which to measure. In this particular case where career maturity must be operationally defined, the opinion of expert judges must decide from a number of studies if the subtests are measuring what they say they measure. Hilton believed the CDI is satisfactory for the three uses suggested by the authors. He also stated that the subtests could be subjected to students faking their answers.

Pinkney (1985) like Hilton (1982) believed CDI is easily faked by students, especially the Career Planning and Career Exploration subtests. He also questions the need for machine scoring when immediate feedback would be more meaningful for students taking the test. The opening scenario of this study also pointed out the diagnostic advantages of taking and scoring the CDI as part of a CAGS package. The reviewer also expresses concerns over local norms and the reading level of part two of the test, Knowledge of Preferred Occupational Group. He notes that the test authors themselves state that the reading level may be too difficult for tenth graders or lower grade level students trying to complete the test.

The Career Decision Scale (Osipow, 1987) was chosen because it was one test which could be used to measure both the construct of indecision and the construct of factor structure which may be used for diagnoses in career planning intervention programs. Harmon (1985) reported a six-week
test-retest reliability of .70 which was good for this five-week evaluation study. Innumerable validity studies have been done correlating the CDS with other instruments, with other personality variables, and with demographic variables. As predicted, the CDS was inversely correlated with the Assessment of Career Decision Making (ACDM). A positive correlation was also found between the CDS indecision scale and the locus of control (Osipow, 1987). Herman (1985) said that the CDS seems to be valid for both its use with individual counseling and with program evaluations.

Despite the shortness of the history of the CDS when compared with the CDI, research using the instrument has been very comprehensive and extensive during the last decade. In another review of the CDS, Allis (1984) reported that the content validity was based upon the author's own interviewing experience with clients. She also stated the two main criticisms of the CDS were the multidimensional nature of several inventory items and their length.

Rogers and Westbrook (1983) conducted a validity study of the CDS. They first measured the test's ability to differentiate one construct from other constructs. Secondly, they measured the test's ability to converge on the construct(s) with which it should correlate. In the first test there was a low correlation with the Scholastic Aptitude Test, as it should be, which measures mental ability. In the second test there was a high correlation with the Holland and
Holland Scale (HHS). The HHS is also supposed to measure career indecision.

The factor structure of the CDS, the ability of the CDS to show that career indecision is a multidimensional phenomenon, has been replicated a number of times since the original research of Osipow, Carney, and Barak in 1976. The results of the replications until Shemizu, Vondracek, Schulenburg, and Hostetler (1988) were inconclusive. They stated that the inconsistent findings could be explained in the seven factor studies leading up to theirs by two things: a diversity in factoring techniques, and the Varimax, right angle, rotational procedures used in all previous studies. Shemizu et al. (1988) used a Promax (oblique) solution to recalculate the results from previous studies and found the Promax-based coefficients to be less complex and more similar in factors. With the key being the invariance of the item or factor relationship across groups, it was necessary that the four factors be permitted to be intercorrelated. The four factors provided the best fit according to the analysis of their results. The four factors related to career indecision were: a feeling of confusion usually related to a lack of experience or information; a feeling of need or support for a decision which had been made; a feeling of frustration when confronted by two or more equally good choices; and a feeling of conflict within, which permits or delays decision making processes. Now, with a stronger confirmation of the four
independent subscales of the CDS, more possibilities are open for further research on and with the CDS, including the possible use with a CAGS. As Newman, Faqua, and Seaworth (1989) point out in their latest study, current knowledge of career indecision does not permit the development of a comprehensive diagnostic system. Continued studies with the CDS may lead to such a system in the near future.

The Ethical Use of CIDS and CAGS

On every front in our society, the new uses of technology have outpaced the written ethical considerations for their proper use. This evaluation study started with Snipes and McDaniels (1981), Cairo (1983), Sampson and Pyle (1983), and Herr and Best (1984) stating that new counseling intervention tools such as CIDS and CAGS must be viewed first in ethical terms if the profession is going to control the technology and not the technology control the profession. One of the first steps which should be completed is an evaluation study. Such a study may not only give clues to decision makers as to what is happening, but also as to how and why it is happening. The evaluation study should have been completed years ago with plans now to evaluate a videodisc career information delivery system (VCIDS) underway (Hansen, 1986).

The 1981 Ethical Standards of the American Personnel and Guidance Association made no specific guidelines for the use
of computers and computerized systems in counseling. In their absence Talbutt (1988) used the 1981 Ethical Standards to solve hypothetical problems confronting counselors. Common sense and a logical extension of 1981 Ethical Standards helped her to answer questions of computers and psychodiagnosis, personal data, and confidentiality of records. The third revision of the Ethical Standards of the American Association for Counseling and Development (1988) will help professionals in the field to answer some of their questions and decide upon suitable plans of action. As with the 1981 Standards, some logical extension of the new ethical standards may still be necessary.

There are five articles under Section B, Counseling Relationship, which deal directly with computers and/or computer applications (Allen, Sampson, & Herlihy, 1988). Article B.6 states that all computer data must be appropriate for the related services provided by the computer. Similarly Article B.9 emphasizes the advisement of clients as to the limitations of computerized reports. Article B.16 sums up some other professional responsibilities to the student such as: (a) screening for computer fit, (b) matching clients' needs with computer application, (c) explaining of hardware operations and software application, and (d) following through after the computer application. Based upon this, Johnston, Buescher, and Heppner (1988) question if any existing system could be advertised as a stand-alone program. The next
section, Article B.19, stresses the counselor's responsibility of providing equal access to the computer application by all groups. Section B.20 is the final section in the 1988 Ethical Standards which has a direct relationship with computer applications related to this study. Here again, the emphasis is on the counselor's responsibility to the client. In brief, this section calls for the counselor to verify the self-help computer application to see if it is truly that, or what kinds of assistance are needed. This section also calls upon the developers to include their qualifications, information on the development process, validation data, and operating procedures in their manual (AACD, 1988). The computer-assisted assessment parts of Section C, Measurement and Evaluation, will become important if additional assessments are added to the CAGS software programs.

**Summary**

In conclusion, the groundwork for an impact evaluation study comparing an information system to a guidance and information system has been laid. NOICC (as cited in Shealy, 1982), ACSCI (1981), AACD (1987), and CAS (1986) have set the professional standards; while Shealy (1982), Block and Kinnison (1986), and Sampson et al. (1986) have completed evaluation models; and Garis (1982), Grant (1985), Marin (1984), and Niles and Garis (1988) have conducted impact
studies which might be replicated. Some comparison studies have been similar to Niles and Garis (1988) in that they have compared one guidance and information system like SIGI to another guidance and information system like DISCOVER. Other studies have evaluated the impact of different delivery modes of the same CAGS upon clients (Garis, 1982). This study evaluated the career intervention outcomes of one-to-one counseling with Virginia VIEW to those of one-to-one counseling and DISCOVER. User satisfaction and economic efficiency of the two systems were also compared.
CHAPTER III
METHODOLOGY

Overview

The purpose of this chapter is to identify the evaluation procedures for a partial implementation of "A Guide for Planning Career Information Delivery Systems Evaluations by Application of the CIPP Model with Program Components Evaluated by Multiple Data Sources" (Shealy, 1982) (Figure 2). The current effects of the following five program components upon the users of Virginia VIEW and DISCOVER for College and Adult Learners were evaluated: information development; information delivery; user services; economic efficiency; and user impact. These five were combined and resulted in the following three components: user impact, user satisfaction, and economic efficiency. The evaluation design matrix concentrated on the final P, the product of Stufflebeam's CIPP model as presented in Figure 3.

Description of the Population

One hundred students, prospective students, and citizens of the service region of New River Community College who sought career development counseling volunteered to participate as subjects for this study. The intake-screening
interviews for this study began on January 4, 1988, and extended through October 17, 1988, and included approximately 400 people. The screening began by asking the clients to indicate what brought them to counseling. Those students requesting occupational and/or educational information were assisted with their requests. Students who expressed a request or who exhibited a need for social, personal, or academic counseling were assisted with their request or need. If there was a perceived or diagnosed reading problem, such as students with low grade point averages, students with learning disabilities, and students with hearing impairments, they were directed towards the adaptive college career planning programs which included a career planning folder as well as materials from the Career and Learning Resources Centers. This career-intervention method was most appropriate for these students' needs and abilities as it has greater flexibility.

The students who were not excluded after this initial screening were the subjects for this evaluation study. The five-week evaluation program was explained to them in detail. They were told by letter and verbally that if they volunteered for the study, they would be requested to do the following as they used Virginia VIEW, DISCOVER, or both in their career planning program for the next five weeks:
1. The program would officially start for them after completing the Career Development Inventory (CDI), the Career Decision Scale (CDS), and the demographic survey.

2. The program involved using only the specified career information delivery system, but they could and were encouraged to use all other career resource materials available to them in the Career and Learning Resources Centers and to complete occupational interviews.

3. The program involved keeping a weekly log of these activities.

4. The program involved the retaking of the CDI and the CDS, and the completion of a questionnaire during the sixth week of the program regardless of where they were in the career planning process.

The students agreeing to participate in the study were randomly assigned to one of three groups: Virginia VIEW only; DISCOVER for Adult Learners only; and Virginia VIEW/DISCOVER.

The Wait-List control group assignment was done by a slightly different method from the above groups. This group of subjects again was comprised of students who had requested career counseling services and who had the time and academic ability to pursue it. Individuals in the control group were assigned to those times during the academic year that they could go five weeks without career planning services if they so desired and then still have time to complete a career planning program before the next registration period began.
They were told that they could not use Virginia VIEW or DISCOVER until they were retested. They were, however, encouraged like the other students to use the other career planning resources which were available at the college and to do occupational interviewing. Twenty-five students were assigned to each of the four groups.

**Virginia VIEW Group**

Virginia VIEW is a statewide career information delivery system (CIDS) which is based upon the Dictionary of Occupation Titles job classification system of data, people, and things. The aspects which this research project has dealt with are the micro-computer Virginia VIEW Career Search and microfiche career information delivery system. It has not attempted to evaluate: the Career Information Hotline, a toll-free hotline which has helped more than 25,000 since 1980; the PREVIEWS, a shorter version of VIEW written on a lower grade level; *The Career Hunt*, an annual tabloid of occupational and educational information which was begun in 1988; the FORUM, a newsletter for professionals using VIEW; or the Interactive VIEW which went on-line at NRCC in January of 1989 after this study was completed.

Subjects assigned to the Virginia VIEW group were instructed in its use in the following manner:

1. The students were seated in front of the computer with the counselor seated to the side.
2. The student at the counselor's direction then entered the first two items from their career search worksheet.

3. The counselor then proceeded to watch and to assist whenever it was necessary until the student finished their first search.

4. The counselor and the student then exchanged seats, with the student now seated in front of the microfiche reader.

5. The client at the counselor's direction finds a fiche of interest and places it on the reader and looks briefly at each page while the counselor describes what is there.

6. The student was then asked to find a second occupation on a different fiche.

7. The counselor then explained the other aspects of the Microcomputer/Microfiche Index booklet and asked if there were any questions.

Students were again told that assistance was available to them at anytime during the five-week program. They could ask for such assistance before, during, or at the end of a session on Virginia VIEW. No structured program for using the search or microfiche was imposed upon the students. They were told they could do as many career searches as they would like and not to worry about the amount of paper they used. They were encouraged to look up all former occupations which they had held and perhaps 10 or more new occupations of interest. A legal pad for notes was provided for the student and they were shown that a good way to classify their information was
into three groups: "+" for the positive aspects of an occupation; "-" for the negative aspects of an occupation; and "?" for things about which they needed to ask a question later. They were encouraged to take the amount of notes which they felt was needed for them in making future decisions. Students had two systems of Virginia VIEW to use in the Career Center and an additional system with a reader-printer to use in the Learning Resources Center.

DISCOVER Group

DISCOVER for College and Adult Learners is a computer-assisted career guidance and information delivery system (CAGS) consisting of nine modules to assist the user with career decision making and planning, and a user guide or handbook. The modules are as follows:

Module 1 - Beginning the Career Journey;
Module 2 - Learning About the World of Work;
Module 3 - Learning About Yourself;
Module 4 - Finding Occupations;
Module 5 - Learning About Occupations;
Module 6 - Making Educational Choices;
Module 7 - Planning Your Next Steps;
Module 8 - Planning Your Career;
Module 9 - Making Transitions.

DISCOVER also has an "Information Only Approach" where the user can:
1. Search for occupations by job characteristics;
2. Search for occupations by programs of study;
3. Information about occupation;
4. Search for trade and technical schools;
5. Search for two-year colleges;
6. Search for four-year colleges;
7. Search for graduate schools;
8. Search for external degree programs;
9. Search for military programs;
10. Information about trade and technical schools;
11. Information about two-year colleges;
12. Information about four-year colleges;
13. Information about graduate schools;
14. Information about external degree programs;
15. Information about military programs;
16. Information about financial aid;
17. Information about getting a job;
18. Information about non-traditional ways to earn college credit.

Subjects used the information only approach or they used the guidance and information approach, or they switched back and forth between approaches.

Students assigned to the DISCOVER system were instructed in its use in the following manner:

1. The subject was seated in front of the computer with the counselor seated to one side. Information concerning the
previous use of a typewriter or a computer was exchanged with the student in an attempt to put the student at ease just as was done with the other groups.

2. The counselor proceeded to direct the student with the procedure to "log on" but provided only the information which appeared to be needed or that was requested.

3. A brief explanation of each module was given.

4. The counselor then proceeded to direct the student with the procedures to "log off."

5. The student was then directed to the Information Only Approach.

6. Subjects were then told that they could use and re-use the "Guidance and Information Approach" or the "Information Only Approach" as many times as they desired during the next five weeks.

They were told that appointments should be scheduled whenever possible with the secretary as walk-ins had to wait if the counselor had scheduled appointments because the college had only one DISCOVER system. Subjects were also advised again that counselor's assistance was available before, during, and after using DISCOVER if they requested it. Finally the students were assisted in returning to the starting point of choice: Guidance and Information Approach or Information Only Approach.

This study has evaluated the impact of DISCOVER for Colleges and Adults (v. 4.02 and 4.10) on New River Community
College student career planning and career decision making. The evaluation covered all 9 modules of the Guidance and Information Approach and Information Only Approach. It evaluated these forms of DISCOVER using the model 1 method, one-to-one counseling and DISCOVER. This model is considered to be both the most effective and highest per-user cost (ACT, 1987). No attempt was made to evaluate model 2 - group counseling and DISCOVER, model 3 - curriculum and DISCOVER, or model 4 - DISCOVER alone. There was no attempt made to evaluate the other versions of DISCOVER used in other settings.

**Virginia VIEW and DISCOVER Group**

Students assigned to the group using both career-intervention methods received the same demonstrations as described for the separate groups above. At the end of their demonstration sessions, they were given their choice of systems on which to start: Virginia VIEW or DISCOVER for College and Adult Learners. Students were encouraged to use both systems and to make mental or written comparison notes.

**Wait-List Control Group**

Subjects assigned to this group were cautioned again after the pretesting that they were to wait for five weeks and the post-testing before using the Virginia VIEW or DISCOVER systems. They were informed that their demonstration on how
to use the hardware and software would come at that time. They were encouraged to use other materials found in the Career Resource Center and the Learning Resource Center, and to do occupational interviews. No hard copies of materials or suggested list of materials were given to the students of this group.

Research Design and Questions

The evaluation design was based upon Shealy's model (Figure 2). Only 5 out of 36 cells were evaluated in this study. The user impact x user x current effect cell was used in answering research question number one dealing with theoretical effectiveness of Virginia VIEW and DISCOVER. The information development x user x current effect, information delivery x user x current effect, and user services x user x current effect cells was used in answering research question number two dealing with user acceptability of DISCOVER and VIEW. The economic efficiency x user x current effect cell was used in answering research question number three dealing with economics of time and money of Virginia VIEW and DISCOVER as both career information delivery and career intervention tools.
Research Question 1

In a test of the effectiveness of interventions in the assisting of community college students in their career decision making and career development, did the use of DISCOVER for College and Adult Learners produce significantly greater gain scores on the World of Work, Knowledge of Preferred Occupations, Career Planning, and Career Exploration subtests of the Career Development Inventory, and on the Certainty and Indecision subscales of the Career Decision Scale than did the use of Virginia VIEW or a combination of DISCOVER and Virginia VIEW?

NOICC (cited in Shealy, 1982) guidelines specified the following criteria be used for evaluating program component 6, user impact of the systems on students:

1) knowledge of occupations;
2) awareness of personally relevant occupations;
3) knowledge of occupational information and sources including people and institutions;
4) knowledge of other sources of career information;
5) user entering and exiting behavior;
6) and uncontrolled factors which influence user.

Outcomes 1, 3, and 4 above were judged by the World-of-Work Information (WW) score of the CDI as it measures changes in the cognitive area of career development (Table 2). Outcome 2, awareness of a personally relevant occupation, was decided
Table 2

Research Question 1/Effectiveness

<table>
<thead>
<tr>
<th>DELINEATING</th>
<th>NOICC Criteria - Program Component 6 - User impact:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clarifying the questions and</td>
<td>1. Knowledge of occupations</td>
</tr>
<tr>
<td>evaluation criteria</td>
<td>3. Knowledge of occupational information and sources including people and institutions</td>
</tr>
</tbody>
</table>

Question 1A

(1) Do students gain cognitive knowledge of career development as the result of using a CIDS and/or CAGS?

NOICC Criteria - Program Components - User impact:

2. Awareness of personally relevant occupations (cited in Shealy, 1982)

Question

(2) Do students gain cognitive knowledge about the occupation of choice as the result of using a CIDS and/or CAGS?
Table 2, continued

Research Question 1/Effectiveness

<table>
<thead>
<tr>
<th>OBTAINING</th>
<th>Data Collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classifying how the data will be collected, organized and analyzed</td>
<td>1. World of Work subtest of the CDI will be used to collect pre-test and post-test data for question 1.</td>
</tr>
<tr>
<td></td>
<td>2. Questions 1 and 2 from the Career Planning Log on what students learned about themselves and the world of work will be used only for secondary analysis.</td>
</tr>
<tr>
<td></td>
<td>3. Knowledge of Preferred Occupation subtest of the CDI will be used to collect pre-test and post-test data for question 2.</td>
</tr>
</tbody>
</table>

**Data Organization**

Data will be organized according to groups:
- A) Virginia VIEW group
- B) Virginia VIEW and DISCOVER group
- C) Control group
- D) DISCOVER group
Table 2, continued

Research Question 1/Effectiveness

Data Analysis

Analysis of variance will be used to test the equality of group means for all pre-tests.

Analysis of covariance will be used to compare post-test scores of the four groups.

Analysis of the answers to questions 1 and 2 from the Career Planning Log for the majority opinion and/or direction.
### Research Question 1/Effectiveness

<table>
<thead>
<tr>
<th>APPLYING</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Decision making</td>
</tr>
<tr>
<td>2. Clarifying what reports having what contents will be provided to what audiences through what communication channels.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Decision Making</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The CIDS and/or CAGS will be considered to be effective in the cognitive area of career development if the F value is statistically significant on the World of Work and Knowledge of Preferred Occupation scales of the CDI.</td>
</tr>
<tr>
<td>2. The CIDS and/or CAGS will be considered helpful in the cognitive area of career development if the majority of answers to question 1 and 2 are positive in nature. This will be secondary analysis if nothing conclusive results from number 1 above.</td>
</tr>
<tr>
<td>3. The CIDS and/or CAGS will be considered not helpful in the cognitive area of career development if the majority of answers to question 1 and 2 are negative in nature in the secondary analysis.</td>
</tr>
</tbody>
</table>

### Reports

1. NRCC
2. VOICC
3. NOICC
4. DISCOVER
Table 2, continued

Research Question 1/Effectiveness

<table>
<thead>
<tr>
<th>DELINEATING</th>
<th>NOICC Criteria - Program Components - User impact:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clarifying the questions and evaluation criteria.</td>
<td>5. User entering and exiting behavior. Several instrumental behaviors could have been chosen such as career information-seeking, but the behavior of career decision making was chosen as it can be measured upon entering and leaving the career planning process. (cited in Shealy, 1982)</td>
</tr>
</tbody>
</table>

Question 1

(1) Are students more certain about their occupational choice and college major selection when they leave the career planning process after using a CIDS and/or CAGS for five weeks as measured by the CDS?

(2) Are students less indecisive about their future when they leave the career planning process after using a CIDS and/or CAGS for five weeks as measured by the CDS?
<table>
<thead>
<tr>
<th>Obtaining</th>
<th>Data Collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clarifying how the data will be collected, organized, and analyzed.</td>
<td>Career Decision Scale</td>
</tr>
<tr>
<td></td>
<td>Career Certainty - questions 1 and 2</td>
</tr>
<tr>
<td></td>
<td>Career Indecision - questions 3 - 18</td>
</tr>
<tr>
<td>Questions 5 and 6 from the Career Planning Log on what they still have questions about and whether they are more or less certain this week than last week will be used for a secondary analysis.</td>
<td></td>
</tr>
</tbody>
</table>

Data Organization

Data will be organized according to groups.

- A) Virginia VIEW
- B) Both Virginia VIEW and DISCOVER
- C) Control group
- D) DISCOVER group

Data Analysis

Analysis of variance will be used to test the equality of group means for all pre-tests.

Analysis of covariance will be used to compare post-test scores of the four groups.

Questions 5 and 6 from the Career Planning Log for the majority opinion and/or direction for the secondary analysis.
Research Question 1/Effectiveness

<table>
<thead>
<tr>
<th>APPLYING</th>
<th>Decision Making</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decision making and reports</td>
<td>1. Virginia VIEW and/or DISCOVER will be considered to be theoretically effective in the area of career decision making behavior if the F value is statistically significant on both Certainty and Indecisive scales of the CDS.</td>
</tr>
<tr>
<td></td>
<td>2. Virginia VIEW and/or DISCOVER will be considered helpful in the area of career decision making behavior if the majority of answers to questions 5 and 6 are in a positive direction on the Career Planning Log. This will be secondary decision if nothing conclusive results from number 1 above.</td>
</tr>
<tr>
<td></td>
<td>3. Virginia VIEW and/or DISCOVER will be considered not helpful in the area of career decision making behavior if the majority of the answers to questions 5 and 6 are negative in the secondary analysis.</td>
</tr>
<tr>
<td>Reports</td>
<td>1. NRCC</td>
</tr>
<tr>
<td></td>
<td>2. VOICC</td>
</tr>
<tr>
<td></td>
<td>3. NOICC</td>
</tr>
<tr>
<td></td>
<td>4. DISCOVER</td>
</tr>
</tbody>
</table>
Table 2, continued

Research Question 1/Effectiveness

<table>
<thead>
<tr>
<th>DELINEATING</th>
<th>NOICC Criteria - Program Components - User impact:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clarifying the questions and evaluation criteria.</td>
<td>None unless outcome 6, dealing with uncontrolled factors which impact users of CIDS, is considered to be affective.</td>
</tr>
<tr>
<td></td>
<td>For the purpose of this study, the affective area will be number 7.</td>
</tr>
<tr>
<td></td>
<td>(cited in Shealy, 1982)</td>
</tr>
</tbody>
</table>

Question 1

Do students gain/grow attitudinally in the area of career planning and career exploration as a result of using CIDS and/or CAGS?

<table>
<thead>
<tr>
<th>OBTAINING</th>
<th>Data Collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clarifying how the data will be collected, organized and analyzed.</td>
<td>1. Career Planning (CP) and Career Exploration (CE) subtests of the CDI will be used to collect pre-test and post-test affective data.</td>
</tr>
<tr>
<td></td>
<td>2. Questions 3 and 4 from the Career Planning Log on what the students think about what they learned about themselves and the world of work will be used as a secondary analysis.</td>
</tr>
</tbody>
</table>
Data Organization

Data will be organized according to groups:
A) Virginia VIEW
B) Both Virginia VIEW and DISCOVER
C) Control
D) DISCOVER

Data Analysis

Analysis of variance will be used to test the equality of group means for all pre-tests.

Analysis of covariance will be used to compare post-test scores of the four groups.

Analysis of the answers to questions 3 and 4 from the Career Planning Log will be used for secondary analysis.

Decision Making

1. Decision making
   - Virginia VIEW and/or DISCOVER will be considered to be theoretically effective in the affective area of career planning and career exploration if the F value is statistically significant on both the CP and CE scores of the CDI.

2. Reporting

APPLYING
Table 2, continued

Research Question 1/Effectiveness

2. Virginia VIEW and/or DISCOVER will be considered helpful in the affective area of career development if the majority of answers to questions 3 and 4 of the Career Planning Log are in the positive direction. There will only be a secondary decision if nothing conclusive results from number 1 above.

3. Virginia VIEW and/or DISCOVER will be considered not helpful in the affective area of career development if the majority of answers to questions 3 and 4 are in the negative direction. Secondary analysis will only be used if nothing conclusive results from number 1 above.

Reports

1. NRCC
2. VOICC
3. NOICC
4. DISCOVER
by the Knowledge of Preferred Occupations (PO) score of the CDI as it measures changes which should result from the in-depth exploration of an occupation (Table 2). Questions 1 and 2 from the students' Career Planning Log were referenced in evaluating outcomes 1, 2, 3, and 4 as a secondary analysis.

The data needed to evaluate component 6, user impact, is only partially prescribed by the NOICC guidelines and nothing was added or suggested by Shealy. Neither NOICC or Shealy suggest any instrument which should or could be used in completing the evaluation. The criteria of knowledge of occupations information sources including people, institutions, and other sources of career information (cited in Shealy, 1982) is simple and straightforward. This is cognitive data which could be provided by the World-of-Work Information (WW) part of the CDI, College and University Form (Super et al., 1981). Cognitive growth is relevant to the broad objectives for using both the CIDS and CAGS. The subtest, Knowledge of the Preferred Occupation Group (PO), could measure the topics of knowledge of occupations and awareness of personally relevant occupations (Thompson, Lindeman, Super, Jordaan, & Myers, 1981).

The second area for evaluation, the behavior domain, is not spelled out for the would-be evaluator by NOICC (cited in Shealy, 1982). Shealy (1982) only presents what NOICC has done and makes no suggestions or interpretations. Sampson et al. (1984) give only one example of behavior to be measured.
They suggest the measurement of change in vocational information seeking behavior after using a CAGS. Oliver and Spokane (1988) reported attempts of measuring other instrumental behaviors and effective role functioning behaviors. The behavior chosen for evaluation which appears to be the most relevant to the objectives for using a CIDS or CAGS was career decision making. The entering and exiting behaviors of career certainty and career indecision seem to fit the NOICC guidelines and make for a triangulation of the affective, cognitive and behavioral domains.

Despite its brevity of only 19 questions, the CDS is a statistically sound instrument for the career counselor to use with pre- and post-test interviewing activities and with career intervention programs. Items 1 and 2 provided direction and strength of direction to the counselor concerning the student's vocational and educational choices. Items 3 through 18 gave the counselor suggestions as to the source or sources of the indecision problem, or if there is one. The two subscales were scored on a four-point Likert scale and were negatively correlated (Osipow, 1987). Question number 19 was open-ended and gave the respondents a chance to discuss their thoughts if they had not been covered by the first 18 items. Questions 5 and 6 from the students' Career Planning Log were used to look at outcome 5 as a secondary analysis.

Outcome 6, dealing with uncontrolled factors which impact users of CIDS, is not specified by the NOICC guidelines as to
what these factors are or how they should be measured. For the purpose of this evaluation outcome 6 was not studied, but outcome 7, career planning attitudes from the affective domain, was added to the cognitive and behavioral domains discussed earlier. This may be an omission from the NOICC guidelines for evaluating program component 6, user impact. The Career Planning (CP) and Career Exploration (CE) scores on the CDI were used to measure changes in the affective domain during the five-week study (Table 2). Data from questions 3 and 4 of the students' Career Planning Log were used in evaluating the affective domain for a second analysis.

Research Question 2

In a test of user acceptability with community college students, did DISCOVER for College and Adult Learners rate higher than Virginia VIEW as a career-intervention tool when measured by a user questionnaire based upon NOICC guidelines?

The second evaluation question cuts across three program component areas: information development, information delivery, and user service. As with research question 1, they were evaluated only in terms of current effect on the user. Each program component was examined separately before the combined results of all three component areas were examined in answering question 2. Questions 1-18 of the user
questionnaire (Appendix A) dealt with the information development, while questions 19-24 dealt with information delivery, and questions 25-33 concerned delivery of user services. Each question addressed a topic which was suggested for evaluation by NOICC. Table 3 displays the NOICC criteria from the component area with the corresponding questionnaire results. A four-point Likert scale was used with: \textit{A} - agree; \textit{TA} - tend to agree; \textit{TD} - tend to disagree; \textit{D} - disagree; and a non-scoring answer \textit{NA} - not applicable. Pertinent questions relevant to the user were asked. Questions on Virginia VIEW and DISCOVER were written in the same direction on the same number question. In other words, they were identical in wording with the exception of the name of the delivery system or its parts used.

\textbf{Research Question 3}

In a test of the efficiency of time and money use at the community college level, did DISCOVER for College and Adult Learners use more time and the institution's money than Virginia VIEW or a combination of Virginia VIEW and DISCOVER as measured by the Virginia VIEW/DISCOVER User Log? Time and money efficiency were used to examine Virginia VIEW and DISCOVER separately and in combination as career information delivery and career intervention tools.
Table 3

Research Question 2/User Satisfaction

<table>
<thead>
<tr>
<th>Program Components - Area 2 Information Development</th>
<th>VIEW</th>
<th>DISCOVER</th>
</tr>
</thead>
<tbody>
<tr>
<td>DELINEATING</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 - Occupations to be covered (#)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 - Kinds (types) of occupations covered</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 - Descriptive information about occupations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 - Conditions and requirements of occupation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 - Economic information about occupation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 - Education and training information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 - Employment outlook</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 - Length of information presentation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 - Detail of information presentation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 - Sources of information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 - Level of geographic specificity</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 3, continued

Research Question 2/User Satisfaction

<table>
<thead>
<tr>
<th>Program Components - Area 2 Information Development</th>
<th>VIEW</th>
<th>DISCOVER</th>
</tr>
</thead>
<tbody>
<tr>
<td>DELINEATING</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 - Accuracy of information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13 - Currency of information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14 - Attractive format</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 - Appropriate reading level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 - Freedom from sex bias</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17 - Freedom from racial bias</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 - Freedom from social class bias</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost of obtaining and processing information (question not addressed)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procedure to provide feedback to data producers (question not addressed)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 3, continued

#### Research Question 2/User Satisfaction

<table>
<thead>
<tr>
<th>Program Components - Area 3 Information Delivery</th>
<th>VIEW</th>
<th>DISCOVER</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DELINEATING</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19 - Delivery vehicle(s) (i.e., ease of directions for)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 - Accessing strategies (finding of occupation information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21 - Accessing strategies (career search vs. module 3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22 - Accessing strategies (index vs. user manual)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23 - Job placement program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24 - Instructional program</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Topics under #3 not addressed by evaluation:

- Storage capabilities
- Statewide penetration
- Varied media for communication
Table 3, continued

Research Question 2/User Satisfaction

<table>
<thead>
<tr>
<th>Program Components - Area 4 User Services</th>
<th>VIEW</th>
<th>DISCOVER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delineating</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25 - User pre-service training</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26 - User in-service training</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27 - Consultation (i.e., needed more before)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28 - Consultation (i.e., needed more during)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29 - Consultation (i.e., needed more after)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30 - Demonstration with individual counseling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31 - Individual vs. classroom guidance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32 - Individual vs. group counseling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>33 - Individual vs. paraprofessional</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 3, continued

Research Question 2/User Satisfaction

<table>
<thead>
<tr>
<th>Program Components - Area 4</th>
<th>VIEW</th>
<th>DISCOVER</th>
</tr>
</thead>
<tbody>
<tr>
<td>User Services</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delineating</td>
<td>Topics under #4 not addressed by evaluation:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Marketing awareness</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Orientations or limitations</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ongoing contact regarding program modification</td>
<td></td>
</tr>
</tbody>
</table>

(NOICC, 1980, cited in Shealy, 1982)
<table>
<thead>
<tr>
<th>Research Question 2/User Satisfaction</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DELINEATING</strong></td>
<td><strong>NOICC - Program Component - Information Development</strong></td>
</tr>
<tr>
<td><strong>Question 2</strong></td>
<td></td>
</tr>
<tr>
<td>(1) Are community college students who need career intervention satisfied with the information format as it has been presented in Virginia VIEW and/or DISCOVER?</td>
<td></td>
</tr>
<tr>
<td><strong>NOICC - Program Component - Information Delivery</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Question</strong></td>
<td></td>
</tr>
<tr>
<td>(2) Are community college students who need career intervention satisfied with delivery of information by Virginia VIEW and/or DISCOVER?</td>
<td></td>
</tr>
<tr>
<td><strong>NOICC - Program Component - User Services</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Question</strong></td>
<td></td>
</tr>
<tr>
<td>(3) Are students who need career intervention satisfied with user services of Virginia VIEW and DISCOVER at NRCC?</td>
<td></td>
</tr>
</tbody>
</table>
Table 3, continued

Research Question 2/User Satisfaction

<table>
<thead>
<tr>
<th>OBTAINING</th>
<th>Data Collection - Components 2, 3, and 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The User Questionnaire will be used to collect data for research question 2 on user satisfaction.</td>
</tr>
</tbody>
</table>

**Data Organization**

Data will be organized according to groups:

A) Virginia VIEW
B) DISCOVER

**Data Analysis**

The mean for each program component will be analyzed individually before they are combined to answer the research question on user satisfaction. The secondary analysis for each program component will be done, if necessary, with aid of comments following each question.
### APPLYING Decision Making - Components 2, 3, and 4

1. Virginia VIEW and DISCOVER will be considered "satisfactory" in terms of user acceptability if the total mean score for each program component is rated from a 2.5 to a 2.99 on a four-point scale.

2. Virginia VIEW and DISCOVER will be considered "good" in terms of user acceptability if the total mean score for each program component is rated from a 3.00 to a 3.49 on a four-point scale.

3. Virginia VIEW and DISCOVER will be considered "excellent" in terms of user acceptability if the total mean score for each program component is rated from a 3.50 to a 4.00 on a four-point scale.

### Reports

1. NRCC  
2. VOICC  
3. NOICC  
4. DISCOVER  
The third evaluation question dealt with program component 5, Economic Efficiency. NOICC called for a detailed budget itemizing the projected cost of each function. With this evaluation of Virginia VIEW and DISCOVER, only the user site costs as they pertain to information development, information delivery, and user services functions were counted for the period studied during calendar year 1988 and then extended for the entire year. The cost for each system was calculated in the following manner: information development = cost per year for the college to obtain the software; information delivery = cost per year for the college to obtain and maintain the hardware; user service = cost per year for the college to hire professionals and paraprofessionals to assist students in the ethical use of the computer and the system.

The latter cost was calculated in the following manner from the Virginia VIEW/DISCOVER User Log which was maintained during the evaluation. The total time spent on each system was summed. The total number of students using each system was summed. The total time spent by this evaluator with students on each system was also summed from this log. With these totals, both the cost per student use and the cost per student hour of use were described (Table 4) in terms of the economic efficiency of time and money. The differences in the cost per student use and the cost per student hour of use can be explained as follows: The cost per student use is the
Table 4

Research Question 3/Economic Efficiency

<table>
<thead>
<tr>
<th>DELINEATING</th>
<th>NOICC Criteria - Program Component 5 - Economic Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A detailed budget itemizing cost of each function.</td>
</tr>
<tr>
<td></td>
<td>Justification of expenditures and promotion of a cost</td>
</tr>
<tr>
<td></td>
<td>efficient system operation.</td>
</tr>
<tr>
<td></td>
<td>Ongoing review of cost efficient management.</td>
</tr>
<tr>
<td></td>
<td>Plans to become self-supporting as NOICC funds phase out.</td>
</tr>
<tr>
<td></td>
<td>Feasibility for user agencies to afford the system</td>
</tr>
<tr>
<td></td>
<td>financially.</td>
</tr>
<tr>
<td></td>
<td>(cited in Shealy, 1982)</td>
</tr>
</tbody>
</table>

Question 3

In a test of the efficiency of time and money use at the community college level, did DISCOVER for College and Adult Learners use significantly more time and institution's money than Virginia VIEW or a combination of Virginia VIEW and DISCOVER as measured by the Virginia VIEW/DISCOVER User Log? Time and money efficiency were used to examine VIEW and DISCOVER separately and in combination as career information delivery and career intervention tools.
Table 4, continued

Research Question 3/Economic Efficiency

<table>
<thead>
<tr>
<th>OBTAINING</th>
<th>Data Collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>VIEW/DISCOVER User Log. A running record of the use of each system during the length of the study. A record of why and for how long the student used the system. A record of when counselor's intervention was requested and for what reason.</td>
<td></td>
</tr>
</tbody>
</table>

Data Organization

The data is organized by system: Virginia VIEW or DISCOVER. All times are approximate. Information Development is considered the cost of the software to the college. Information Delivery is considered the cost of the hardware to the college. User Services is considered the cost of humanware to the college.
### Table 4, continued

Research Question 3/Economic Efficiency

<table>
<thead>
<tr>
<th>APPLYING</th>
<th>Decision Making</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>A career information delivery tool is efficient if it costs the college less than $3.50 per student use.*</td>
</tr>
<tr>
<td>2.</td>
<td>A career intervention tool is efficient if it costs the college less than $23.50 per hour of student use.**</td>
</tr>
</tbody>
</table>
| 3.       | A secondary analysis, if one and/or two prove to be inconclusive, will be information gathered from the "Recorded Behavior" section of the Counselor/Paraprofessional Observation Log.  

#### Reports

1. NRCC  
2. VOICC  
3. NOICC  
4. DISCOVER  

* DISCOVER alone model estimated per-user cost  
** One-to-one counseling and DISCOVER estimated per-user hour cost
Table 4, continued

Research Question 3/Economic Efficiency

Actual Cost for February 5 - November 22, 1988

<table>
<thead>
<tr>
<th></th>
<th>VIEW</th>
<th>DISCOVER</th>
<th>BOTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Development (Software)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information Delivery (Hardware)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>User Services (Counselor Time)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\[
\text{SW} + \text{HW} + \text{CT} = \text{cost per student use}
\]
\[
\# \text{ students served}
\]

\[
\frac{\text{SW} + \text{HW} + \text{CT}}{\# \text{ of student hours}} = \text{cost per student hour}
\]

\[
\# \text{ of student hours}
\]
actual cost of the system to the college each time a student is shown how to use the system, regardless of how long that student uses the system, while the cost per student hour of use is the actual cost of the system each hour of the day which the system is used. The cost per student use is probably more reflective of the cost of the system for the college to deliver educational and occupational information services. The cost per student hour of use is probably more reflective of the cost of the system for the college to deliver career counseling intervention services. Finally, the results of research questions 1, 2, and 3 were triangulated (Table 5).

**Instruments**

Six different instruments were used to collect career-intervention outcomes for this study: a student Career Planning Log, a Counselor Observation Log, a CIDS/CAGS User Log maintained by the counselor, a 37-question user survey with 6 additional demographic questions, the Career Development Inventory, and the Career Decision Scale. The first four were designed for this study, and the latter have the dual purposes of individual diagnosis and program evaluation.
Table 5

Triangulation of Research Questions 1, 2, and 3

<table>
<thead>
<tr>
<th>DELINEATING</th>
<th>NOICC Criteria - Program Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. User Impact</td>
<td>a. Cognitive development</td>
</tr>
<tr>
<td></td>
<td>b. Affective development</td>
</tr>
<tr>
<td></td>
<td>c. Decision making development</td>
</tr>
<tr>
<td>2. User Satisfaction</td>
<td>a. Information development</td>
</tr>
<tr>
<td></td>
<td>b. Information delivery</td>
</tr>
<tr>
<td></td>
<td>c. User service</td>
</tr>
<tr>
<td>3. Economic Efficiency</td>
<td>a. Career information delivery tool</td>
</tr>
<tr>
<td></td>
<td>b. Career intervention tool</td>
</tr>
</tbody>
</table>

Triangulation of Research Questions 1, 2, and 3

How do Virginia VIEW and/or DISCOVER compare in terms of user impact, user satisfaction, and economic efficiency as done through this evaluation at NRCC?
Table 5, continued

Triangulation of Research Questions 1, 2, and 3

<table>
<thead>
<tr>
<th>OBTAINING</th>
<th>Data Collection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>See Tables 2, 3, and 4.</td>
</tr>
</tbody>
</table>

Data Organization

1. Virginia VIEW only
2. DISCOVER only
3. Virginia VIEW and DISCOVER

Data Analysis

One point will be given to each system evaluated in each program area rated positively. Secondary analysis will be done through the comment section of each research question if necessary.
Table 5, continued

Triangulation of Research Questions 1, 2, and 3

<table>
<thead>
<tr>
<th>APPLYING</th>
<th>Decision Making</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Three points makes the system acceptable for use.</td>
</tr>
<tr>
<td></td>
<td>2. One or two points gives the developers, administrators, and user site staff a warning concerning the use of that system.</td>
</tr>
</tbody>
</table>

Reports

1. NRCC
2. VOICC
3. NOICC
4. DISCOVER
Student Career Planning Log

The Career Planning Log is how the student was asked to record quantitatively the preceding weeks' activities as to the number of visits to the Career Center and/or Learning Resource Center, the hours spent, career resources used, and the career resource contacts made. Information seeking behavior was recorded on the front side. The back side of the sheet asked the student to record qualitative information in three areas: cognitive, affective, and behavioral. Questions 1 and 2 asked the student to record what they learned about themselves and the world of work during the past week. Questions 3 and 4 asked the students to record their thoughts concerning what they learned about themselves and the world of work. Questions 5 and 6 asked the students about their state of certainty and status of indecision. This five-week quantitative/qualitative diary provided some insights as to what was happening to the individual community college student in the area of career decision making and career development. Side 2 results for qualitative information on career decision making and career development were compared to side 1, quantitative effort.

Counselor Observation Log

The Counselor Observation Log was designed to find out more about what the role of the counselor actually is when using a CIDS or CAGS with students. The counselor was asked
to complete this form if assistance was requested by one of the subjects involved in the study. Information concerning the intervention were recorded as follows:

1. On which use of the systems was help requested?
2. Was the assistance requested before, during, or after using the system?
3. What was the kind of assistance requested?
4. How much time was spent by the counselor in helping the student?

It was designed to give more in-depth information than the general information provided on all users on the next instrument.

**CIDS/CAGS Usage Log**

The purpose of the CIDS/CAGS Usage Log was to find out how much time average students (subjects and non-subjects alike) spend on the system, for what purpose(s) they use the system, and how much of the counselor's time was required in helping students use the system. Cost per student use and cost per student hour of use was determined with the aid of this log. The log was maintained from February, 1988, until the end of the study.

**User Questionnaire**

The questionnaire each subject completed had two major components. Part IV, a six-question demographic survey, was
completed by the student at the time of pretesting. It was
designed to provide some answers as to whom was being served
by the community college in the area of career counseling.
Part I, II, and III, a 37-question user opinion poll, was
completed by the student at the time of post-testing. It was
designed to see if the users of Virginia VIEW and DISCOVER
were satisfied with the system and how it was being used at
New River Community College. Its questions coordinated with
the NOICC requirements for evaluating components 2, 3, and 4,
and with answering research question 2.

Career Decision Scale

The Career Decision Scale (Osipow, 1987) was used in this
study, as it has in many others, to evaluate program outcomes.
All questions, with the exception of question 19, were scored
on a Likert scale with a 4 corresponding to Exactly like me
and a 1 corresponding to Not at all like me. A person
entering career counseling could have the behavior described
as undecided, and through the course of career counseling with
the aid of a career intervention tool like a CIDS or CAGS move
on a continuum to a more decided behavior. Questions 1 and
2 on the CDS were designed to measure movement on this
continuum of behavior labeled decidedness or certainty. A
second type of behavior related to career decision making
which is often dysfunctional and delaying in nature is labeled
as being indecisive. Questions 3 through 18 were designed to
measure if the program or intervention lessened or removed the barriers to movement along this continuum to behavior which is more decisive. Question 19 was for those respondents who thought 1-18 did not describe them. It was an open-ended question. These comments were examined and reported in narrative. The average length of time for completing the CDS was 10 to 15 minutes, and it was scored easily by hand.

Career Development Inventory

The Career Development Inventory (Super et al., 1981) was developed like the CDS to be used in program evaluation as well as individual case studies. The CDI was chosen for this study to measure the impact of CIDS and CAGS upon both the affective and cognitive areas of career planning and development. The CDI measures the changes suggested by NOICC in the evaluation of CIDS in the cognitive area almost perfectly. The affective area, though not suggested by NOICC, fits the objectives of this study.

The CDI was also chosen as the instrument to evaluate the affective domain outcomes. NOICC (cited in Shealy, 1982) does not call for this measurement but it should be included for several reasons. The amount one learns about a subject (cognitive) is often dependent upon one's attitude (affective domain) toward the subject. Hilton (1974) states that attitudes have a cognitive component and that the cognitive component has an affective component when it comes to
learning. Attitudinal change was one of the outcomes variables studies in the meta-evaluation done by Oliver and Spokane (1988). The reliability estimates for the subtests in the affective area Career Planning (.89) and Career Exploration (.77) are high enough for a career counselor to use as diagnostic data (Hilton, 1982), or as criterion measures in evaluating career-intervention packages like DISCOVER and Virginia VIEW. The CDI was designed originally to be used in the evaluation of the Educational and Career Exploration System, a CAGS. It has been used numerous times since then for evaluating other CAGS. The results from the Blustein (1989) study were consistent with those of the Career Pattern Study concerning the importance of beliefs with career planning and exploration.

The CDI takes about one hour to administer while the Career Maturity Inventory takes about three hours for administration. The CDI was selected for several reasons, with the time constraints on community college students being one of them. Test selection of the CDI was also done because of the desire to compare results to that of Garis on the construct of progress in educational and career planning. Neither the CDI or CMI, or any other test in print, may be accurate at this time in the assessments of career development needs of people past their mid-twenties. Half of the people involved in this study were past their mid-twenties.
Part 1 of the CDI consists of four tests with 20 questions each. Section A, Career Planning, has two subtests. The first 11 questions ask the students how much thinking and planning they have done, while the last 9 questions are concerned with the kind of work they would like to do. Section B, Career Exploration, also has two subtests. The first 10 questions deal with whether or not a student would use these resources, and the final 10 questions ask how much useful information has already been received from those same sources. Section C, Decision Making, gives the student 20 hypothetical career choices to make. In Section D, the final 20 questions ask the student to choose among general sources of occupational and educational information. Part II, Knowledge of Preferred Occupation, contains 40 specific questions concerning the occupation which is currently number one on their list. The 120-question test can be hand scored, but the developers recommend returning the tests for machine scoring. The CDI was machine scored for this study.

Procedures

The study was to begin on January 4, 1988, but was delayed until the end of the month when a modified version of the 1987-88 DISCOVER for Colleges and Adults arrived and was reviewed. This modified version corrected some earlier problems that students were encountering at NRCC and
elsewhere. The evaluation study was conducted at New River Community College's Career Planning and Placement Center by the author. The students were true clients who had been interviewed, pretested, and oriented to their software program and hardware.

The subjects were on their own during the five-week study. They could make appointments to use Virginia VIEW, DISCOVER, or to see the career counselor, or they could just drop in during regular office hours which were from 8 a.m. to 7 p.m. Monday through Thursday and 8 a.m. to 5 p.m. on Friday. A counselor was available if assistance was requested before, during, or after using the system. They were requested to maintain their career planning log during the five-week period from pre-test to post-test. This log was a record of their career planning activities including using the system, reading, and occupational interviewing. The only action initiated by the career planning office during the five weeks was the telephone call and/or letter to set up the post-test for the sixth week of the study.

The procedure followed "A Guide for Planning Career Information Delivery Systems Evaluations by Application of the CIPP Model with Program Components Evaluated by Multiple Data Sources" (Shealy, 1982). Tables 2, 3 and 4 explain how the NOICC criteria for program components were clarified. The questions were then derived from the criteria during the delineation process. The sections on obtaining (Table 2)
explained how the data were collected, organized and analyzed for each research question. The decision making and reporting are explained under the section on applying. Table 5 shows the triangulation summary of the significant findings of the study. The evaluation procedures outlined above were supplemented by materials from Brinkerhoff et al. (1986a, 1986b, and 1986c), and the analysis of data followed procedures outlined in the SPSSx (1988) manual.

The program components of organization and management structure, data sources, user site staff and administration, and the longitudinal effects were not evaluated in this study for several reasons. The program component organization and management structure was omitted because student users have little or no knowledge of this element of programming. The element would be better judged by user site staff and the administration. User site staff and the administration were omitted from the data source collection because this would have involved the securing of permission from the central office of the Virginia Community College System. The longitudinal effects were omitted because it took one year to study just the current effects.

**Evaluation Reports**

This study will become part of NRCC's total College Assessment Plan. In the five-year period beginning the school
year 1987-88, the assessment of student outcomes in each of the educational programs will be conducted. The second part of the assessment will include evaluations of college programs, administrative units, and personnel. The results of this evaluation study on Virginia VIEW and DISCOVER will provide data for both parts of the college assessment program.

The first audience of consideration for the results of this evaluation study will be the Coordinator of Planning and Research at NRCC who is responsible for the Assessment Plan at NRCC. This internal report will be sent to the Dean of Instruction and Student Service for review. Again, it may be sent to the President's Cabinet. At any or all of these levels an oral presentation may also be requested. The Cabinet would then decide if and how the information should be reported to higher system offices in Richmond, Virginia.

A technical report will be prepared for the second level of audiences. This report would be for the Project Director of Virginia VIEW, the Assistant Vice President at American College Testing who is responsible for the DISCOVER Center, the Executive Director of NOICC, and the Director of the Clearinghouse for Computer-Assisted Guidance Systems. This report will also be available for others upon request. This report will also serve as the basis for professional journal articles and professional presentations.
CHAPTER IV
RESULTS OF THE STUDY

The problem for this study was to evaluate a CIDS (Virginia VIEW) and a CAGS (DISCOVER for College and Adult Learners) at New River Community College using the appropriate parts of Shealy's model "A Guide for Planning Career Information Delivery System Evaluations by Applications of the CIPP Model With Program Components Evaluated by Multiple Data Sources." The chapter will open with a description of the population from the demographic findings. The findings related to program component six, user impact, and research question number one will be presented next. This will include quantitative findings from pre- and post-testing with the CDI on career planning knowledge and attitudes and the CDS on career decision making behaviors. These findings will be followed by the users' satisfaction scores of program components: information development, information delivery, and user services. As with question number one, the findings for research question number two will be presented in both narrative and tabular form. The recorded findings from the CIDS/CAGS User Log will be used for answering research question number three dealing with the component of economic efficiency. A triangulation of the findings related to research questions one, two, and three will conclude the chapter.
Description of the Population

The demographic profile of the population which made up the NRCC study was four-fifths female and almost 100% white. Almost half of the population was the traditional-aged college student, while over one-third of the population studied was age 30 or older. One-third of the participants were unemployed, while one-tenth were displaced homemakers. Membership in the study was divided evenly among current students and non-students. Four-fifths of the people taking part in the study stated they planned to continue school on a part-time or full-time basis the next semester.

Seventy-four percent of the participants completed the study by taking the post-tests and answering the survey questionnaire. The percentages completing the study from the four groups were: 68% of the Virginia VIEW group, 72% of the DISCOVER and Virginia VIEW group, 76% of the control group, and 80% of the DISCOVER group. There was almost an equal percentage of males with 79% and females with 82% completing the study. There was a slight difference between traditional-age college students where 79% completed the five-week program, and non-traditional-age students where 71% finished the program. One-fourth of the study's dropouts, seven of the non-completers, did so because of job-related reasons such as change of job or increased work load. Three people withdrew from the study because of transportation problems, while four
more withdrew because of family problems. Two of the subjects moved during the study, while one had medical related problems which prevented completion.

The breakdown of students seen between January 28 and October 18, 1988, was approximately the following: 100 agreed to take part in the NRCC evaluation study; 48 other career planners stated that they did not have the time to take part in the study; 46 other career planners stated they were not interested in taking part in the study; 13 career planners were not invited to take part because they had less than a 2.0 GPA; 10 career planners were not invited to take part in the study because of reading related problems; 9 other career planners were not invited for various reasons; 105 individuals were given occupational information; 61 individuals were given educational information; 12 people were given financial aid information; and 9 people were given job search information. Men were more likely than women to say that they did not have time or were not interested in taking part in the study. Men were also more likely than women to seek just occupational and educational information.

Research Question 1

In a test of the effectiveness of interventions in the assisting of community college students in their career decision making and career development, did the use of
DISCOVER for College and Adult Learners produce significantly greater gain scores on the World of Work, Knowledge of Preferred Occupations, Career Planning, and Career Exploration subtests of the Career Development Inventory, and on the Certainty and Indecision subscales of the Career Decision Scale than did the use of Virginia VIEW or a combination of DISCOVER and Virginia VIEW?

The findings on Virginia VIEW's and DISCOVER's effectiveness as an intervention in the assisting of community college students in their career decision making and career development are found in Table 6. Analysis of variance was used to test the equality of group means for the World-of-Work Information, Knowledge of Preferred Occupations, Career Planning, and Career Exploration subtests of the Career Development Inventory. None of the "F" were significant at the .05 level; therefore, it was assumed that all groups were equal at the start of the career intervention. Analysis of covariance was then used to compare post-test scores of the four groups. All post-test scores were statistically insignificant at the .05 level: World of Work, F=1.177; Knowledge of Preferred Occupations, F=.263; Career Certainty, F=1.637; Career Indecision, F=2.048; Career Planning, F=1.497; and Career Exploration, F=1.193. Therefore, it was assumed that all groups were equal at the end of the career intervention. DISCOVER for College and Adult Learners was not more effective than Virginia VIEW, or Virginia VIEW and
Table 6

Relationship of Treatment Group Pretest to Post-test Mean Scores

(World of Work Subtest and Knowledge of Preferred Occupations Subtest from Career Development Inventory)

<table>
<thead>
<tr>
<th>Treatment Group</th>
<th>World of Work Mean Pretest Score</th>
<th>World of Work Mean Post-test Score</th>
<th>Knowledge of Preferred Occupations Mean Pretest Score</th>
<th>Knowledge of Preferred Occupations Mean Post-test Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virginia VIEW</td>
<td>101.24</td>
<td>100.12</td>
<td>90.88</td>
<td>93.69</td>
</tr>
<tr>
<td>DISCOVER</td>
<td>95.36</td>
<td>96.05</td>
<td>87.24</td>
<td>85.11</td>
</tr>
<tr>
<td>Virginia VIEW and DISCOVER</td>
<td>98.72</td>
<td>96.94</td>
<td>92.44</td>
<td>91.22</td>
</tr>
<tr>
<td>No Treatment Control</td>
<td>103.00</td>
<td>98.05</td>
<td>97.25</td>
<td>93.17</td>
</tr>
</tbody>
</table>
DISCOVER, in the assisting of community college students in their career decision making and career development.

An analysis of the answers to questions 1 and 2 from the Career Planning Log varies little in content and does little to help in the comparison of the effectiveness of the career information system and the computer-based guidance system. The DISCOVER and the Control groups had only two and three completed logs respectively. A DISCOVER respondent stated that, "I learned about different jobs and the different kinds of people who worked in them" when answering question 2. The group which used both Virginia VIEW and DISCOVER had six volunteers who completed parts of the Career Planning Log, while the Virginia VIEW only group had eight out of sixteen of their members complete the log. Again the remarks concerning cognitive information gains were of a general nature on topics like education, outlook, salaries. Several respondents noticed that "living in Southwest Virginia seriously limits job potential for highly specialized areas." One of the most common responses from people in both groups was "I learned that there are so many different fields." Not a single one of the respondents from any of the four groups showed a growth or specificity of knowledge concerning one occupation. In the final analysis, both the Virginia VIEW (CIDS) and DISCOVER (CAGS) systems were considered helpful in the cognitive area of career development because all of the answers to questions 1 and 2 were positive in nature.
The theoretical effectiveness of the impact of CIDS and CAGS on the development of career decision making behavior indicated growth toward certainty of career and major choices and a decline in indecisiveness. While the results from pre- and post-test mean scores on the CDS are not significant, they are worthy of comparison. The group which used DISCOVER and Virginia VIEW together experienced the greatest growth in certainty as measured by the CDS, while the DISCOVER only group was only 4/100ths of a point behind. The Virginia VIEW group experienced the biggest decline on the Indecisiveness Scale of the CDS, followed by the DISCOVER only group (Table 7). The statistical results do not show significant enough gain to answer the question in the affirmative that students are more certain about their occupational choice and college major selection. Also, the same statistical results do not show a statistically significant decrease in identified barriers to career decision making as indicated on the CDS to answer question 1 positively.

As Table 7 is examined, the reader is reminded that the positive direction for improvements in career certainty on the CDS is for the score to get larger and that the positive direction for improvements in career indecision on the CDS is for the score to get smaller. Therefore, it can be said that all four groups became more certain about their status in the career decision making process and less indecisive about their career decision. The screening process used in the NRCC
Table 7
Relationship of Treatment Group Pretest to Post-test Mean Scores
(Certainty Scale and Indecision Scale from Career Decision Scale)

<table>
<thead>
<tr>
<th>Treatment Group</th>
<th>CDS/Certainty Mean</th>
<th>CDS/Indecision Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pretest Score</td>
<td>Post-test Score</td>
</tr>
<tr>
<td>Virginia VIEW</td>
<td>3.28</td>
<td>5.41</td>
</tr>
<tr>
<td>DISCOVER</td>
<td>3.84</td>
<td>6.24</td>
</tr>
<tr>
<td>Virginia VIEW and DISCOVER</td>
<td>3.00</td>
<td>5.44</td>
</tr>
<tr>
<td>No Treatment Control</td>
<td>3.36</td>
<td>4.94</td>
</tr>
</tbody>
</table>
The program seems to be on target in the identification of students and/or clients who could benefit from a career intervention program. Raw improvement scores for the Virginia VIEW group, and the DISCOVER and Virginia VIEW group, were more than twice the size of those for the control group.

The issue of system effectiveness again must be answered with the qualitative data from questions 5 and 6 on the Career Planning Log. Seven out of eight students who completed Virginia VIEW stated that they were more certain of their career plans than they were at the end of the week before. Both DISCOVER students who completed the Career Planning Log stated the same thing. Seven out of nine students who answered questions 5 and 6 on the Career Planning Log from the combined group stated that they were more certain about their futures than they were one week ago, as did three out of four respondents from the control group. Therefore, Virginia VIEW and DISCOVER will be considered helpful in the area of developing career decision making behavior.

The comparison of Virginia VIEW's and DISCOVER's effectiveness in the affective domain of career planning and exploration showed that positive changes resulted, but again the changes were not statistically significant as measured by the CDI. The results (Table 8) show that the group using both DISCOVER and Virginia VIEW demonstrated the greatest changes from pretest to post-test mean scores, with the Virginia VIEW only and DISCOVER only groups close behind in the area of
Table 8  
Relationship of Treatment Group Pretest to Post-test Mean Scores  
(Career Planning Subtest and Career Exploration Subtest from Career Development Inventory)  

<table>
<thead>
<tr>
<th>Treatment Group</th>
<th>CDI/Career Planning</th>
<th>CDI/Career Exploration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean Pretest Score</td>
<td>Mean Post-test Score</td>
</tr>
<tr>
<td>Virginia VIEW</td>
<td>69.96</td>
<td>95.06</td>
</tr>
<tr>
<td>DISCOVER</td>
<td>78.88</td>
<td>102.89</td>
</tr>
<tr>
<td>Virginia VIEW and DISCOVER</td>
<td>78.24</td>
<td>104.50</td>
</tr>
<tr>
<td>No Treatment Control</td>
<td>75.76</td>
<td>94.37</td>
</tr>
<tr>
<td></td>
<td>95.92</td>
<td>112.35</td>
</tr>
<tr>
<td></td>
<td>98.12</td>
<td>120.32</td>
</tr>
<tr>
<td></td>
<td>100.28</td>
<td>114.44</td>
</tr>
<tr>
<td></td>
<td>97.79</td>
<td>113.78</td>
</tr>
</tbody>
</table>
Career Planning as measured by the CDI. The DISCOVER only group demonstrated the greatest changes from pretest to posttest mean scores on the Career Exploration subtest.

The gain scores for all groups in the affective area, career planning and career exploration, may mean that screened, volunteer clients such as those involved in the NRCC program are receptive to career planning interventions. They do become positively involved in exploring and planning for their careers even though the program has no set guidelines or goals. It may mean that more effort needs to be exerted towards the recruitment of clients with career planning needs and that they may benefit more from a structured career intervention program.

Since the F value is not statistically significant on either the CP or CE scores of the CDI, the answer to research question 1E is "No" and the results of questions 3 and 4 of the Career Planning Log must again be considered in deciding if Virginia VIEW and/or DISCOVER is helpful in the affective area of career development. Question 3 asked the respondents to discuss their feelings (attitudes) concerning what they learned about themselves, while question 4 asked the respondents to discuss their feelings (attitudes) concerning what they learned about the world of work as a result of what they did in the way of career planning during the past week. This secondary analysis of changes in attitude toward career planning and exploration showed that the subjects' reactions
to Virginia VIEW and/or DISCOVER were again very positive and varied little from group to group. Many demonstrated a change in the affective area of a positive nature from week one to week five as revealed in this Virginia VIEW user's answers to question 3, their feelings about what they have learned about themselves, and question 4, their feelings about what they have learned about the world of work. Following week number one they stated, (#3) "I'm still undecided" and (#4) "There are so many careers." Week number two they stated, (#3) "I'm still undecided about my future career," and (#4) left the space for an answer blank. Week number three, (#3) "No change" and (#4) left blank. Week number four, (#3) "I'm excited about finding out what I'm going to be entering as a career" and (#4) "I feel that I'm not really ready to enter the world of work after high school, but I'm going to try my very best in whatever I go for."

Another fourth week comment by a person in the Virginia VIEW only group was, (#4) "I feel more secure about the job I choose because I know my chances of getting one of the two jobs." A third week comment by a person in the DISCOVER only group was, (#4) "I learned that you can't expect to do well in a job if everything about the job is something you don't like to do." First and fifth week comments by a person in the group who used both VIEW and DISCOVER were, (#4) "I learned that I am truly dissatisfied with my life as it is" and (#4)
"I am optimistic about finding a new career and excited about getting started."

The majority of answers to questions 3 and 4 of the Career Planning Log were positive. Therefore, Virginia VIEW and DISCOVER would be considered helpful in the affective area of career development. The students demonstrated signs of positive attitudinal growth from week one to week five.

The following can be stated based upon the results for research question 1. Virginia VIEW and DISCOVER, separately or jointly, did not differ significantly among themselves or from the control group in the cognitive, behavioral, or affective areas of career development and decision making as measured by the CDI or CDS. The secondary analysis in each of these areas, which was based upon student comments, was that Virginia VIEW and DISCOVER, used separately and jointly, were considered to be helpful in the areas of career development and decision making in all three areas. Therefore, the final conclusion was that Virginia VIEW and DISCOVER were helpful to community college students in the cognitive, behavioral, and affective areas of career development and decision making when provided with one-to-one counseling support as in the NRCC study.
Research Question 2

In a test of user acceptability with community college students, did DISCOVER for College and Adult Learners rate higher than Virginia VIEW as a career-intervention tool when measured by a user questionnaire based upon NOICC guidelines? The results are shown in Tables 9, 10, and 11. The "View" column displays the mean scores for Virginia VIEW answers, while the "DISCOVER" column displays the mean score for DISCOVER for College and Adult Learners answers. An unsatisfactory attempt was made at measuring the ratings of the group which used both Virginia VIEW and DISCOVER. Therefore, the ratings column for Both was dropped from Tables 9, 10, and 11 when no accurate means of comparing the results could be found. Questions 23 and 24 probably should be placed in Program Components - Area 4 - User Services. The User Services component reflects the evaluation of local implementation of the system more than it does the evaluation of the system itself.

Virginia VIEW Group Responses

For program component two, information development, the 17 evaluators who completed the form gave Virginia VIEW an overall rating of 3.49 which places it near the "excellent range." They rated VIEW the highest on the freedoms from various biases and the appropriateness of reading level, and
Table 9
Comparison of Virginia VIEW's and DISCOVER's Mean Scores on Information Development

<table>
<thead>
<tr>
<th>Program Components - Area 2</th>
<th>VIEW</th>
<th>DISCOVER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Development</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 - Occupations to be covered (#)</td>
<td>3.71</td>
<td>3.60</td>
</tr>
<tr>
<td>2 - Kinds (types) of occupations covered</td>
<td>3.65</td>
<td>3.60</td>
</tr>
<tr>
<td>3 - Descriptive information about occupations</td>
<td>3.41</td>
<td>3.45</td>
</tr>
<tr>
<td>4 - Conditions and requirements of occupation</td>
<td>3.69</td>
<td>3.53</td>
</tr>
<tr>
<td>5 - Economic information about occupation</td>
<td>3.35</td>
<td>3.47</td>
</tr>
<tr>
<td>6 - Education and training information</td>
<td>3.24</td>
<td>3.32</td>
</tr>
<tr>
<td>7 - Employment outlook</td>
<td>3.29</td>
<td>3.11</td>
</tr>
<tr>
<td>8 - Length of information presentation</td>
<td>3.59</td>
<td>3.47</td>
</tr>
<tr>
<td>9 - Detail of information presentation</td>
<td>3.24</td>
<td>3.63</td>
</tr>
<tr>
<td>10 - Sources of information</td>
<td>3.63</td>
<td>3.47</td>
</tr>
<tr>
<td>11 - Level of geographic specificity</td>
<td>3.19</td>
<td>3.27</td>
</tr>
<tr>
<td>12 - Accuracy of information</td>
<td>3.67</td>
<td>3.84</td>
</tr>
<tr>
<td>13 - Currency of information</td>
<td>3.40</td>
<td>3.55</td>
</tr>
<tr>
<td>14 - Attractive format</td>
<td>3.56</td>
<td>3.95</td>
</tr>
<tr>
<td>15 - Appropriate reading level</td>
<td>3.81</td>
<td>4.00</td>
</tr>
<tr>
<td>16 - Freedom from sex bias</td>
<td>3.94</td>
<td>3.90</td>
</tr>
<tr>
<td>17 - Freedom from racial bias</td>
<td>3.65</td>
<td>3.85</td>
</tr>
<tr>
<td>18 - Freedom from social class bias</td>
<td>3.71</td>
<td>3.68</td>
</tr>
</tbody>
</table>

Average Mean 3.49 3.69
Table 10
Comparison of Virginia VIEW's and DISCOVER's Mean Scores on Information Delivery

<table>
<thead>
<tr>
<th>Program Components - Area 3</th>
<th>VIEW</th>
<th>DISCOVER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Delivery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19 - Delivery vehicle(s) (i.e., ease of directions for)</td>
<td>3.65</td>
<td>3.75</td>
</tr>
<tr>
<td>20 - Accessing strategies (finding of occupation information)</td>
<td>3.65</td>
<td>3.06</td>
</tr>
<tr>
<td>21 - Accessing strategies (career search vs. module 3)</td>
<td>3.53</td>
<td>3.56</td>
</tr>
<tr>
<td>22 - Accessing strategies (index vs. user manual)</td>
<td>3.65</td>
<td>3.53</td>
</tr>
<tr>
<td>23 - Job placement program</td>
<td>3.93</td>
<td>3.92</td>
</tr>
<tr>
<td>24 - Instructional program</td>
<td>3.75</td>
<td>3.50</td>
</tr>
</tbody>
</table>

Average Mean 3.69 3.55
Table 11
Comparison of Virginia VIEW's and DISCOVER's Mean Scores on User Services

<table>
<thead>
<tr>
<th>Program Components - Area 4 User Services</th>
<th>VIEW</th>
<th>DISCOVER</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 - User pre-service training</td>
<td>3.82</td>
<td>3.78</td>
</tr>
<tr>
<td>26 - User in-service training</td>
<td>3.94</td>
<td>3.75</td>
</tr>
<tr>
<td>27 - Consultation (i.e., needed more before)</td>
<td>3.82</td>
<td>3.70</td>
</tr>
<tr>
<td>28 - Consultation (i.e., needed more during)</td>
<td>3.94</td>
<td>3.78</td>
</tr>
<tr>
<td>29 - Consultation (i.e., needed more after)</td>
<td>3.56</td>
<td>3.87</td>
</tr>
<tr>
<td>30 - Demonstration with individual counseling</td>
<td>3.71</td>
<td>3.55</td>
</tr>
<tr>
<td>31 - Individual vs. classroom guidance</td>
<td>3.59</td>
<td>3.27</td>
</tr>
<tr>
<td>32 - Individual vs. group counseling</td>
<td>3.56</td>
<td>3.71</td>
</tr>
<tr>
<td>33 - Individual vs. paraprofessional</td>
<td>3.47</td>
<td>3.57</td>
</tr>
</tbody>
</table>

Average Mean 3.71 3.66
the lowest on sources of information and the level of geographic specificity. A summary of the respondents' comments on information delivery are listed below:

#1 "It provided me with information about several occupations which I considered."

#1 "I needed more specific information in the field of nursing broken down into areas which could be done by someone with physical disabilities or related work available."

#8 "You can never get enough information on a subject that is likely to influence your entire future."

The Virginia VIEW group rating of program component three, information delivery, with a 3.69 was almost identical to that of component four, user services, with a mean score of 3.71. Both of these ratings bring Virginia VIEW's overall rating to a 3.59 which is in the excellent range. The only comment made about Virginia VIEW on components three and four was the following statement dealing with question number 31:

#31 "I am not sure. I found the info just fine on my own. It was easy to understand."

DISCOVER Group Responses

The overall evaluation of DISCOVER by the DISCOVER group evaluation of 3.61 was very close to the rating of Virginia VIEW by its evaluators. Nevertheless, there are several rating variations among questions. For example, with program
component two, information development, DISCOVER's lowest rating was with employment outlook. The comments about DISCOVER were as follows:

#2 "It gave how much education, money, time, wages, possibilities of jobs, etc. What else would a person need?"

#4 "The work setting covered everything I wanted to know."

#8 "The information was good but the format took up a lot of space. I think all the information on the 4-page printout could fit on 2 pages."

#10 "I wrote these places and all they sent back was mostly applications."

Similar to Virginia VIEW, the ratings for DISCOVER on the information delivery component, 3.55, and user service component, 3.66, were in the excellent range. DISCOVER's lowest score was on accessing strategies with a rating of 3.06. As with Virginia VIEW, most students preferred individual assistance to that provided by classroom instruction or a paraprofessional as characterized by the following statement:

#31 "I would rather have individual help."

Research Question 3

In a test of the efficiency of time and money use at the community college level, did DISCOVER for College and Adult
Learners use more time and the institutions's money than Virginia VIEW or a combination of Virginia VIEW and DISCOVER as measured by the Virginia VIEW/DISCOVER User Log? Time and money efficiency were used to examine VIEW and DISCOVER separately and in combination as career information delivery and career intervention tools.

The findings follow in both narrative and tabular form. Some information comes from DISCOVER Reports while the remainder comes from the CIDS/CAGS User Log. See Table 12 for DISCOVER Report 8 on Users of DISCOVER's Guidance and Information for February through November, 1988.

The first five modules were used more than twice as much as the last four modules. The report also indicates, but it is not shown on the table, that the ratio of female to male users runs 68% to 32% respectively. See Table 13 for a similar report on the uses of the Information Only Approach. Some parts of the report have been omitted where the systems were not used. This gives a total of 950 individual parts of DISCOVER used during the 10-month study. Table 14 provides a profile of individual users of the two parts of the DISCOVER system by months. Therefore, 504 individuals used 950 modules or parts of the DISCOVER system (Table 14). It does not reflect any repeated use of the same modules or parts by an individual. The CIDS/CAGS User Log reflected 390 individual uses of DISCOVER during this time. Therefore, the log reflects a little over 77% of DISCOVER usage during the study.
Table 12
DISCOVER Report 8: "Information About Users of DISCOVER's Guidance and Information Approach"

<table>
<thead>
<tr>
<th>Module</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Module 1</td>
<td>126</td>
</tr>
<tr>
<td>Module 2</td>
<td>78</td>
</tr>
<tr>
<td>Module 3</td>
<td>104</td>
</tr>
<tr>
<td>Module 4</td>
<td>103</td>
</tr>
<tr>
<td>Module 5</td>
<td>88</td>
</tr>
<tr>
<td>Module 6</td>
<td>53</td>
</tr>
<tr>
<td>Module 7</td>
<td>50</td>
</tr>
<tr>
<td>Module 8</td>
<td>46</td>
</tr>
<tr>
<td>Module 9</td>
<td>38</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>686</strong></td>
</tr>
</tbody>
</table>
### Table 13

**DISCOVER Report 9: "Information About Uses of DISCOVER's Information Only Approach"**

<table>
<thead>
<tr>
<th>Search by job characteristics</th>
<th>41</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information about occupations</td>
<td>47</td>
</tr>
<tr>
<td>Search for technical schools</td>
<td>3</td>
</tr>
<tr>
<td>Search for 2 year colleges</td>
<td>2</td>
</tr>
<tr>
<td>Search for 4 year colleges</td>
<td>33</td>
</tr>
<tr>
<td>Search for graduate schools</td>
<td>4</td>
</tr>
<tr>
<td>Search for military program</td>
<td>1</td>
</tr>
<tr>
<td>Information on 2 year colleges</td>
<td>7</td>
</tr>
<tr>
<td>Information on 4 year colleges</td>
<td>39</td>
</tr>
<tr>
<td>Information on graduate schools</td>
<td>28</td>
</tr>
<tr>
<td>Information on external degree</td>
<td>3</td>
</tr>
<tr>
<td>Information on military program</td>
<td>4</td>
</tr>
<tr>
<td>Information on financial aid</td>
<td>15</td>
</tr>
<tr>
<td>Information on getting a job</td>
<td>25</td>
</tr>
<tr>
<td>Information about non-traditional</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>264</td>
</tr>
</tbody>
</table>
Table 14

DISCOVER Report 11: "Profile of DISCOVER Use"

<table>
<thead>
<tr>
<th></th>
<th>Guidance and Information</th>
<th>Information Only</th>
</tr>
</thead>
<tbody>
<tr>
<td>February</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>March</td>
<td>27</td>
<td>25</td>
</tr>
<tr>
<td>April</td>
<td>34</td>
<td>12</td>
</tr>
<tr>
<td>May</td>
<td>23</td>
<td>16</td>
</tr>
<tr>
<td>June</td>
<td>33</td>
<td>8</td>
</tr>
<tr>
<td>July</td>
<td>41</td>
<td>11</td>
</tr>
<tr>
<td>August</td>
<td>39</td>
<td>18</td>
</tr>
<tr>
<td>September</td>
<td>44</td>
<td>21</td>
</tr>
<tr>
<td>October</td>
<td>44</td>
<td>20</td>
</tr>
<tr>
<td>November</td>
<td>49</td>
<td>24</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>343</strong></td>
<td><strong>161</strong></td>
</tr>
</tbody>
</table>
The total of 504 will be increased by 20% for the parts of the year not covered by the study.

The CIDS/CAGS User Log reflected 263 individual uses of the Virginia VIEW systems. Assuming again that this was 77% of usage during the study, then approximately 339 people used VIEW during the study and 424 people used VIEW during the calendar year 1988 at NRCC. These figures will be used in calculating the cost per student use of Virginia VIEW and DISCOVER at NRCC during 1988 (Table 15).

The VIEW/DISCOVER User Log also provides the following information whereby the amount of counselor time provided for students on each system and the amount of student time spent on each system can be calculated (Table 16). The counselor's time was valued at $20.00 per hour.

Virginia VIEW's cost of information development was calculated at $90.50 with $80.00 for the counselor time to attend the fall workshop and $10.50 for transportation to and from the fall workshop. The IBM-PC system with printer was bought in 1984 for $5,469 with grant money (Conrad, 1985). If the system were used for 10 years, then the cost would be $547 per year for information delivery, program component number three. The computer of the VIEW system was repaired once for a cost of $230. The $542 printer was declared unreparable during the course of the evaluation and it will be replaced from the 1989-90 Career Planning budget of $2,300. These costs would add another $77 per year for information
Table 15
Calculated Cost Per Student Use and Cost Per Student Hour of Use for 1988 at NRCC of Virginia VIEW and DISCOVER

<table>
<thead>
<tr>
<th>Program Components - Area 5</th>
<th>VIEW</th>
<th>DISCOVER</th>
<th>BOTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic Efficiency</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information Development</td>
<td>90.50</td>
<td>1150.00</td>
<td>1240.50</td>
</tr>
<tr>
<td>(Software = SW)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information Delivery</td>
<td>624.00</td>
<td>308.00</td>
<td>932.00</td>
</tr>
<tr>
<td>(Hardware = HW)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>User Services</td>
<td>1160.00</td>
<td>1360.00</td>
<td>2520.00</td>
</tr>
<tr>
<td>(Counselor Time = CT)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\[
\frac{\text{SW} + \text{HW} + \text{CT}}{\text{# students served}} = \text{cost per student use} \\
4.42 \quad 4.66 \quad 4.54
\]

\[
\frac{\text{SW} + \text{HW} + \text{CT}}{\text{# of student hours}} = \text{cost per student hour} \\
7.81 \quad 5.95 \quad 6.88
\]
Table 16
Virginia VIEW/DISCOVER User Log Information

<table>
<thead>
<tr>
<th>Virginia VIEW</th>
<th>DISCOVER</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.7 min. per student/per request</td>
<td>10.5 min. per student/per request</td>
</tr>
<tr>
<td>2 min. per student for career information directions</td>
<td>2 min. per student for career information directions</td>
</tr>
<tr>
<td>20 min. per student for career planning directions</td>
<td>10 min. per student for career planning directions</td>
</tr>
<tr>
<td>34 min. average length of time that students used the system per use</td>
<td>47 min. average length of time that students use the system per use</td>
</tr>
<tr>
<td>78% of users request assistance</td>
<td>65% of users request assistance</td>
</tr>
<tr>
<td>25% of users use VIEW for 12 min. or less</td>
<td>25% of users use DISCOVER for 20 min. or less</td>
</tr>
<tr>
<td>50% of users use VIEW for 25 min. or less</td>
<td>50% of users use DISCOVER for 40 min. or less</td>
</tr>
<tr>
<td>75% of users use VIEW for 45 min. or less</td>
<td>75% of users use DISCOVER for 70 min. or less</td>
</tr>
</tbody>
</table>
delivery, making the total cost $624. With aid from the CIDS/CAGS User Log it was calculated that counselors would spend approximately 58 hours with 326 users of VIEW for a cost of $1160. for 1988. It was also calculated that 240 hours would be spent on VIEW by 424 users. Therefore, VIEW's unweighted average cost was $4.42 per user and $7.81 per user hour (Table 15).

DISCOVER's cost for information development was $1150 for the license fee. The hardware on which DISCOVER operates was also bought under a grant. This equipment was bought in 1986 for $3,079 because the price of computers was on the decline (Conrad, 1987). No repairs have been made to this computer or printer. The cost of the hardware over a 10-year period would be $308 per year. Using the CIDS/CAGS User Log, the 605 students required 68 hours of counselor time during 1988 for a cost of $1,360. It is estimated that these same students used DISCOVER for 474 hours. Therefore, the unweighted average cost of DISCOVER per student user was $4.66 and $5.95 per user hour. Finally, these figures would indicate that the cost of both Virginia VIEW and DISCOVER per user served for 1988 was $4.54 and the cost per user hour of both was two dollars higher at $6.88 per hour (Table 15).

In answering research questions 3A, 3B, 3C, and 3D on the time and money efficiency of Virginia VIEW and DISCOVER as career information and career intervention tools, the data analysis from Tables 17 and 18 would indicate the following
Table 17

Calculated Cost Per Student Use and Cost Per Student Hour of Use for 1988 at NRCC for Virginia VIEW Only

<table>
<thead>
<tr>
<th># students served</th>
<th>1/2SW + 1/2HW + CT</th>
<th>Virginina VIEW</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>45.25 + 312 + 166</td>
<td>$2.08 per student user for career information</td>
</tr>
<tr>
<td></td>
<td>250</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th># students served</th>
<th>1/2SW + 1/2HW + CT</th>
<th>$8.09 per student hour for career planning</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>45.25 + 312 + 1660</td>
<td></td>
</tr>
<tr>
<td></td>
<td>250</td>
<td></td>
</tr>
</tbody>
</table>

* Based upon NRCC cost of serving 250 students with career information and 250 students with career counseling using data from VIEW/DISCOVER User Log.
Table 18

Calculated Cost Per Student Use and Cost Per Student Hour of Use for 1988 at NRCC for DISCOVER Only

<table>
<thead>
<tr>
<th>DISCOVER</th>
</tr>
</thead>
<tbody>
<tr>
<td>$1/2SW + 1/2HW + CT = 575 + 154 + 166.60</td>
</tr>
<tr>
<td># students served</td>
</tr>
<tr>
<td>= $3.58 per student user for career information</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DISCOVER</th>
</tr>
</thead>
<tbody>
<tr>
<td>$1/2SW + 1/2HW + CT = 575 + 154 + 830</td>
</tr>
<tr>
<td># students served</td>
</tr>
<tr>
<td>= $6.02 per student hour for career planning</td>
</tr>
</tbody>
</table>

*Based upon NRCC cost of serving 250 students with career information and 250 students with career counseling using data from VIEW/DISCOVER User Log.*
when based upon serving 250 students per year for both career information and career counseling:

3A. Virginia VIEW is the most efficient means of delivery of career information to the student as it takes two minutes to train students on how to use the microfiche reader and to use the Microfiche/Micro-Computer Index. The cost would be $2.08 per student for using Virginia VIEW as a career information tool.

3B. Virginia VIEW would also be considered efficient in terms of time and money as a career intervention tool. It is figured at $8.09 for the first hour of career planning if 250 students were assisted in career planning. This is a little over one-third of the estimated cost of DISCOVER and one-to-one counseling at $23.50 per hour.

3C. Question 3 asked if DISCOVER was efficient in terms of time and money as a career information delivery tool. The answer is "No" in terms of college time and money as $3.58 is eight cents above the $3.50 limit set for being efficient in terms of time and money as a career information delivery tool (Table 16).

3D. "Yes" would also be the answer to question number 3D, "Is DISCOVER efficient in terms of time and money as a career intervention tool?" From Table 18 it can be seen that DISCOVER requires only $6.02 per student hour for career planning. The final answer for question 3 is "No."
DISCOVER did not use more time or money than Virginia VIEW.

**Triangulation of Research Questions 1, 2, and 3**

Question "A" under Triangulation of Research Questions 1, 2, and 3 results have been summed up in Table 19. This table compares the evaluation results of the two systems by awarding one point to positive proven results, by placing a zero beside results which have not been proven either way, and by subtracting one point for negative proven results. The use of DISCOVER for College and Adult Learners did not produce significantly greater gain scores on the CDS and CDI than did the use of Virginia VIEW; therefore, no points are awarded to either system under the results for research question one. The results of user satisfaction were just the opposite; each system can be awarded one point each for information development, information delivery, and user services. The economic efficiency results gives the use of Virginia VIEW a two-point advantage over the use of DISCOVER only. DISCOVER has the direct "out of pocket" license fee each year. This cost for DISCOVER is the highest when comparing it to Virginia VIEW for information delivery only. Cost comparison for the two systems at NRCC for 1988 becomes less significant when both systems are used several hundred times. DISCOVER's costs
Table 19

Comparison of Virginia VIEW's and DISCOVER's Effectiveness, User Satisfaction, and Economic Efficiency at NRCC Using a Three Point Scale

<table>
<thead>
<tr>
<th></th>
<th>VIEW</th>
<th>DISCOVER</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Effectiveness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1A Cognitive Effectiveness</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1B Behavioral Effectiveness</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1C Affective Effectiveness</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>(2) User Satisfaction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2A Information Development</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2B Information Delivery</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2C User Services</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>(3) Economic Efficiency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3A VIEW Information Efficiency</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>3B VIEW Intervention Efficiency</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>3C DISCOVER Information Efficiency</td>
<td>-1</td>
<td></td>
</tr>
<tr>
<td>3D DISCOVER Intervention Efficiency</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>5</td>
<td>3</td>
</tr>
</tbody>
</table>

1 = positive proven results
0 = no conclusive results either way
-1 = negative proven results
are decreased when it is used repeatedly by students for longer periods of time than Virginia VIEW.

**Clinical Observation Results**

Prospective and community college students who used Virginia VIEW, DISCOVER, and the other career information and career counseling services provided by New River Community College seem to reflect our society as a whole. They are in a hurry. They want their career information and career counseling services delivered like their fast food, "FAST."

Both Virginia VIEW and DISCOVER seem to be meeting the needs of these students. The Interactive Virginia VIEW, which has been used at NRCC since January, 1989, provides the student with a printout of the career information material. Students like using the Interactive VIEW better than the micro-fiche version which was used for this study. Community college students like and use the local job market information on earnings and employment outlook. The software program needs a few modifications in order for the user not to have to use the "return" key so often.

Just as Virginia VIEW has met the community college students' need for local information, some students are served equally well by DISCOVER guidance and information which are not currently being met by Virginia VIEW. One student may need information on colleges and universities which offer
Native American Studies. Another student may be bolstered enough by the information in modules 8 and 9 on life roles and transitions to inform her husband that she plans to attend college. On the basis of this study, it can be said that many prospective and community college students can be assisted best by both systems being used together if the college can afford both systems.
CHAPTER V
CONCLUSIONS AND IMPLICATIONS

Overview

The final chapter reviews the purposes of the study, the procedures of the study, and the results of the research findings. The results will be compared with those of other CIDS and CAGS studies. The chapter closes with implications for practice and implications for future research.

Purposes of the Study

The mission statement of the Student Affairs Department of most community colleges includes a statement that assistance will be provided to students in the development of career and educational plans. Sometimes this help has been provided to students by the means of a computer-assisted career information system, and/or a computer-assisted career guidance and information system. The National Occupational Information Coordinating Committee evaluation criteria included the management structure, information development, information delivery, user services, cost efficiency, and student impact. Shealy (1982) developed an evaluation model to standardize the collection of data following NOICC's evaluation criteria. This study was an attempt to partially
implement Shealy's model in the community college setting by evaluating the last five components using the user data source for the current effect.

Garis (1982) completed a study of DISCOVER, a computer-assisted career guidance system. One of his recommendations for further research was that a similar study be done of a computer-assisted career information system to see if the two systems had similar impacts on the career development and career decision making of students. This study was an attempt to implement Garis' recommendation by evaluating the impact of Virginia VIEW and DISCOVER upon the cognitive and affective career development of community college students, along with the effect on career decision-making behavior.

In particular, the following research questions were studied in an effort to solve the above problem:

1. In a test of the effectiveness of interventions in the assisting of community college students in their career decision making and career development, did the use of DISCOVER for College and Adult Learners produce significantly greater gain scores on the World of Work, Knowledge of Preferred Occupations, Career Planning, and Career Exploration subtests of the Career Development Inventory, and on the Certainty and Indecision subscales of the Career Decision Scale than did the use of Virginia VIEW or a combination of DISCOVER and Virginia VIEW?
2. In a test of user acceptability with community college students, did DISCOVER for College and Adult Learners rate higher than Virginia VIEW as a career-intervention tool when measured by a user questionnaire based upon NOICC guidelines?

3. In a test of the efficiency of time and money use at the community college level, did DISCOVER for College and Adult Learners use more time and the institution's money than Virginia VIEW or a combination of Virginia VIEW and DISCOVER as measured by the Virginia VIEW/DISCOVER User Log? Time and money efficiency were used to examine VIEW and DISCOVER separately and in combination as career information delivery and career intervention tools.

**Procedures of the Study**

Students and prospective students were screened on the basis of needing and being able to benefit from a career counseling intervention program. The clients who passed the initial screening were then informed both orally and in writing of the evaluation purposes and procedures. Twenty-five volunteers were assigned to each of the following: Virginia VIEW only group, DISCOVER only group, and the Virginia VIEW and DISCOVER group. Twenty-five volunteers were also assigned to a control group which was to wait for five
weeks before using Virginia VIEW and DISCOVER. At the beginning of the study, it was hoped by the researcher that these students would not do any career planning for five weeks. The study began in January, 1988, and continued through November, 1988.

The clients completed a data sheet, the CDI, and CDS to start the five-week program. Instructions then were given on how to use the respective hardware, software, and how to complete the weekly career planning log. Participants then were encouraged to use their system and to seek counselor assistance as often as necessary during the study. Counselors maintained a Counselor Observation Log on participants and a CIDS/CAGS User Log on all users of the systems during the evaluation period. During the fifth week, each evaluatee was contacted and requested to set up an appointment for turning in their logs, for completing their questionnaire, and for taking the CDI and the CDS.

Results of the Research Findings

Seventy-four of the 100 participants completed the study with 17 being from the Virginia VIEW only group, 18 from the DISCOVER and Virginia VIEW group, 19 from the control group, and 20 from the DISCOVER only group. In answer to research question 1, there was not a statistically significant difference in the cognitive, behavioral, or affective areas
during the five-week study among any of the groups. In answer to research question 2, the community college user of DISCOVER liked it in almost equal terms to the user of VIEW on information development, information delivery, and user services. It did not rate higher. The results for research question 3 did not show that the use of DISCOVER used more time or the institution's money than Virginia VIEW. The triangulation of the results of the three research questions showed no conclusive results as to which system was more effective, more acceptable, or more efficient.

**Comparison With Other CIDS/CAGS Results**

Results from the NRCC study on CIDS and CAGS appear to be inconclusive as the results from many of the other career intervention and evaluation studies have been. The use of CIDS and CAGS with career counseling has generally been shown to make contributions to some, but not all, areas of career development and decision making. For example, the Garis (1982) study at Pennsylvania State University on which the NRCC study was patterned found that all treatment groups with DISCOVER had statistically significant post-test scores on the Career Planning and Career Exploration subtests of the CDI. He found no statistically significant scores on the Decision Making, Work Information, or the Knowledge of Preferred Occupations subtests of the CDI. The biggest gains, though
they were not statistically significant, on the CDI in the NRCC study were on the Career Planning and Career Exploration subtests.

Garis and Niles (1988) conducted studies at Pennsylvania State University and the University of Virginia with SIGI and DISCOVER. The findings at PSU which used DISCOVER were a greater significant interaction reduction from pretest-post-test scores on the CDS for the career planning course without DISCOVER than for the career planning subjects using DISCOVER. In the NRCC study, the use of DISCOVER with Virginia VIEW did not differ from that of the control groups on the CDS. Therefore, the findings of both the PSU and NRCC studies support those of Holland, Magoon, and Spokane (cited in Garis & Niles, 1988), which stated that the adding of career interventions together often does not produce greater gains than the interventions acting independently of each other.

Oliver and Spokane (1988) studied the design characteristics of 58 career-intervention studies. The NRCC study had the following design characteristics in common with their approved studies for meta-analytic comparison: random assignment, 57%; three treatments, 8%; six outcome measures, 2%; sample size of 50-100, 55%; F calculation method, 4%; client volunteers, 36%; college age, 50%; adult age, 8.5%; experienced counselor, 24%; computer treatment, 6%; and counseling evaluations, 1/2%.
Evaluation studies, as seen by the last figure, are few in number for comparison. Sampson et al. (1986) did comparison studies of DISCOVER for Adult Learners and SIGI PLUS on their use nationwide. The usage statistics for DISCOVER in the above study compared to the NRCC study with the figures given in that order: 293 per year with 604 at NRCC; 63 minutes per use with 47 minutes at NRCC; and 2.3 appointments per student with 2.3 appointments per student at NRCC with the DISCOVER-only user group.

Sampson et al. (1986) conducted a differential feature-cost analysis of DISCOVER for Adult Learners and SIGI PLUS. They did not measure the cost per student or the cost per student hour as did the NRCC study. Therefore, a summary comparison of cost cannot be done.

New York State (Bloch & Kinnison, 1986) completed an extensive evaluation of computerized career information systems including DISCOVER. None of the results from the five evaluation activities of the New York study can be compared with the results of the NRCC study, but in one way the overall results of both studies were the same. The New York State study could not, based upon its results, recommend one of the five CIDS to be the one single state model. The NRCC study could not recommend one of the two systems to be its single system of use.
Implications for Practice

The first implication for practice at New River Community College was discussed at the end of Chapter IV. This implication was that the college should continue to operate both systems as long as it is economically feasible. An ongoing evaluation study could monitor changes from year to year. The second implication, in other words, is that the counselor should maintain the dual roles of researcher and practitioner. The insights and the experiences of both aid the growth and development of the person in both roles, the college, and more importantly the student.

Another implication for practice is that counselors must continue to improve their intake interview skills. Good screening procedures, such as those used in this evaluation study, quickly separated those students who needed only occupational or educational information from those who stated that they needed career counseling. It is evident to the evaluator that neither the CDI or the CDS is far enough along in its development that it could be used as a diagnostic tool. For example, counselor screening seemed to point out the undecided from the uninformed student as quickly and as effectively as the CDS. Many community college students either have or only want to devote a short time to the career planning process. The CDI has to be mailed for the results and is very expensive. A college such as NRCC would have to
make the choice between software packages such as DISCOVER for Adult Learners or diagnostic testing. A cost benefit and time benefit analysis would need to be completed on the diagnostic tests before the final decision.

This study has ethical implications for practice. According to the information gathered by the CIDS/CAGS it appears that it would be unethical to set up either a CIDS or CAGS in a Student Lounge or similar place and let it stand alone. Most students need some assistance with the systems and some have individual counseling needs.

This study also indicates to the practicing counselor that the Career Planning Log, especially the personal reaction section, has promise as a tool for improving career counseling sessions. It not only provides the counselor with a record of student activities since the last counseling session, it provides them with a picture of the level of understanding of what was learned. In addition to this, a record of the changes in attitudes can be monitored from week to week as was done in this evaluation study. Finally, it gives the client a way of expressing what is giving them problems which they may or may not be able to reveal or communicate during the counseling session.

The final implication for practice from this evaluation study is that the students would have benefitted more from a regular system of making and keeping appointments. The
students who tried to make and keep appointments tended to be the completers in this evaluation study.

**Implications for Future Research**

Shealy's model which was used for this evaluation study appears to be a good model for evaluating CIDS and CAGS. It provided this evaluator with the framework in which to conduct the evaluation and the flexibility for adapting it to the particular situation. This study should be easy to replicate. Before the final conclusions can be made pertaining to the Shealy model, it needs to be tried by other practitioners in other settings. She was seeking a model by which the results could be transferred across local and state lines. For this objective to be achieved, future evaluators need to follow the Oliver and Spokane (1988) method of selecting subjects and assigning them to treatment groups in addition to Shealy's model. Then it will be easier to see which career-intervention treatment contributes to which client's gains and in what area.

The second implication for research using the Shealy model is that practitioners/researchers limit the scope of their studies to fewer program components. This evaluation study became unwieldy at times because too many program components were being compared at the same time.
Replicators may also want to take a second look at the placement of questions under each program component. As stated before, this author found that questions 23 and 24 under information delivery might be better placed under program area 4, User Services. This leaves program area 3, Information Delivery, with perhaps too few questions for a complete rating of that component. The rating of program component number 4, User Services, by the user for the current effect actually became more of a rating of how the user site staff provided program component number 3, Information Delivery, to the user.

It is further recommended for future research that NOICC commission one or more complete evaluation studies following Shealy's model unless a better model can be demonstrated. It is also recommended that each commercial developer which has licensed systems operating under one or more SOICCs be required to document on-going evaluation studies of their present and future products, such as videodiscs. In addition, it is recommended that the Interactive Virginia VIEW be evaluated by Shealy's model. A comparison study by Shealy's model of the Interactive Virginia VIEW with other career information delivery systems is also recommended. Longitudinal studies with Shealy's model would be difficult as it took ten months to complete this current event study.

Absent from Shealy's model was any method on how to weigh and compare the results from various program components x data
sources x effects whether one was evaluating one system or several systems. Triangulation was one attempt to show the reader how it might be done. It should be a part of the delineating section of the evaluation design matrix.

Furthermore, in order to study the current and longitudinal effects upon users of CIDS and CAGS, more time and money needs to be devoted to the research and development of career assessment instruments. More precise information is needed about the barriers to career planning as with the CDS. Research is needed to establish differences in cognitive, affective, and behavioral aspects of career development across age, gender, racial, and socio-economic lines as with the CDI. Then, subsequent evaluations regarding the effectiveness of Virginia VIEW and DISCOVER may prove to be more conclusive.


CIDS Evaluation Procedures

I. Initial Interview

A. Is the student only interested in career information?

B. Is the student only interested in explanation of college offerings? or

C. Is the student interested in the career planning program?

1. If the student is presently enrolled, does he/she have a grade-point-average 2.0 or higher and
   a) If the student is interested in taking part in the evaluation program after reading the description then
   b) Record student name, address, phone number, and social security number on folder (also record date) and
   c) Give student material from folder and place it in a new folder and
   d) Either give CDI then or set up an hour-and-a-half appointment for completions CDI and explanation of Virginia VIEW or DISCOVER but if
   e) Student is not interested or does not have a cumulative 2.0 GPA give other type of folder from top shelf and make an appointment

2. If the student is not presently enrolled, do you think they would be a successful college student (i.e. 2.0 GPA or higher) see "a - e" under #1 same procedure

II. Second and succeeding visits

A. Complete and file Counselor/Paraprofessional Observation Log for each person with whom you work is in the evaluation program.

B. Collect and file any completed material

III. Final visit at the end of the fifth week

A. Have student complete in the following order:

1. CDI
2. CDS
3. Appropriate questionnaire

B. Material is on the bottom shelf
Dear NRCC Career Center Evaluator:

Your local community college will be evaluating its effectiveness in the area of student outcomes as a part of its new College Assessment Plan. Each administrative unit at NRCC, including Student Development, will be involved in this assessment process over the next five years. The office of Career Planning will also take part in this effort. As a part of this effort, and to partially fulfill the requirements for the degree of Doctor of Education in Counseling and Student Personnel at Virginia Tech, I am requesting your participation in a five week program designed to implement an evaluation of some of NRCC's career development services.

Your participation, if you agree to do so, will take approximately three to five hours in addition to the normal time involved in the career planning process. The requirements include taking the Career Development Inventory and the Career Decision Scale at both the beginning and the end of the five week program. In addition to the two tests, you will be asked to keep a Career Planning Log and complete a questionnaire and interview at the end. No individual information will be released.

If you do agree to take part in this evaluation study, you are requested to make every effort to complete all seven items outlined in the above paragraph. Your involvement and cooperation will help future students who use the services offered by the NRCC Career Planning office.

Sincerely,

President

Dale W. Conrad
Career Counselor
PURPOSE:

- To teach students and citizens of the New River Community College service region to analyze their own interests, skills, and values through the process of self assessment.

- To teach students and citizens to gather individually relevant information concerning the working world through the use of Virginia VIEW, DISCOVER and the process of informational interviewing.

- To help students integrate knowledge of self and work into a well-defined, individually realistic career plan with alternatives.

- To help students integrate resume writing, interviewing, prospecting, networking, and record keeping skills in a well-defined job search.

SERVICES TO STUDENTS AND CITIZENS CONSIST OF:

- Individual Assessment

- Career Counseling

- Virginia VIEW (Vital Information for Education and Work) - A career information delivery system providing information on occupations, armed services, two years colleges, four year colleges, and financial aid. Not only useful in career planning, but also helpful in writing resumes, cover letters, and preparing for job interviews.

- DISCOVER for Adult Learners - A guidance and information delivery system in one package. It contains nine modules on the following topics: 1) Beginning the Career Journey; 2) Learning About the World of Work; 3) Learning About Yourself; 4) Finding Occupations; 5) Learning About Occupations; 6) Making Educational Choices; 7) Planning Next Steps; 8) Planning a Career; and 9) Making Transitions.

- Virginia Employment Commission Job Bank (Weekly listing of job openings in the state and the nation)

- College catalogs and applications for students who intend to transfer.

- Career pamphlets, magazines, books, and corporate literature.

- An annual Career Day Program in cooperation with Job Placement Office for the purpose of informational interviewing.

- Career Planning Course (STD 107).
# Career Planning Log

<table>
<thead>
<tr>
<th>Student Name</th>
<th>Student I.D.#</th>
</tr>
</thead>
</table>

Week Number (Please circle): 1 2 3 4 5

**RECORDED ACTIVITY**

- Number of visits to Career Center
- Number of hours spent in Career Center
- Number of visits to LRC for career planning
- Number of hours in LRC spent on career planning
- Number of hours on Virginia VIEW

(Check all files used)

- Occupational
- Military Training
- Apprenticeship
- Secondary School Subject
- Postsecondary School
- Financial Aid
- Additional Training

List all other written resources used this week

- 
- 
- 

List all people contacted this week

- 
- 
- 

(over)
Career Planning Log

Student Name ____________________________ Student I.D. #____________________

Week Number (Please circle): 1 2 3 4 5

RECORDED ACTIVITY

___ Number of visits to Career Center

___ Number of hours spent in Career Center

___ Number of visits to LRC for career planning

___ Number of hours in LRC spent on career planning

___ Number of hours on DISCOVER

(Circle all modules used)

1 2 3 4 5 6 7 8 9

___ Number of occupations explored

List all other written resources used this week

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

List all people contacted this week

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

(over)
Career Planning Log

Student Name ___________________________ Student I.D.# _______________________

Week Number (Please circle):  1  2  3  4  5

RECORDED ACTIVITY

_____ Number of visits to Career Center
_____ Number of hours spent in Career Center
_____ Number of visits to LRC for career planning
_____ Number of hours in LRC spent on career planning
_____ Number of hours on Virginia VIEW

(Check all files used)

_____ Occupational
_____ Military Training
_____ Apprenticeship
_____ Secondary School Subject

_____ Number of hours on DISCOVER

(Circle all modules used)

1  2  3  4  5  6  7  8  9

_____ Number of occupations explored

List all other written resources used this week

__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________

List all people contacted this week

__________________________________________________________________________
__________________________________________________________________________

(over)
Career Planning Log

<table>
<thead>
<tr>
<th>Student Name</th>
<th>Student I.D.#</th>
</tr>
</thead>
</table>

Week Number (Please circle): 1 2 3 4 5

RECORDED ACTIVITY

- Number of visits to Career Center
- Number of hours spent in Career Center
- Number of visits to LRC for career planning
- Number of hours in LRC spent on career planning

List all other written resources used this week

- 
- 
- 

List all people contacted this week

- 
- 
- 

(over)
Career Planning Log - Personal Reactions

1. Discuss what you learned or relearned about yourself as a result of this week's career planning activities (the facts).

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

2. Discuss what you learned or relearned about the world of work as a result of this week's career planning activities (the facts).

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

3. Discuss your feelings concerning what you learned or relearned about yourself as a result of this week's career planning activities (your attitude toward).

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

4. Discuss your feelings concerning what you learned or relearned about the world of work as a result of this week's career planning activities (your attitude toward).

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

5. Discuss those things which you still have doubts about concerning your future career plans.

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

6. I feel less or more (please circle appropriate one) certain concerning my career plans than I did at this time last week.
Counselor/Paraprofessional Observation Log

Observer

Student ___________________________ Student I.D. # ___________________________

Visit #  1  2  3  4  5  6  7  8  9  10  Other ________

A. Virginia VIEW  B. Virginia VIEW & DISCOVER  C. DISCOVER

(Please circle appropriate letter)

Recorded Behavior

1. Length of time spent with student ___________________________

2. Record # and kinds of questions asked as to the following:
   a. Directions ____________________________________________
   b. Content information or explanation _______________________
   c. Equipment problems ____________________________________
   d. Other (please explain) _________________________________

3. List all other materials used ______________________________

4. List any other action taken or recommended __________________

5. Comments ______________________________________________

<table>
<thead>
<tr>
<th>#</th>
<th>Date</th>
<th>VIEW/DISCOVER</th>
<th>On/Off</th>
<th>Student Time</th>
<th>Counselor Time</th>
<th>Student Question(s)</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2/5</td>
<td>V/D</td>
<td>8:30/10:00</td>
<td>90</td>
<td>5</td>
<td>C</td>
<td>CP</td>
</tr>
</tbody>
</table>
Dear Student or Client:

During the last five weeks you have participated in an evaluation study of the use of Virginia VIEW and DISCOVER at NRCC. The purpose of this questionnaire is to gather your final reactions to the use of one or both of these instruments. As with all of the other information gathered from this study, all of the individual responses will remain confidential. Only group data will be mentioned in any published reports. A copy of the main findings will be made available to the participants after May 6, 1989.

The survey is divided into four sections. Please mark the one response which best answers the question from your point of view about the instrument(s) which you used during the five week study. All answers should be marked on the survey instruments with a circle. Please feel free to make comments in the space provided.

When you have completed the survey, please return it to me, Dale Conrad, or the Student Development secretary. Thank you for your assistance, interest, time, and support.

Sincerely,

Dale W. Conrad
Career Development Counselor
Virginia VIEW Survey

Your response to the following statements will aid in evaluating the use of Virginia VIEW at NRCC during 1988. CIRCLE THE WORD OR PHRASE WHICH BEST EXPRESSES YOUR THOUGHTS about each of the statements below.

A - AGREE         TA - TEND TO AGREE         TD - TEND TO DISAGREE
D - DISAGREE      NA - NOT APPLICABLE

Please read carefully.

I. Information Development

1. The number of occupations covered by Virginia VIEW microfiche files was adequate for my career development needs.
   A       TA       TD       D       NA
   Comments:

2. The types of occupations covered by Virginia VIEW microfiche files was adequate for my career development needs.
   A       TA       TD       D       NA
   Comments:

3. The descriptive information on occupational duties covered by Virginia VIEW microfiche files was too short for my career development needs.
   A       TA       TD       D       NA
   Comments:
4. The information on working conditions covered by Virginia VIEW microfiche files was too long for my career development needs.

   A   TA   TD   D   NA

   Comments:

5. The information on salaries and fringe benefits covered by Virginia VIEW microfiche files was adequate for my career development needs.

   A   TA   TD   D   NA

   Comments:

6. The information on educational and training requirements covered by Virginia VIEW microfiche files was too general for my career development needs.

   A   TA   TD   D   NA

   Comments:

7. The information on employment outlook and trends covered by Virginia VIEW microfiche files was not specific enough for my career development needs.

   A   TA   TD   D   NA

   Comments:
8. The fourteen pages of information on each occupation presented on Virginia VIEW microfiche files was too long for my career development needs.

A TA TD D NA

Comments:

9. Enough details of career information were included on each occupation presented by the Virginia VIEW microfiche files to meet my career development needs.

A TA TD D NA

Comments:

10. The sources of additional information at the end of each occupation presented by the Virginia VIEW microfiche files were not adequate for me to further explore the occupation.

A TA TD D NA

Comments:

11. The details of local, state, and national geographic occupational information covered by the Virginia VIEW microfiche files was adequate for my career development needs.

A TA TD D NA

Comments:
12. Based upon the information which was already known to me concerning the occupation explored, the information presented by the Virginia VIEW microfiche files was not accurate.

A TA TD D NA

Comments:

13. Based upon the information which was already known to me concerning the occupation explored, the information presented by the Virginia VIEW microfiche files was current.

A TA TD D NA

Comments:

14. The information presented by Virginia VIEW microfiche files was not in an attractive format.

A TA TD D NA

Comments:

15. I had trouble reading the information presented on Virginia VIEW microfiche files.

A TA TD D NA

Comments:

16. The information presented on the Virginia VIEW microfiche files was sex biased.

A TA TD D NA

Comments:
17. The information presented on the Virginia VIEW microfiche files was free of racial bias.

A   TA   TD   D   NA

Comments:

18. The information presented on the Virginia VIEW microfiche files was free of social class bias.

A   TA   TD   D   NA

Comments:

II. Information Delivery

19. It was easy to follow the directions for using the Virginia VIEW computer package.

A   TA   TD   D   NA

Comments:

20. It was difficult to find the occupational information desired with the Virginia VIEW microfiche system.

A   TA   TD   D   NA

Comments:

21. The Virginia VIEW Career Search Workbook made it easy to complete the Virginia VIEW Career Search Worksheet.

A   TA   TD   D   NA

Comments:
22. The Virginia VIEW Microfiche/Micro-computer Index was easy to follow in locating the desired occupations to explore.

A   TA   TD   D   NA

Comments:

23. A Virginia VIEW career information system was available at NRCC when I needed to use it for job placement activities.

A   TA   TD   D   NA

Comments:

24. Faculty use of Virginia VIEW with classroom assignments is adequate at NRCC.

A   TA   TD   D   NA

Comments:

25. The demonstration which I received on how to use the Virginia VIEW career information delivery system was adequate for my career development needs.

A   TA   TD   D   NA

Comments:
26. Counselor assistance was available to you at anytime during your use of the Virginia VIEW system to answer questions and deal with problems. This assistance was adequate for my career development needs.

   A   TA   TD   D   NA

   Comments:

27. I needed more assistance than was provided before using the Virginia VIEW career information system.

   A   TA   TD   D   NA

   Comments:

28. I needed more assistance than was provided between sessions using the Virginia VIEW career information delivery system.

   A   TA   TD   D   NA

   Comments:

29. I needed more assistance than was provided after completing the Virginia VIEW career information delivery system.

   A   TA   TD   D   NA

   Comments:
30. Counselor assistance was made available to you in an individual counseling framework while using the Virginia VIEW career information delivery system. This individual counseling method of using Virginia VIEW was adequate for my career development needs.

A  TA  TD  D  NA

Comments:

31. The classroom method of using the Virginia VIEW career information system would have been a better method of meeting my career development needs than the individual counseling method.

A  TA  TD  D  NA

Comments:

32. The individual counseling method of using the Virginia VIEW career information system was a better method of meeting my career development needs than a group counseling method.

A  TA  TD  D  NA

Comments:

33. The paraprofessional method (i.e., one of having a work study student available at all times) would have been a better method of using the Virginia VIEW career information delivery system to meet my career development needs than the individual counseling method of using Virginia VIEW.

A  TA  TD  D  NA

Comments:
III. Information on use of Virginia VIEW

34. I used the following Virginia VIEW career resources.

(Please check only one)

Career Search only
VIEW microfiche file only
Both Career Search and VIEW microfiche files

35. If you used the Virginia VIEW microfiche files, place a check by the following files which you used.

(Please check all that apply).

Occupational Files
Apprenticeship Files
Military Training Files
Postsecondary School Files
Financial Aid Files
Secondary School Subject Files
Additional Training Files

36. During the past five weeks, I spent a total of _____ hours in the career development process.

37. Of this time, _____ hours were spent using Virginia VIEW resources.
DISCOVER Survey

Your response to the following statements will aid in evaluating the use of DISCOVER at NRCC during 1988. CIRCLE THE SYMBOL WHICH BEST EXPRESSES YOUR THOUGHTS about each of the statements below.

A - AGREE  TA - TEND TO AGREE  TD - TEND TO DISAGREE
D - DISAGREE  NA - NOT APPLICABLE

I. Information Development

1. The number of occupations covered by DISCOVER was adequate for my career development needs.

   A  TA  TD  D  NA

   Comments:

2. The types of occupations covered by DISCOVER was adequate for my career development needs.

   A  TA  TD  D  NA

   Comments:

3. The descriptive information on occupational work tasks covered by DISCOVER was too short for my career development needs.

   A  TA  TD  D  NA

   Comments:
4. The information on work settings covered by DISCOVER was too long for my career development needs.

   A   TA   TD   D   NA

Comments:

5. The information on salary potential covered by DISCOVER was adequate for my career development needs.

   A   TA   TD   D   NA

Comments:

6. The education or training possibilities covered by DISCOVER was too general for my career development needs.

   A   TA   TD   D   NA

Comments:

7. The projected demand for new workers covered by DISCOVER was not specific enough for my career development needs.

   A   TA   TD   D   NA

Comments:

8. The four-page description for each occupation presented on DISCOVER's printouts was too long for my career development needs.

   A   TA   TD   D   NA

Comments:
9. Enough details of career information were included on each occupation presented by DISCOVER to meet my career development needs.

A TA TD D NA

Comments:

10. The section "Where to Get More Information" at the end of each occupation presented by DISCOVER was not adequate for me to further explore the occupation.

A TA TD D NA

Comments:

11. The national geographic occupational information on salary potential and projected demand for new workers was adequate for my career development needs.

A TA TD D NA

Comments:

12. Based upon the information which was already known to me concerning the occupations explored, the information presented by DISCOVER was not accurate.

A TA TD D NA

Comments:
13. Based upon the information which was already known to me concerning the occupations explored, the information presented by DISCOVER was current.

A    TA    TD    D    NA

Comments:

14. The information presented by DISCOVER was not in an attractive format.

A    TA    TD    D    NA

Comments:

15. I had trouble reading the information presented on the DISCOVER computer package.

A    TA    TD    D    NA

Comments:

16. The information presented by DISCOVER was sex biased.

A    TA    TD    D    NA

Comments:

17. The information presented by DISCOVER was free of racial bias.

A    TA    TD    D    NA

Comments:
18. The information presented by DISCOVER was free of social class bias.

A     TA     TD     D     NA

Comments:

II. Information Delivery

19. It was easy to follow the directions for using the DISCOVER software package.

A     TA     TD     D     NA

Comments:

20. It was difficult to find the occupational information desired with Module 5 of the DISCOVER system.

A     TA     TD     D     NA

Comments:

21. It was easy to complete the interests, abilities, experiences, and values surveys of Module 3 of the DISCOVER software package.

A     TA     TD     D     NA

Comments:
22. DISCOVER's User Manual was easy to follow in locating the desired occupations to explore.

A   TA   TD   D   NA

Comments:

23. The DISCOVER guidance and information system was available at NRCC when I needed to use it with job placement activities.

A   TA   TD   D   NA

Comments:

24. Faculty use of DISCOVER with classroom assignments is adequate at NRCC.

A   TA   TD   D   NA

Comments:

25. The demonstration which I received on how to use the DISCOVER guidance and information system was adequate for my career development needs.

A   TA   TD   D   NA

Comments:
6. Counselor assistance was available to you at anytime during your use of the DISCOVER system to answer questions and deal with problems. This assistance was adequate for my career development needs.

A          TA          TD          D          NA

Comments:

7. I needed more assistance than was provided before using the DISCOVER guidance and information system.

A          TA          TD          D          NA

Comments:

8. I needed more assistance than was provided between sessions using the DISCOVER guidance and information system.

A          TA          TD          D          NA

Comments:

9. I needed more assistance than was provided after completing the DISCOVER guidance and information system.

A          TA          TD          D          NA

Comments:
30. Counselor assistance was made available to you in an individual counseling framework while using the DISCOVER guidance and information delivery system. This individual counseling method of using DISCOVER was adequate for my career development needs.

A    TA    TD    D    NA

Comments:

31. The classroom method of using the DISCOVER guidance and information system would have been a better method of meeting my career development needs than the individual counseling method.

A    TA    TD    D    NA

Comments:

32. The individual counseling method of using the DISCOVER guidance and information system was a better method of meeting my career development needs than a group counseling method.

A    TA    TD    D    NA

Comments:

33. The paraprofessional method (i.e., one of having a work study student available at all times) would have been a better method of using the DISCOVER guidance and information system to meet my career development needs than the individual counseling method of using DISCOVER.

A    TA    TD    D    NA

Comments:
III. Information on use of DISCOVER

34. I used the following DISCOVER career resources.

(Please check only one)

- Information System only
- Guidance and Information System only
- Both the Information System and the Guidance and Information System

35. If you used the DISCOVER guidance and information system, place a check by the following modules which you used.

(Please check all that apply)

- Module 1 Career Journey
- Module 2 Occupational Organization
- Module 3 Interest Survey
- Module 4 Abilities Survey
- Module 5 Experiences Survey
- Module 6 Values Survey
- Module 7 Occupation Identification
- Module 8 Occupation Description
- Module 9 Screen Description
- Module 10 Short Description
- Module 11 Long Description
- Module 12 Educational Plans
- Module 13 A Place to Go to Work or School
- Module 14 Plan your Career
- Module 15 Transitions
36. During the past five weeks, I spent a total of _____ hours in the career planning process.

37. Of this time, _____ hours were spent using DISCOVER resources.

Thank you very much for your cooperation.
IV. Demographic Information
(Please check only one in each group)

1. Gender Group
   - Male
   - Female

2. Ethnic Group
   - Black
   - Hispanic
   - Oriental
   - White
   - Other

3. Age group
   - Under 19
   - 19 - 22
   - 23 - 29
   - 30 - 39
   - 40 - 49
   - 50 - 59
   - 60 and over

4. Current Employment Group
   - Unemployed
   - Part Time (less than 30 hours per week)
   - Full Time (30 hours or more per week)
   - Homemaker
   - Retired
   - Other (please explain)
5. Current Income Group

(Your income only for 1987)

0 - $4,999
5,000 - 9,999
10,000 - 14,999
15,000 - 19,999
20,000 - 29,999
30,000 - 39,999
40,000 - 49,999
50,000 and over

6. Current Student Group

(Check all that apply to you)

Plan to enroll part time in 1988
Plan to enroll full time in 1988
(take 12 or more credit hours)
High School Student
College Freshman Student (have earned less than 45 quarter hours of credit)
College Sophomore Student (have earned more than 45 quarter hours, but less than what is needed for an associate degree)
No plans to enroll in college in 1988

Thank you very much for your cooperation.
Dear [Name],

I have read copies of the materials recently produced by the Clearinghouse for Computer-Assisted Career Guidance Systems. is my advisor at Virginia Polytechnic Institute and State University, Blacksburg, Virginia. He suggested that I write you for suggestions and assistance as my dissertation topic "The Impact of Career Information Delivery Systems on Career Counseling in Virginia's Community Colleges" ties directly with the Clearinghouse's research goal number one of conducting original research on the impact of computer technology in counseling and career development on institutions.

At this time, I would like to make two requests of you and your organization. Please send me any information or technical advice which might assist me in my research efforts. Secondly, would you give me permission to replicate the survey used in "Technical Report No. 2, A National Comparison of the Use of DISCOVER and SIGI." My survey would be a slight modification of the one used in this report. It would compare the use of Virginia VIEW with the various computer-assisted career guidance systems now being used in Virginia's community colleges.

A quick response to my inquiry would be appreciated as my Dissertation Prospectus Examination is scheduled for Winter quarter of 1987. It would be a pleasure and honor for me to be able to further the research started by you and Dr. Reardon at Florida State University.

Sincerely yours,

Dale Conrad, N.C.C.
Assistant Professor and Career Counselor
Assistant Vice-President
American College Testing Program

Dear :

During the next twelve to eighteen months I will be completing an evaluation study of the impact of career information delivery systems upon career counseling in Virginia's Community Colleges under Dr. Carl McDaniels at Virginia Tech. I wonder if you might know of any evaluation studies which have been completed during the last five years of the use of DISCOVER with adult learners in community colleges. New River Community College is one of a growing number of community colleges in Virginia which has started using DISCOVER during the past year.

If you know of any such evaluation studies, I would appreciate your sending me any information on them, or their author’s name, address, and telephone number. As usual in things of this nature, it would help to know soon. My telephone number at NRCC is , and my home phone is if you need to call. Thank you for your consideration and help in this research endeavor.

Sincerely yours,

Dale Conrad, N.C.C.
Career Development Counselor
New River Community College
Dublin, VA 24084
January 30, 1987

Senior Research Scientist
Educational Testing Service

Dear :

During the next twelve to eighteen months I will be completing an evaluation study of the impact of career information delivery systems upon career counseling in Virginia's Community Colleges under Dr. Carl McDaniels and Dr. Marty Gerstein at Virginia Tech. I wonder if you might know of any evaluation studies which have been completed during the last five years of the use of SIGI in community colleges.

If you know of any such evaluation studies, I would appreciate your sending me any information on them, or their author's name, address, and telephone number. As usual in things of this nature, it would help to know soon. My telephone number at NRCC is , and my home phone is if you need to call. Thank you for your consideration and help in this research endeavor.

Sincerely yours,

Dale Conrad, N.C.C.
Career Development Counselor
New River Community College

Dublin, VA 24084
January 30, 1987

Dr. Carl McDaniels, my major professor at Virginia Tech, suggested that I should contact you for possible help in researching my dissertation topic. During the next twelve months I will be completing an evaluation study of the impact of career information delivery systems upon career counseling in Virginia's Community Colleges. He stated that you may know of similar studies which may have recently been or are concurrently being done which are not in the literature at the present time. In particular, I am interested in contact people who are working with the evaluation of state-wide career information delivery systems. If you know of such studies, please provide me the name, address, and telephone number of the authors and I will make the contact.

As usual in things of this nature, it would help to know soon. My telephone number at NRCC is , and my home phone is if you need to call. Thank you for your consideration and help in this research endeavor.

Sincerely yours,

Dale Conrad, N.C.C.
Career Development Counselor
New River Community College
Dublin, VA 24084
January 30, 1987

Executive Director
Career Information Systems
Center for Advanced Technology in Education
University of Oregon

Dear :

During the next twelve to eighteen months I will be completing an evaluation study of the impact of career information delivery systems upon career counseling in Virginia's Community Colleges under Dr. Carl McDaniels at Virginia Tech. While doing my search of the literature, I read your article on "Standards of Quality in Systems of Career Information in the JCD. You made reference to a Handbook of Standards for Computer-Based Career Information Systems. If possible, I would like to purchase a copy of this handbook. It may be that the ACSCI standards of service can be used as a model for my evaluation study.

As usual in things of this nature, it would help if I could obtain a copy of this book soon. If you need to call me, my telephone number at NRCC is , and my home phone is Thank you for your consideration and help in this research endeavor.

Sincerely yours,

Dale Conrad, N.C.C.
Career Development Counselor
New River Community College  
Dublin, VA 24084  
January 30, 1987

Director  
ERIC Counseling and Personnel Services Clearinghouse  
College of Education  
University of Michigan

Dear:

During the next twelve to eighteen months I will be completing an evaluation study of the impact of career information delivery systems upon career counseling in Virginia's Community Colleges under Dr. Carl McDaniels at Virginia Tech. While doing my search of the literature, I read your article on "Role of the Counselor with Computers" in the JCD. You made reference to SHAPE—Self Help Approach to Program Evaluation in your article. If possible, please send me a copy of SHAPE. It may be that SHAPE can be used as a model for my evaluation study. Please let me know if this could be done if it proves to be what I am looking for in my search of the literature.

As usual in things of this nature, it would help to know soon. If you need to call me, my telephone number at NRCC is , and my home phone is

Thank you for your consideration and help in this research endeavor.

Sincerely yours,

Dale Conrad, N.C.C.  
Career Development Counselor
February 16, 1987

Mr. Dale Conrad
Career Development Counselor
New River Community College

Dublin, VA 24084

Dear Mr. Conrad:

Thanks for your letter of January 30 in which you enquire about evaluation studies done in community colleges about DISCOVER for Adult Learners. Unfortunately, I am not aware of any. There have been significant studies on this system both at Oakland University (four-year institution) by 1. I am enclosing references on these two.

You may not be aware of the clearinghouse which runs at Florida State. It does a constant review of the literature of computer-based systems and provides abstracts much like those available through ERIC. I also enclose address and phone number for this clearinghouse. You can get free abstracts there about everything that is going on in published research.

Good luck!

Yours truly,

Assistant Vice President
February 12, 1987

Mr. Dale Conrad
Career Development Counselor
New River Community College
Dublin, Virginia 24084

Dear Mr. Conrad:

I have 3 sources of information that may be useful in your research effort.

1. The NOICC Directory asks State Occupational Information Coordinating Committees (SOICC) if they have conducted evaluations of their career information delivery system (CIDS). The responses to that item in our May 1986 data are attached. If you wish to contact any of the SOICC's indicating they have an evaluation, a SOICC directory is enclosed.

2. The most recent large scale evaluation of a CIDS was done for the New York SOICC. A copy of the Executive Summary is attached. My understanding is the full report is available in ERIC.

3. I have spoken to the President-Elect of the Association of Computer-Based Systems for Career Information (ACSCI), Chuck Mollerup, who is the Idaho SOICC Director about the issue of evaluation as a priority for ACSCI. You might wish to contact him as well. His telephone number is in the SCICC Directory.

If you have any further questions, don't hesitate to call. My number is

Sincerely,

[Signature]
TO: Dale Conrad, N.C.C.

FROM: Ph. O., Ph.D.

March 5, 1987

RE: Evaluation Models

Please find the enclosed information concerning evaluation models, which you requested in January. I am sorry for the delay in sending you this information, but I was momentarily behind in fulfilling personal requests. I am glad your pre-prospectus exam went well and I hope you will find this material helpful in your research. If I can be of any further assistance, please feel free to contact me at the Florida State University.
**IBM-PC with 256K and Color Display**

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<th>ITEM DESCRIPTION</th>
<th>PRICE</th>
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<tr>
<td>IBM-PC with 256K, 2 double sided double density Disk Drives, PC-DOS 2.1, Color Graphics Adapter and Quadboard</td>
<td>$2,772.00</td>
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<tr>
<td>IBM Color Monitor</td>
<td>$544.00</td>
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<tr>
<td>Quadram Quadlink board (emulates Apple computer)</td>
<td>$442.00</td>
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<tr>
<td>DCA IRMA board (emulates IBM 3278 terminal)</td>
<td>$960.00</td>
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<tr>
<td>IBM Displaywriter 2 word processor</td>
<td>$209.30</td>
</tr>
<tr>
<td>Epson FX-80P matrix printer with cable for the IBM-PC</td>
<td>$542.00</td>
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**SYSTEM PRICES**

| IBM-PC with Epson FX-80 printer                                                                      | $5,469.30 |

*Source: Management Analysis and Systems Data Standard Contract*
## EQUIPMENT

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<tr>
<td>IBM Color Monitor</td>
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<tr>
<td>Quad Ram Quad Board for the IBM-PC with 64k, 1 serial port, 1 parallel port, dock calendar</td>
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<td>20 Megabyte Hard Disk Drive</td>
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<td>Epson FX-85 Printer (parallel) with a cable for the IBM-PC</td>
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<td>Discover - License Fee</td>
<td>1,200.00</td>
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<td>Microfiche Reader</td>
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