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ABSTRACT

This study compares the effectiveness of the computer-based Occupational Information Access System (OIAS) with the Lane Community Counseling Center, Eugene, Oregon, in terms of their abilities to deliver occupational information to 1970-71 students. Cost models were developed for both. Research findings include: (1) OIAS rated "good" and the Counseling Center "fair" when compared with a model system checklist; (2) both systems were attractive, OIAS largely because of its unique teletype terminal and the Counseling Center because of students' information needs; (3) counselors had more effect on students' career plans and career certainty than did OIAS, though this difference was due in part to dissimilar system purposes, different student motivations for using the two systems, and the large number of OIAS users who were certain of their future careers before accessing information; (4) all but a few students were satisfied with the information received from either system; and (5) OIAS delivered information of at least equal quality to the Counseling Center in about one-half the time per user, at a cost one-tenth or less that of the Counseling Center. The main conclusion is that OIAS is a useful tool for counselors and students because of its general ability to store and deliver information more efficiently and less expensively than counselors. (Author)

THE EFFECTIVENESS OF TWO SYSTEMS FOR DELIVERING OCCUPATIONAL INFORMATION: A COMPARATIVE ANALYSIS

by

LARRY LYNN ROSS

A THESIS

Presented to the Department of Economics
and the Graduate School of the University of Oregon
in partial fulfillment
of the requirements for the degree of
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Title: The Effectiveness of Two Systems for Delivering Occupational Information: A Comparative Analysis

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This study compares the effectiveness of the computer-based Occupational Information Access System (OIAS) with the Lane Community College Counseling Center in terms of their abilities to deliver occupational information to 1970-1971 Lane Community College students. Data were gathered from three sources: telephone interviews with eighty-five students who had used either OIAS or the Counseling Center to access occupational information, personal interviews with College personnel, and OIAS project files. Evaluation standards were (1) a model system checklist comprised of ideal system characteristics, (2) system attractiveness, (3) effects on career plans and career certainty, (4) user satisfaction, and (5) results and costs of information search. Cost models were developed for both OIAS and the Counseling Center. Research findings include: (1) OIAS

rated "good" and the Counseling Center "fair" when compared with a model system checklist; (2) both systems were attractive, OIAS largely because of its unique teletype terminal and the Counseling Center because of students' information needs; (3) counselors had more effect on students' career plans and career certainty than did OIAS, although this difference was due in part to dissimilar system purposes, different student motivations for using the two systems, and the large number of OIAS users who were certain of their future careers before accessing information; (4) all but a few students were satisfied with the information received from either system; and (5) OIAS delivered information of at least equal quality to the Counseling Center in about one-half the time per user, at a cost one-tenth or less that of the Counseling Center. The main conclusion is that OIAS is a useful tool for counselors and students because of its general ability to store and deliver information more efficiently and much less expensively than counselors.

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For Mother, Dad, and Vicki

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

OCCUPATIONAL INFORMATION, DELIVERY SYSTEMS, AND THE SCHOOLS

Importance of Occupational Information

It has been said that "knowledge is power." In terms of occupational choice and the labor market, valid and up-to-date information about jobs and the job market is most important. Those persons who possess such information will be most likely to make expedient, rational decisions about jobs. Shartle described occupational information as:

> . . . essentially a description of man's work and its related conditions. It is not primarily a study of the characteristics of man himself, but of his environment . . . . Occupational information is not merely an aid in counseling or decision-making at a particular time; it represents information that is relevant to the vocational development of the person and his adjustment throughout the life span.[1]

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[1] Carroll L. Shartle, Occupational Information: Its Development and Application (3rd ed.; Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1959), p. 2.

> The development of occupational information in a systematic fashion has progressed considerably during the past quarter century. It may be forming a science of its own . . . . The techniques and data used are adapted from several disciplines. Survey methods come from educational research, sociology, and psychology. Job analysis is from engineering and psychology. Information about the labor force and labor market is based on data in sociology and economics. Counseling and instruction methods for applying occupational information are in education and psychology. It is thus no wonder that a course in occupational information at the college level may be found in any of several departments, depending on the institution.[2]

Numerous career development theorists and economists have emphasized the relevance of occupational and labor market information to both vocational development and labor market efficiency. Super considered "possession of information concerning the preferred occupations" a very essential part of an individual's vocational development,[3] and listed information and planning about occupations among the five dimensions of vocational maturity.[4]

Stigler, in a 1962 landmark article, stressed the importance of information to help eliminate labor market imperfections:

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[2] Ibid., p. 19.

[3] Samuel H. Osipow, "Super's Developmental Self-Concept Theory of Vocational Behavior," in Theories of Career Development (New York: Appleton-Century-Crofts, Inc., 1968), pp. 124-25.

[4] Ibid., p. 129.

> There is no exaggeration . . . in the suggestion that the analysis of the precise problems of information and of the methods an economy uses to deal with them appears to be a highly rewarding area for future research.[5]

Stigler regarded labor market information as capital: ". . . it was produced at the cost of search, and it yields a higher wage rate than on average would be received in its absence."[6] According to Stigler, investment in information results in

> . . . more efficient allocation of the labor force; the better informed the labor market, the closer each worker's (marginal) product is to its maximum at any given time. From this viewpoint, the function of information is to prevent less efficient employers from obtaining labor, and inefficient workers from obtaining the better jobs. In a regime of ignorance, Enrico Fermi would have been a gardener, Von Neumann a checkout clerk at a drugstore.[7]

Most recently, Parnes characterized the role of information in the labor market in the following manner:

> In an economic system in which individuals are free to choose among occupations and specific jobs, effective allocation of human resources depends upon workers and potential workers having accurate labor market information. The market's measure of the relative social importance of

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[5]George J. Stigler, "Information in the Labor Market," The Journal of Political Economy, LXX, No. 5, Part 2 (1962), 104.

[6]Ibid., p. 103.

[7]Ibid., p. 104.

> different occupations and different jobs is reflected in differentials in economic rewards. These, in turn, are presumed to attract individuals into those occupations and jobs where their contribution to the social product will be at a maximum. But this can occur only if workers have a reasonably good knowledge of the range of alternatives for which they might potentially qualify and of the rewards (and costs) attached to each. Accurate and complete labor market information also is important from the standpoint of the individual. Whatever his particular employment goals, the probabilities of achieving them are enhanced by full knowledge of the existence and characteristics of alternative employment opportunities.[8]

In a 1970 study, Parnes hypothesized that "the degree of success a worker experiences in the labor market is associated with the extent of his labor market information." More specifically, the following hypotheses were tested: (1) that the extent of labor market information is positively related to wage rates and the extent of occupational and wage improvement over time, (2) that an inverse relationship exists between the amount of unemployment and the extent of labor market information, assuming that persons with more knowledge have higher probabilities of finding work, and (3) that a greater congruence exists between occupational aspirations and realizations among persons with

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[8] Herbert S. Parnes, "Knowledge of the World of Work," in Career Thresholds: A Longitudinal Study of the Educational and Labor Market Experience of Male Youth, Vol. I, U.S. Department of Labor Manpower Administration, Manpower Research Monograph No. 16 (Washington, D.C.: Government Printing Office, 1970), 119.

much knowledge of the labor market than among those with little knowledge. Incomplete study results indicated that (1) those with relatively greater labor market knowledge were more likely to believe that they had progressed in terms of job skill and responsibility than those with less knowledge, and (2) those with high scores on an occupational information test enjoyed higher wages than those with low scores.[9] The federal government has also recognized "the widespread inadequacy of workers' information about job opportunities and the frequent reliance, especially among those in lower level occupations, on informal sources of job leads . . . ."[10] A 1968 amendment to the Manpower Development and Training Act charged the Secretary of Labor to "develop a comprehensive system of labor market information . . . on a national, State, local, or other appropriate basis."[11]

The 1970 Manpower Report of the President noted that a labor market information system should provide:

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[9] Ibid., pp. 120-38.

[10] U. S., Department of Labor, Manpower Report of the President Including a Report on Manpower Requirements, Resources, Utilization, and Training (Washington, D. C.: Government Printing Office, 1969), p. 191.

[11] U. S., Department of Labor, Manpower Report of the President: A Report on Manpower Requirements, Resources, Utilization, and Training (Washington, D. C.: Government Printing Office, 1970), p. 199.

1. . . . essential information on the operation of labor markets necessary to accomplish such purposes as . . . measurement of the welfare of workers in terms of employment, earnings, hours of work, and working conditions; planning in the field of manpower, including projections of future manpower requirements and supply; . . . information on other employment-related problems such as underemployment, barriers to employment, part-time employment, seasonal employment, or employment at low rates of pay.

2. . . . data not only at the national level but also for States and local areas . . . .

3. . . . information that is clearly and simply adaptable to the needs of various users, including industry, labor, manpower administrators, public employment officers, educational officials responsible for planning or for vocational guidance, and workers. This means that attention has to be paid to the specific needs of these various users and to their understanding of the problems so that the information can be presented in a manner they can understand and apply to their needs.[12]

Occupational Information and the Schools

In order to make rational decisions about future education and training, students should be aware of available occupations, characteristics and rewards of different jobs, and entrance requirements. Parnes listed the following questions as being of fundamental importance to students:

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[12] Ibid., p. 202.

> Which firms in the area have openings in relevant occupational categories? Which firms are the best employers in terms of wage rates, fringe benefits, and other factors that influence satisfaction or dissatisfaction with work? Are opportunities greater outside the local area, either in terms of job vacancies or in terms of better wages, working conditions, or other prerequisites?[13]

Shartle, author of a book on occupational information published in 1959, noted that

> The schools and colleges of the country have a great need for occupational information in individual and group educational and vocational counseling and in planning and establishing new and revised courses of study. The schools are often criticized by industry and business for not relating educational programs in the light of the actual needs that graduates and others who leave school encounter in trying to secure and hold a job. Realistic information about the jobs and industries in a community can contribute much to educational planning. Similarly, an analysis of the longer range occupational and industrial trends can yield information important to the development of new courses and the revision of old ones.[14]

Two guidance experts went so far as to maintain that "vocational guidance is implemented through the use of appropriate occupational information."[15] Whether or not this is true, one can hardly deny the

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[13]Parnes, "World of Work," p. 119.

[14]Shartle, Occupational Information, pp. 8-9.

[15]James C. Hansen and Herman J. Peters, ed., Vocational Guidance and Career Development (New York: The MacMillan Company, 1966), p. 173.

importance of thorough and reliable knowledge to vocational decisions.

A foremost authority on vocational counseling, Leona Tyler, stated that a person choosing a career needs "relevant information about fields of work, information presented in such a way as to make it possible for him to assimilate it."[16] This statement clearly points out the necessity of not only providing quality information, but also making this material available to the user in an easily accessible and understandable form.

Tyler distinguished between students involved in exploration of occupations, and those engaged in actual occupational selection. A student in the exploration stage, a "search for promising alternative courses of action," should be provided with such materials as descriptions of occupational situations, films, field observations, and conversations with workers. On the other hand, the student interested in selecting an occupation is searching for answers to questions like: What are the prospects for placement once he gets out of school? Where would he be likely to live? How high is the income level, and what are his chances for advancement? Tyler noted that "such

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[16] Leona E. Tyler, The Work of the Counselor (New York: Appleton-Century-Crofts, Inc., 1969), p. 173.

information of this kind has not found its way into the standard occupational materials, such as leaflets and monographs."[17]

School Counseling--Need for Better Delivery Systems

Hoppock,[18] and Baer and Roeber[19] emphasized that counseling and guidance can and should play large roles in a student's occupational decision-making process. By identifying, evaluating, and classifying occupational information, and by making it available for students to use, counselors can contribute positively toward an individual's occupational choice. However, given the abundance of such information, it would be highly unrealistic, if not impossible, for a counselor to gather, sort, and arrange this vast quantity of information. Such tasks would require a fulltime staff member, thus occupying valuable time that should be spent in individual counseling sessions with students.

Many experts have voiced concern for the inability of school counseling programs to provide adequate occupational and labor market

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[17] Ibid., pp. 119-21.

[18] Robert Hoppock, Occupational Information (New York: McGraw-Hill Book Company, Inc., 1963).

[19] Max F. Baer and Edward C. Roeber, Occupational Information: The Dynamics of Its Nature and Use (Chicago: Science Research Associates, Inc., 1964).

information to students. As early as 1959 Shartle, although noting considerable growth of occupational information in secondary schools during the 1950's, pointed out that

> . . . both secondary schools and colleges are generally still inadequate in supplying occupational information to students--particularly information that reflects the nature of job opportunities in the communities in which their graduates seek employment."[20]

Dorothy Johnson, an Associate Professor of Psychology-Counseling at Ball State University, expressed the following opinion at the 1967 Indiana Manpower Research Conference:

> Counselors, along with teachers and other educators, must provide opportunities for students to learn problem solving and decision-making within a realistic context. Students must have available to them current, accurate, and appropriate data as tools for effective decision-making. Present vehicles and methods for the collection and dissemination of information are largely archaic. Much of the material that counselors receive is outdated the day it reaches their desks. Indeed, some significant studies applying new technologies and methods to the field of information are under way. Systems centering around computer-assisted systems, media such as TV, audio tapes, print outs, microfilm and microcards, and gaming techniques will provide youngsters with more efficient tools than presently exist for exploring themselves and the employment scene. At the same time these systems will release counselors to

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[20] Shartle, Occupational Information, p. 10.

contribute more effectively as counselors to the decision-making process.[21]

Numerous surveys in recent years have concluded that new systems are badly needed to deliver occupational and labor market information to students. A 1967 poll of school counselors and administrators in the state of New York indicated that counselors felt poorly prepared in occupational information.[22] A 1968 national survey of school personnel reported that (1) although roughly 58 percent of high school graduates enter work or a work training program after high school, occupational information for this group is very poor; and (2) information on training opportunities, job clusters, worker characteristics, and occupational outlook is inadequate. This study recommended (1) that multi-media approaches be developed to deliver occupational and labor market information, (2) that government assume responsibility for data-gathering, (3) that state or

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[21] Dorothy Johnson, "Counselling for Occupational Choice in the Face of Technological Change," in Indiana Manpower Research Conference, 1967 Proceedings (Indiana: Indiana University, 1967), pp. 174-75.

[22] George S. Dubato, A Feasibility Study to Investigate the Structure and Operation of a Model Occupational Information Dissemination Unit Which Would Operate Between the New York State Employment Service and the New York State Education Department (Albany, New York: Bureau of Occupational Education Research, New York State Education Department, 1967).

regional information centers be established, and (4) that films and filmstrips be used to portray work duties.[23]

In a 1969 study, questionnaires were completed by 59 percent of counselors at the 167 Youth Opportunity Centers of the U.S. Employment Service. Among the counselors' recommendations were that schools provide better occupational information, more vocational guidance, and more courses concentrating on basic pre-vocational skills.[24] The Human Factors in Technology Research Group at the University of California, Berkeley, recently conducted interviews with school staffs in the Bay Area. A viewpoint encountered in these interviews was

> that an adequate program of occupational guidance for youth must include more and better ways of acquainting students with the world of work than by improved guidance

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[23]University of Wisconsin, Industrial Relations Research Institute, A National School Counselor Evaluation of Occupational Information (Madison, Wisconsin: Industrial Relations Research Institute, University of Wisconsin, 1968).

[24]Donald F. Eggeman, Robert E. Campbell, and Albeno P. Garbin, Problems in the Transition from School to Work as Perceived by Youth Opportunity Center Counselors: A National Survey (Columbus, Ohio: Center for Vocational and Technical Education, Ohio State University, 1969).

materials in written form.[25]

In a study published in 1970, Parnes observed very low scores on an occupational information questionnaire among youths fourteen to seventeen years of age, and pointed out that such scores were discouraging "since they suggest that largely irreversible educational decisions by high school students are being made on the basis of relative ignorance." Arguing for schools to assume a larger role in informing students about the world of work, Parnes concluded that

> . . . there are already indications that the amount of knowledge a young man has about the world of work makes a difference so far as his success in the labor market is concerned. Those with relatively greater knowledge are more likely to believe they have progressed in terms of the skill and responsibility of their jobs during the year preceding the survey. Of greater importance, even when educational attainment is controlled, those with high scores on the occupational information test enjoy higher wages than those with low scores. These data suggest that labor market information provides a significant payoff to the individual.[26]

This is the irony: although nearly everyone realizes that schools must make every effort to link their teaching and vocational training to

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[25]Human Factors in Technology Research Group, Requirement and Design of a Labor Market Information System for a Large Metropolitan Area: Quarterly Progress Report for the Period 10/1/70-12/31/70 (Berkeley, California: Department of Industrial Engineering and Operations Research, University of California, Berkeley, 1970), p. 4.

[26]Parnes, "World of Work," pp. 137-38.

the real world, it is blatantly apparent that delivery systems for occupational information are grossly inadequate, or even nonexistent. Too many students muddle through twelve or sixteen years of school without ever reaching rational decisions concerning their post-school future. The names of such persons far too often eventually appear on lists of the unemployed.

Multi-Media Approaches to Information Delivery

Numerous attempts have been made to develop multi-media approaches to delivery of occupational and labor market information.

The use of recorded tapes as a delivery mechanism was discussed as early as 1952 by Kenyon, who reported on a community effort using recordings of job descriptions, entry requirements, and local employment opportunities.[27] A closed circuit television was described by Beachley in 1959 as a medium for delivering information to junior and senior high school students in Washington County, Maryland.[28] Hoppock described a dual media system involving color slides and

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[27] Lawrence B. Kenyon, "Dust Off That Tape Recorder," Occupations, XXX (February, 1952), 327-28.

[28] C. Beachley, "Careers Via Closed Circuit Television," Vocational Guidance Quarterly, VII, No. 2 (1959), 67-70.

corresponding tape recordings covering job duties and training for fifty local occupations.[29]

A 1967 article by Pierson and others reported on a regional career information center established in San Diego County, California, to collect, abstract, synthesize, produce, store, and disseminate occupational and labor market information to high schools and junior colleges. Microfilm aperture cards were used to store the following information covering approximately 200 occupations: hiring and training requirements, job descriptions, salaries, lists of local training institutions, lists of local people willing to talk with students about the occupations, and bibliographies of related studies.[30]

Project VISION (Vocational Information System Involving Occupational Needs), a research project conducted by the Wisconsin State Employment Service, aimed at developing "a model system of local occupational and employment information involving current and prospective manpower resources and requirements" for educational planners.[31] An essential part of this project was the development of

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[29]Hoppock, Occupational Information, p. 304.

[30]Glen N. Pierson, Richard Hoover, and Edwin A. Whitfield, "A Regional Career Information Center, Development and Process," Vocational Guidance Quarterly, XV, No. 3 (1967), 162-69.

[31]Thomas Ritter, "Project VISION: An Approach to a Model System of Occupational Employment Information," in Indiana Manpower

a standard method of preparing job guides, descriptions, or occupational briefs. According to Ritter, this system represented an attempt "to utilize both labor market and occupational analysis expertise in disseminating occupational employment information."[32]

Among recent experimenters in delivery of occupational information were the New York State Education Department and the New York State Employment Service, who cooperated to produce and disseminate current information about local occupations. Tested at six high schools, three vocational technical programs, and three two-year colleges, this system consisted of 200 occupational guides in two forms, microfilm aperture cards and loose-leaf binders. Heaviest use of these guides was reported among students in vocational technical programs.[33]

Computer Technology: Role in Delivering Information

Many recent efforts toward "streamlining" the delivery of

Research Conference, 1967 Proceedings (Indiana: Indiana University, 1967), p. 101.

[32] Ibid., p. 116.

[33] New York State Education Department, Bureau of Occupational Education Research, A Demonstration System of Occupational Information for Career Guidance, Final Report (Albany, New York: Bureau of Occupational Education Research, New York State Education Department, 1968).

occupational and labor market information have involved the computer. As applied to educational counseling and guidance, a computerized occupational information system introduces increased flexibility and storage capacity into the guidance process. The computer-based system allows one to change and update job descriptions, hours, wages, educational and training requirements, and employment outlooks, as well as providing the capacity for adding new occupations and eliminating outdated ones.[34]

Huber and Ullman pointed out, in regard to computerized job matching, that

> Computer technology can be used to speed and improve the assessment of workers and jobs. And better assessment will have payoffs in counseling as well as in placement . . . . All of the fully computerized systems are still developmental, and many design problems remain to be solved before they can significantly affect employment service operations. The continuing development of such systems will help the employment service move toward a national job-matching network. The number and magnitude of unresolved problems suggest, however, that the major gains from computerization still lie in the future.[35]

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[34]Joseph T. Impellitteri, "A Computerized Occupational Information System," Vocational Guidance Quarterly, XV, No. 4 (1967), 264.

[35]George P. Huber and Joseph C. Ullman, "Computer Job Matching--How and How Well," Manpower, II (November, 1967), 6.

The importance of the computer as a delivery medium for labor market information was stressed in the 1970 Manpower Report of the President:

> The availability of electronic data processing equipment for job matching provides numerous opportunities for using job market information more effectively in the placement process. It can shorten the time needed to get useful data to the employment interviewer or counselor involved. Information can be presented to the counselor in an immediately usable form without the need for extensive reading from a variety of sources.[36]

In spite of cries of depersonalization, dehumanization, and "I'm not going to let some machine tell me what to do!," it appears that the computer is here to stay as a mechanism for storing and delivering occupational information.

Computerized Information Delivery Systems

Numerous projects have utilized the computer as a delivery mechanism for occupational and labor market information. A few of the most recent and important projects will be described here.

The Information System for Vocational Decisions (ISVD) project was initiated through Harvard University in 1966. Through a

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[36] U. S., Department of Labor, Manpower Report of the President, 1970, p. 199.

computer-based training system, the goal of this project was to improve vocational decision-making of New England secondary students.[37] The following statement appeared in the original project proposal:

> What is needed is a system which will provide for the student direct access to all relevant facts without requiring the direct mediation of a counselor. This would bring about a change in the counselor's role. Instead of being both source and interpreter of facts, he would have the primary responsibility of interpreting the student's use of the facts as he transforms them into information. This would require attention to the role of unconscious motivation, and the effort to help the student transform his tacit understandings into explicit ones . . . . Ultimately, it should be possible for the student to use the data system in a relatively independent manner for both exploration and decision-making, with recourse to the counselor only when assistance or interpretation is needed.[38]

Impellitteri[39] described a computer-based occupational information system developed by the Department of Vocational Education at the Pennsylvania State University during 1966-1967. This system,

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[37]Harvard University Graduate School of Education, New England Data Systems, and Newton (Massachusetts) Public School System, Information System for Vocational Decisions, Annual Report 1966-1967 (Cambridge, Massachusetts: Graduate School of Education, Harvard University, 1967), pp. 1-5.

[38]Ibid., pp. 4-5.

[39]Impellitteri, "A Computerized Occupational Information System"; Impellitteri, "Exploration with a Computer-Assisted Occupational Guidance Program" (paper presented at the annual meeting of the American Educational Research Association, Los Angeles, California, February 5-8, 1969).

designed to individualize the presentation of occupational information by matching information about the students' abilities, preferences, and educational plans with stored general occupational information, consisted of (1) computer printouts of job descriptions, related sources of information, and lists of discrepancies between job requirements and the student's qualifications; (2) tape recordings providing narrative orientation to the system and interviews with actual workers in the field; and (3) a slide projector showing workers performing typical job duties, employment outlook, and diagrams pertinent to certain occupations. Centered around an IBM 1050 computer terminal, this system matched ninth-grade students' General Aptitude Test Battery (GATB) profiles with certain occupations. This selective presentation of occupational information was intended as an effective complement and aid to the counselor, providing

> the function of information-giving, that portion of the vocational guidance process which counselors are admittedly less adept to handle, and more willing to delegate. The role of the counselor in vocational guidance . . . is thus revised. His responsibilities no longer include knowledge of specific jobs, but instead involve the understanding of the world of work, its relation to individual goals and aspirations, and the ability to communicate effectively with the student in these terms.[40]

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[40]Impellitteri, "A Computerized Occupational Information System," p. 263.

Student reaction to this system was generally positive, and printouts were viewed as the most useful component of the system.[41]

Private firms have also entered the field. The International Business Machines Corporation (IBM) recently developed and tested a computerized Educational and Career Exploration System (ECES). System components included (1) an occupational information bank, (2) an educational information bank listing training and educational programs, and (3) a college information bank listing names of post-high school educational institutions.[42]

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[41] Impellitteri, "Computer-Assisted Occupational Guidance Program."

[42] Frank J. Minor, A Computer Based Educational and Career Exploration System (Yorktown Heights, New York: International Business Machines Corporation, 1970).

CHAPTER II

TWO SYSTEMS FOR DELIVERING OCCUPATIONAL INFORMATION

The Occupational Information Access System (OIAS)

The Occupational Information Access System (OIAS) was developed by the University of Oregon School of Community Service and Public Affairs and the Bureau of Governmental Research and Service, with funds provided by the State of Oregon Employment Division and the United States Department of Labor Manpower Administration. Primarily based on the premise that occupational and labor market information is under-utilized due to its inaccessibility to counselors and clients, the OIAS project had as its purpose to design and test a model information access system which would make occupational information more accessible for career counseling.

Research by OIAS staff during the early stages of the project revealed (1) occupational information courses and counselor training programs in Oregon and Washington colleges did not emphasize access,

delivery, or format of occupational information,[1] and (2) most counselors receive no formal in-service training in the use of labor market information.[2]

In light of the above purpose and findings, project personnel set out to design a system which would (1) make information available to persons of varying needs and abilities, (2) present information in various formats and media, (3) emphasize local occupational and labor market information, and (4) be usable independently or as part of the counseling process.

Initially begun in September, 1969, the Occupational Information Access System became operational in May, 1970, and was installed and tested at five pilot agencies in Eugene, Oregon. These test sites included the State of Oregon Vocational Rehabilitation Division, the State of Oregon Employment Division, the University of Oregon Counseling Center, Churchill High School, and Lane Community College.

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[1]Randolph Selten, "Survey of Counselor Education in Oregon and Washington," University of Oregon, Eugene, Oregon, 1969. (Mimeographed.)

[2]Mike Shadbolt, "Survey of In-Service Training in Labor Market Information," University of Oregon, Eugene, Oregon, 1969. (Mimeographed.)

The Occupational Information Access System consists of five components:

1. Information Referral Generator

   This aspect of OIAS consists of a paper-pencil questionnaire and a teletype terminal connected to a time-sharing computer (a needle-sort card system is used in place of the teletype terminal in the manual version of OIAS). Stored in the computer memory bank are titles and descriptions of approximately 200 occupations, with emphasis on local occupations and data. If a user knows the name of an occupation about which he desires information. he enters the appropriate code and receives a list of information available in the four information files: interview cassette tapes, bibliography and books, job description printouts, and personal visit file. If a user does not desire information about a particular occupation, but instead wishes to receive a list of occupations to consider, he completes the questionnaire by indicating his requirements regarding physical capabilities, geographic location, city size, education, aptitudes, interests, and minimum acceptable salary. After entering the appropriate code and inputting questionnaire answers, the user receives a list of occupations having the

specified characteristics. The user can review the list, determine which occupations he wants to learn more about, and enter the appropriate codes to obtain the desired information.

2. Job Description Printouts

These descriptions, up to 250 words in length, emphasize local information and cover such topics as job duties, working conditions, hiring and licensing requirements, employment level, typical employers, salaries and wages, and employment outlook for approximately 200 occupations.

3. Interview Cassette Tapes

Pre-recorded and locally produced tape recordings of interviews with persons employed in or possessing knowledge of an occupation are provided with OIAS. These tapes, designed for persons unfamiliar with an occupation or unable to digest information in more abstract forms, briefly describe major job duties, work environment, and job functions. Both interview tapes and cassette tape recorders allow easy individual use.

4. Bibliography and Books

Selected sources are provided containing information about

various occupations included in OIAS; these sources are accessible through a bibliography notebook listing occupation names and appropriate sources, both general and specific.

5. Personal Visit File

The following information regarding persons to contact about an occupation is available for at least eighty occupations and is accessible through the teletype terminal: name, position or title, telephone number, firm name and address, and contact instructions. Each person listed has previously agreed to discuss a certain occupation with OIAS users.

The Occupational Information Access System was installed at Lane Community College in July, 1970, and was located in a room in the Center Building of the college along with a portion of the school's other occupational materials. Although student use was quite low at first due to relatively small summer enrollment and activities, four counselors reported using the system forty-five to fifty times during the first two months after installation.

An evaluation conducted early in September, 1970, revealed that counselors found the system easy to use; initial complaints involved computer downtime and some students' difficulties operating the terminal. Counselors described most students as interested, receptive,

amused, and impressed with OIAS. All four counselors interviewed agreed that (1) the system made occupational information more accessible, and (2) they generally made better use of occupational information after installation than before. Three of the four counselors indicated that the Occupational Information Access System saved them time previously spent searching for information. Divergent views were expressed regarding the types of individuals benefiting most from the system.

The Occupational Information Access System received much student use at Lane Community College during the 1970-1971 regular school year. During one-half of this nine-month period the system was located in the Placement Office of the Center Building, and was available for student use on a walk-in, no-appointment basis. Approximately 100 individual uses per month were recorded during this time.

The Lane Community College Counseling Center[3]

The fifteen counselors at Lane Community College function within a unique "open" system designed to make counselors more

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[3]This section is based on information received from John White, Lane Community College Director of Counseling, in a private interview held at Lane Community College, May, 1971.

readily accessible to students. Providing counseling services for thirteen hours per day Mondays through Thursdays and nine hours on Fridays, the Counseling Center endeavors to break down the connotation that to visit a counselor is to openly admit mental illness.

Every new student at Lane Community College is required to see a counselor. Typical topics of discussion during these initial interviews include orientation to college, career goals, and educational program planning. New student interviews, however, comprise a very small amount of the counselors' work.

Most students visit counselors voluntarily on a walk-in, no-appointment basis, a plan designed to promote the Center's goal of increasing counselor accessibility. As a result, there is no official client intake procedure as in many counseling service centers. No official records of students visiting counselors are kept, although individual counselors may keep their own records if they wish. Students are encouraged to drop in any time to discuss life goals, academic problems, careers, personal problems, scheduling, or whatever else is on their minds.

The responsibilities of Lane Community College counselors do not begin and end in their individual offices. When not involved in personal counseling, counselors often travel around campus and can be seen talking with students, both individually and in groups. The

Counseling Center recognizes the importance of going to certain groups of students such as Aid to Dependent Children (ADC) mothers, Blacks, and ethnic groups. Counselors regularly attend Adult Basic Education (ABE) classes, whose enrollees have less than an eighth grade education.

Each counselor is assigned to a certain academic department at Lane Community College, and participates in departmental activities and faculty meetings. This departmental assignment system is a means of providing counseling services with both breadth and depth of expertise, for the college realizes that no one counselor can be an expert in every academic or vocational field. Students enrolled in specific academic programs are often channelled to counselors assigned to these respective programs, although no student is <u>required</u> to meet with a particular counselor. Every effort is made to promote and facilitate students' freedom of choice.

Counselors play an active role in the overall academic program at Lane Community College. In addition to teaching classes such as College Orientation, Human Relations, and Career Analysis, counseling staff members also serve on faculty committees such as Curriculum Development. An important part of a counselor's job is staff consulting--talking with administrators, teachers, and staff in working out solutions to individual students' problems.

The Lane Community College Counseling Center makes every attempt to maintain close contact with the surrounding community. To further the Center's aim of reaching as many students as possible, counselors are assigned to visit certain Lane County high schools periodically. Responsibilities range from consulting with high school counselors to discussing the college and its programs with students. The Counseling Center also endeavors to work closely with such social service agencies as the State of Oregon Employment Division, the Vocational Rehabilitation Division, and the Welfare agency.

Approximately 75 percent of Lane Community College students who seek counseling are in need of educational and/or vocational planning and career guidance, according to the Director of Counseling. In addition to their own knowledge, counselors rely on occupational information published by the United States Department of Labor. The Occupational Outlook Handbook is regularly used as a starting point; counselors also find the vertical file of occupational monographs quite helpful.

Students seeking general educational requirements for certain careers are regularly referred to the file of college catalogs and bulletins which Lane Community College maintains. A fairly complete library of such publications for West Coast colleges and universities is located in the Counseling Center. A more extensive collection of

catalogs and bulletins is available in the main college library.

By far the largest sources of occupational information for counselors are faculty members and people involved in specific occupations. Students seeking information about a particular occupation are usually referred to appropriate faculty members; the student then visits these teachers personally or in conjunction with a counselor. Nevertheless, efforts are made to encourage student contact with members of the community actually engaged in various occupations.

Lane Community College's Counseling Center is, therefore, a conscious attempt to involve counselors in making information about careers and occupations as accessible as possible to students. Close relations between students, counselors, faculty, and working citizens help to promote this goal. Nevertheless, there is a possibility of disparity between goal and practice. It is hoped that the following pages will shed some light on this possibility.

CHAPTER III

EVALUATION STANDARDS AND RESEARCH PROCEDURE

Standards for System Evaluation

This study measures the effectiveness of two alternative systems for delivering occupational information to college students. The two systems analyzed are (1) the Occupational Information Access System (OIAS), and (2) the Lane Community College Counseling Center, both of which were used by students at Lane Community College during the 1970-1971 school year. The benefits accruing from each system will be measured in terms of the following standards:

1. Checklist of Characteristics of an Ideal System

   Authorities on occupational information and career counseling agree that an ideal occupational information delivery system should have certain characteristics. An evaluation of both OIAS and the Lane Community College Counseling Center in terms of such a checklist appears in Chapter IV.

2. System Attractiveness

   An occupational information system must be able to attract

information seekers. The relative attractiveness of OIAS and the Counseling Center will be evaluated in terms of student user answers to question 1, page 37.

3. Effects on Career Plans

A possible benefit of an occupational information system is the change in the user's immediate or long-range career plans as a result of obtaining information. An evaluation of this change in student user behavior centers around question 6 on page 37.

4. Effects on Career Certainty

An effective occupational information system may have an impact on the career certainty of some information seekers. Changes in career certainty of OIAS and Counseling Center student users are indicated by answers to question 7, page 37.

5. User Satisfaction

Although user satisfaction with a system is not necessarily indicative of user welfare, satisfaction may be used as one objective standard for evaluating a system. Personal satisfaction derived from using OIAS and the Counseling Center is measured by question 9, page 37.

6. Results and Costs of Information Search

The result of an information search can be summarized in terms of whether the information seeker finds the information for which he is searching, and the time and costs involved in information search. A comparison of OIAS and the Lane Community College Counseling Center in terms of these objective measures will be conducted using data received from questions 2, 3, and 8 on page 37 and relevant cost figures.

Research Procedure

It was decided that two sample groups of Lane Community College students should be selected to participate in the study: (1) fifty students who had used the Occupational Information Access System (OIAS) to search for occupational information during the 1970-1971 school year, and (2) fifty students who had used the college's Counseling Center to search for occupational information during the 1970-1971 school year.

OIAS Users

Three methods were devised to collect names of fifty Lane Community College students who had used OIAS during the 1970-1971 school year:

1. A survey of student names stored in the OIAS computer

memory bank revealed many names; however, the number of names usable for the study was limited, because (a) many OIAS users at the college were not registered students, and (b) many registered students, when asked to enter their names at the OIAS computer terminal, entered only their first names, making any follow-up study impossible.

2. The staff at Lane Community College was requested to maintain a file of OIAS user sign-up sheets. Nevertheless, only a few such records could be found.

3. An article was placed in the college newspaper asking students who had used OIAS to contact the college Placement Office. This attempt resulted in no names whatsoever.

Despite numerous difficulties, the names of fifty students who had used OIAS during the school year were secured. The proper administrators were then consulted for permission to use student records to find corresponding telephone numbers for the fifty students. (Lane Community College regards student names and personal information as confidential; no student directory is published.)

Counseling Center Users

The following steps were followed in an attempt to gather names of fifty Lane Community College students who had used the Counseling

Center to search for occupational information during the school year:

1. A random sample of 500 students, drawn on the basis of student social security numbers, was secured with the aid of a college statistician. This sample was drawn by a computer; names and addresses of the 500 students were printed on ready-to-use address labels.

2. Five hundred two-way postcards were printed, bearing a short note of introduction and one question: Have you used the L.C.C. Counseling Center during this school year to search for information about occupations and careers? (A replica of these postcards appears in the Appendix.)

3. The address labels were affixed to the 500 two-way postcards; the postcards were then placed in the mail.

Three weeks after mailing only thirty-five cards had been returned with "yes" responses to the one-question questionnaire. It was decided that a follow-up study of students not returning postcards should be conducted. However, this procedure was abandoned because a copy of the original sample of 500 students had not been retained and could not be duplicated by Lane Community College staff. It was therefore decided that these respondents, although less in number than the proposed fifty students, would have to suffice for purposes of the

study.

The Questionnaire

Fifty OIAS users and thirty-five Counseling Center users were contacted by telephone and asked to respond to the following questions:

1. Why did you use OIAS (Counseling Center)?
2. What information were you searching for?
3. Did you find the information you were searching for?
4. What parts of OIAS did you use to search for this information? (What sources did the counselor either use himself or refer you to in order to search for the desired information?)
5. Specifically, what information did you find out?
6. As a result of using OIAS (Counseling Center), did you change your immediate or long-range career plans? If so, in what way?
7. How certain of your future career were you before and after using OIAS (Counseling Center)? As a result of using OIAS (Counseling Center), did you become more certain of your future career?
8. How much time did you spend searching for the desired information?
9. How satisfied were you with the information you received from OIAS (Counseling Center)?

CHAPTER IV

EVALUATION IN TERMS OF IDEAL SYSTEM CHARACTERISTICS

Ideal System Characteristics

Most authorities agree that a model occupational information delivery system should:

1. Make information accessible to persons of varying ability and experience;

   Tyler has said that every career decision-maker needs "relevant information about fields of work, information presented in such a way as to make it possible for him to assimilate it."[1] Lohnes, writing about college career guidance programs, noted that college students need "access to relevant information and instruction in how to use that

[1] Leona E. Tyler, The Work of the Counselor (New York: Appleton-Century-Crofts, Inc., 1969), p. 119.

information in personal decision-making."[2] Most recently, the 1970 Manpower Report of the President called for a nationwide system to provide occupational information

> that is clearly and simply adaptable to the needs of various users . . . attention has to be paid to the specific needs of these users and to their understanding of the problems so that the information can be presented in a manner they can understand and apply to their needs.[3]

2. Provide a means for integrating occupational information with clients' interests, values, aptitudes, and abilities; Occupational information must be related to personal attributes in order for a decision-maker to reach a rational and logical decision about his future career. Goldman, writing in 1967, emphasized this point--noting that one of the primary reasons for counselors rather than information specialists to disseminate occupational information is that the individual needs information integrated with such

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[2]Paul R. Lohnes, "Learning About Opportunities for Adult Activities and Roles at the College Level," in Computer Based Vocational Guidance Systems (Washington, D.C.: U.S. Office of Education, Department of Health, Education, and Welfare, 1969), p. 17.

[3]U.S., Department of Labor, Manpower Report of the President: A Report on Manpower Requirements, Resources, Utilization, and Training (Washington, D.C.: Government Printing Office, 1970), p. 202.

subjective factors as interests, values, and aptitudes.[4] Goldman obviously believed that counselors alone could provide such services. Lohnes, after acknowledging that a college career guidance program "should help each student know himself better, understand the educational and vocational structure of our society, and relate this knowledge in exploring his career potentialities,"[5] reached quite the opposite conclusion:

> Extensive guidance services for a majority of college students can only be accomplished by an auto-instructional system which minimizes counselor contacts. Through a core of auto-instructional experiences students could learn rubrics and relevant generalizations of career development psychology, implications of trait profiles for career adjustments, and aspects of sociology and economics in the world of work.[6]

3. Deliver information through various media;

The importance of multi-media systems for delivering occupational information has been stressed by numerous authorities, many of whom argue that a variety of media helps

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[4]Leo Goldman, "Information and Counseling: A Dilemma," Personnel and Guidance Journal, XLVI, No. 1 (1967), 42-46.

[5]Lohnes, "Adult Activities and Roles," p. 16.

[6]Ibid., p. 17.

to increase user involvement and attention. Baer and Roeber included "all the effective media of presentation" as an essential attribute of an "adequate occupational information library."[7] More recently Johnson noted that multi-media systems are needed which "provide youngsters with more efficient tools than presently exist for exploring themselves and the employment scene."[8]

4. Display and/or deliver information in an attractive manner; Attractive presentation of information, although not of utmost importance, can contribute positively to user satisfaction. Baer and Roeber also explained that

> The more attractive the occupational information materials are, the greater the number of individuals who are likely to use them. Size of type, quality of paper, illustrations, format, and cover design all are factors which affect the attractiveness of printed materials . . . . In the final analysis, the effectiveness of the occupational information library depends on its power to attract and to hold readers.[9]

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[7]Max F. Baer and Edward C. Roeber, Occupational Information (Chicago: Science Research Associates, Inc., 1958), p. 311.

[8]Dorothy Johnson, "Counselling for Occupational Choice in the Face of Technological Change," in Indiana Manpower Research Conference, 1967 Proceedings (Indiana: Indiana University, 1967), pp. 174-75.

[9]Baer and Roeber, Occupat onal Information, p. 312.

5. Provide accurate and current information, including capacity for updating;

Accurate, up-to-date information is essential for rational career decision-making. Of course, as Baer and Roeber pointed out, "in vocational planning, the results of misinformation may be more serious than those caused by ignorance or by lack of any information."[10] Nevertheless, an up-to-date, thorough knowledge of the labor market is necessary if an individual is going to function "perfectly" in a labor market.

6. Supply local as well as national data;

Information concerning both local and national labor markets is very helpful to the career decision-maker, especially in a world which is "shrinking" every day due to rapid communication and transportation. Since it is likely that each person will live and work in at least two different locales during his lifetime, local and national information can contribute positively to the efficient operation of the labor market. The need for such data was stressed by both

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[10] Ibid., p. 310.

Parnes[11] and the 1970 Manpower Report of the President.[12]

7. Provide information concerning a wide variety of occupational groups;

The number of occupational groups that an occupational information system should cover obviously depends on the needs of system users. For example, a system located in an educational institution serving both vocational/technical and college preparatory students should probably provide information about more occupational groups than a similar system located in a college preparatory academy. Baer and Roeber included "materials concerning all occupational groups" as an essential characteristic of an occupational information service.[13]

8. Include such specific information as (a) job duties, (b) work environment, (c) hiring and training requirements, (d) terms

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[11]Herbert S. Parnes, "Knowledge of the World of Work," in Career Thresholds: A Longitudinal Study of the Educational and Labor Market Experience of Male Youth, Vol. I, U.S. Department of Labor Manpower Administration, Manpower Research Monograph No. 16 (Washington, D.C.: Government Printing Office, 1970), 119.

[12]U.S., Department of Labor, Manpower Report of the President, 1970, p. 202.

[13]Baer and Roeber, Occupational Information, p. 311.

of employment, (e) hours, (f) current labor market situation, and (g) long-range outlook.

To be effective, an occupational information system must supply depth as well as breadth of information. Shartle, in a 1959 textbook, noted that a career decision-maker needs information on local job opportunities plus longer range trends.[14] Tyler, a foremost career counseling expert, pointed out that a person sorting and ruling out certain occupational alternatives needs information such as post-school placement opportunities, geographic availability of jobs, salaries, and chances for advancement.[15] The federal government has also recognized the need for such information. The 1968 Amendments to the Manpower Development and Training Act (Sec. 106) noted that a system of labor market information should include information concerning job opportunities, hiring requirements, and employment outlook in various occupations. More recently the 1970 Manpower

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[14]Carroll L. Shartle, Occupational Information: Its Development and Application (3rd ed.; Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1959), pp. 8-9.

[15]Tyler, The Work of the Counselor, p. 120.

Report of the President stressed the importance of a system to deliver the following information:

> . . . measurement of the welfare of workers in terms of employment, earnings, hours of work, and working conditions . . . projections of manpower requirements and supply . . . problems such as underemployment, barriers to employment, part-time employment, seasonal employment, or employment at low rates of pay.[16]

Evaluation of OIAS and Counseling Center in Terms of Ideal System Characteristics

The foregoing ideal occupational information system checklist may be used to evaluate and compare OIAS and the Lane Community College Counseling Center. For purposes of this evaluation and comparison the following rankings will be used: 5 = Very Good, 4 = Good, 3 = Fair, 2 = Poor, 1 = Very Poor. This evaluation process obviously assumes that each of the eight ideal system characteristics is of identical importance. Some authorities assign more weight to some items than others, but it is virtually impossible to separate out certain characteristics as being generally more or less important.

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[16] U. S., Department of Labor, Manpower Report of the President, 1970, p. 202.

1. Make information accessible to persons of varying ability and experiences;

Ratings

OIAS: 4

Counseling Center: 4

Reasons

OIAS: Various media allow delivery of information to persons of varying ability and experience:

1. Most information, although printed, is written at a very elementary reading level.
2. Visit file allows users to copy names, addresses, and telephone numbers; however, the visit file appears for less than one-half of occupations listed in OIAS.
3. Cassette tapes present information effectively and are understandable by a variety of persons; however, the stock of tapes is very limited.

Counseling Center:

1. Information is accessible, but not as rapidly as with OIAS.
2. Counselors are on duty thirteen hours per day Monday through Thursday.

3. Counseling staff includes persons of various racial and ethnic origins.
4. For persons not seeing a counselor first, information is written (occupational monographs, United States Department of Labor materials, and college catalogs), and may present some difficulties for very slow readers.

2. Provide a means for integrating occupational information with clients' interests, values, aptitudes, and abilities;

Ratings

OIAS: 5

Counseling Center: 5

Reasons

OIAS:

1. Questionnaire enables the user to express his interests, aptitudes, and abilities and to receive a list of occupations normally suited for persons displaying these characteristics.

Counseling Center:

1. Personal discussions with counselors plus a battery of tests permit the user to express his interests, aptitudes, values, and abilities.

3. Deliver information through various media;

Ratings

OIAS: 4

Counseling Center: 2

Reasons

OIAS:

1. Three media are available, including a teletype terminal (user actively shares in delivery process), printed materials, and cassette tape recordings.
2. OIAS does not include slides or movies.

Counseling Center:

1. Information is delivered through two media: personal discussions with counselors and printed materials.
2. No tapes, slides, or movies are provided.

4. Display and/or deliver information in an attractive manner;

Ratings

OIAS: 3

Counseling Center: 2

Reasons

OIAS:

1. OIAS teletype terminal is especially attractive to

students.

2. Although the information is well-organized, OIAS is not particularly attractive to the eye.

Counseling Center:

1. The attractiveness of the Counseling Center obviously depends a great deal on the attractiveness of each individual counselor.
2. The Center has no actual "display" of all printed occupational materials.

5. Provide accurate and current information, including capacity for updating;

Ratings

OIAS: 4

Counseling Center: 2

Reasons

OIAS:

1. Information is accurate although not always up-to-date.
2. OIAS has the capacity for regular updating.

Counseling Center:

1. Most of the printed materials are nationally published and are not up-to-date.

2. Counselors endeavor to keep in touch with faculty members in the various disciplines as well as private citizens in numerous occupations.
3. Efforts are made to maintain communication with the State of Oregon Employment Division.

6. Supply local as well as national data;

Ratings

OIAS: 5

Counseling Center: 2

Reasons

OIAS:

1. Although most OIAS job descriptions are quite standard, local data such as wages, hours, training opportunities, and current employment level are included.

Counseling Center:

1. Printed materials provide standard national information.
2. The staff endeavors to keep abreast of local information through private citizens and the State of Oregon Employment Division; nevertheless, very little local occupational information is readily

accessible.

7. Provide information concerning a wide variety of occupational groups;

Ratings

OIAS: 4

Counseling Center: 4

Reasons

OIAS:

1. Almost all occupational groups are represented.

Counseling Center:

1. Each counselor is assigned to a different department, and can therefore provide in-depth information in at least one field.
2. Printed materials cover occupational groups similar to OIAS.

8. Include such specific information as (a) job duties, (b) work environment, (c) hiring and training requirements, (d) terms of employment, (e) hours, (f) current labor market situation, and (g) long-range outlook.

Ratings

OIAS: 5

Counseling Center: 2

Reasons

OIAS:

1. OIAS delivers specific, detailed information in well-organized, readable form.

Counseling Center:

1. Although more general information such as job duties, work environment, and hiring requirements is available through the Counseling Center, specific data are scanty.

Summary

Table 1 summarizes the results of an evaluation of OIAS and the Lane Community College Counseling Center in terms of an ideal system checklist. Again, it must be emphasized that this evaluation assumed each of the eight ideal system characteristics to be of equal importance. This assumption may or may not be valid; particular weighting would probably depend more than anything else on the perspective of the evaluator.

Table 1 reveals that the largest discrepancy between the two systems was in characteristics 6 and 8, dealing with local as well as national data and specificity of information. OIAS obviously fared better than the Counseling Center in both of these categories. Also, the mean

TABLE 1

RATINGS OF OIAS AND COUNSELING CENTER IN TERMS OF IDEAL SYSTEM CHARACTERISTICS

Ideal System Characteristic	Ratings	
	OIAS	Counseling Center
1. Make information accessible to persons of varying ability and experience;	4	4
2. Provide a means for integrating occupational information with clients' interests, values, aptitudes, and abilities;	5	5
3. Deliver information through various media;	4	2
4. Display and/or deliver information in an attractive manner;	3	2
5. Provide accurate and current information, including capacity for updating;	4	2
6. Supply local as well as national data;	5	2
7. Provide information concerning a wide variety of occupational groups;	4	4
8. Include such specific information as (a) job duties, (b) work environment, (c) hiring and training requirements, (d) terms of employment, (e) hours, (f) current labor market situation, and (g) long-range outlook.	5	2
Totals	34	23
Means	4.25	2.88

Key: 5 = Very Good, 4 = Good, 3 = Fair, 2 = Poor, 1 = Very Poor

rating of OIAS was "good," while the Counseling Center "fair."

Despite these objective outcomes, it would be unfair to conclude absolutely that OIAS did a better job of delivering occupational information than the Counseling Center. It may be concluded, however, that in terms of this list of authorities' ideal characteristics, OIAS "looked better on paper."

CHAPTER V

RESEARCH FINDINGS

System Attractiveness

The question "Why did you use OIAS (Counseling Center)?" was asked of the fifty OIAS users and thirty-five Counseling Center users participating in the study. The following table indicates respondents' answers.

TABLE 2

REASONS FOR USING OIAS/COUNSELING CENTER
(ALL RESPONDENTS)

	Total	OIAS Users	Counseling Center Users
Used OIAS (Counseling Center) because of:			
a. Curiosity/recreation	10	10	0
b. Individual choice/looking for occupational information	53	19	34
c. Counselor/teacher recommendation	6	5	1
d. Class assignment	16	16	0
Total	85	50	35

The large number of students (31 out of 50) who used OIAS because of curiosity/recreation, counselor/teacher recommendation, or class assignment may probably be attributed to the system's unique teletype terminal. Many respondents considered this component of OIAS to be an interesting and attractive gimmick, as well as an effective means of delivering information. The very small number of Counseling Center users (1 out of 35) falling into the above three categories is also quite understandable. The Center does not have a gimmick to attract students. Rather, its attractiveness mostly depends on the types of persons employed as counselors. (Actually, it is rather strange that so few teachers referred students to counselors.)

Almost all (34 of 35) students who used the Counseling Center were personally in need of occupational information. On the other hand, less than one-half of the students who used OIAS did so for the same reason. Apparently, a student who takes the time and trouble to visit a counselor is probably motivated by informational, rather than recreational, needs.

These data in no way allow one to reach a definite decision as to which system is generally more attractive. Tribute must be given to OIAS for attracting a large number of students who did not have a recognized need for information, as well as attracting teachers to

assign OIAS. Nevertheless, it must be said that both systems are attractive, each in its own way. The difference between the two systems may be summed up as follows: OIAS has a unique and fascinating means of attracting students; the Counseling Center does not.

Effects on Career Plans

The eighty-five study participants were asked the following questions: "As a result of using OIAS (Counseling Center), did you change your immediate or long-range career plans? If so, in what way?" Table 3 reports students' responses to the first question.

TABLE 3

CHANGES IN CAREER PLANS
(ALL RESPONDENTS)

	Total	OIAS Users	Counseling Center Users
Changed career plans due to using OIAS (Counseling Center):			
a. Yes	19	5	14
b. No	66	45	21
Total	85	50	35

It is immediately apparent from Table [illegible] that a much larger percentage [illegible] reported to [illegible] Counseling Center users than OIAS users changed their career plans after attempting, with or without success, to assess occupational information. (The change in career plans for both groups of users almost unanimously involved changes of academic major.) It would be incorrect, however, to conclude from these data that counselors always have more impact on students' career plans than does OIAS.

It seems logical to assume that the effect of an occupational information system on career plans will vary according to an individual's reasons for using the system. For example, a system is more likely to influence the career plans of a user seriously in need of occupational information than of a user motivated by curiosity, recreation, another's recommendation, or class assignment. The important factor is informational need. If in need of information, a person will be receptive to, and probably influenced by, the information he receives (assuming, of course, that the information delivered satisfies his informational need to some degree). If he is not in real need of information, then the individual is much less likely to be affected by the information, regardless of its quality.

A re-examination of Table 2 on page 55 may help to explain the different impacts of OIAS and counselors on students' career plans.

Thirty-four of 55 students who visited a counselor did so out of individual choice and in search of occupational information. On the other hand, only 19 of the 50 OIAS users were motivated by the same reasons. Since a much larger percentage of Counseling Center users than OIAS users were in definite need of occupational information, the data of Table 3 appear most plausible.

Nevertheless, the data for students motivated by individual choice and in search of occupational information reveal that 41 percent of the counsellees, compared with 5 percent of the OIAS users, changed their career plans after using either system (see Table 4).

TABLE 4

PERCENTAGE OF USERS REPORTING CHANGES IN CAREER PLANS (STUDENTS MOTIVATED BY INDIVIDUAL CHOICE/LOOKING FOR OCCUPATIONAL INFORMATION)

	OIAS Users (Total = 19)	Counseling Center Users (Total = 34)
Number of users reporting changes in plans	1	14
Percentage of users reporting changes in plans	5%	41%

It must be emphasized that one would expect a counselor to have more influence on an occupational information seeker's plans than a computer-based delivery system. A counselor's job is not only to deliver information, but also to counsel and advise persons as to feasible careers. A computerized system does one thing--it delivers information. This difference in roles presents numerous difficulties when one attempts to compare the influences of a human occupational information system with a machine system. The two systems are, in this respect, not comparable.

Counselors, therefore, had more influence on the career plans of the 35 Counseling Center users than did OIAS on its 50 users. This difference may be attributed in part to (1) different student motivations for using the two systems, and (2) dissimilar system purposes. Nevertheless, credit must be given where credit is due. That 10 percent of the students who used OIAS changed their career plans is a respectable showing for a system designed solely to deliver occupational information. That 40 percent of the students who visited a counselor changed their career plans is, although quite expected, also worthy of some praise.

Effects on Career Certainty

The two groups of students were asked to respond to the following

questions: "How certain of your future career were you before and after using OIAS (Counseling Center)? As a result of using OIAS (Counseling Center), did you become more certain of your future career?" Table 5 reports respondents' answers to these questions.

TABLE 5

CHANGES IN CAREER CERTAINTY
(ALL RESPONDENTS)

	Total	OIAS Users	Counseling Center Users
Changed career certainty due to using OIAS (Counseling Center):			
a. Yes (Increased Certainty)	35	14	21
Certainty before and after using system			
Certain/Very Certain	10	6	4
Uncertain/Certain	9	3	6
Uncertain/Very Certain	6	1	5
Very Uncertain/Uncertain	5	2	3
Very Uncertain/Certain	3	2	1
Very Uncertain/Very Certain	2	0	2
b. No (No Change in Certainty)	50	36	14
Certainty before and after using system			
Very Certain	14	11	3
Certain	12	8	4
Uncertain	17	12	5
Very Uncertain	7	5	2

The results of these two questions, reported in Table 5, indicate that 60 percent of the Counseling Center users increased their career certainty as a result of seeing a counselor, the corresponding figure for OIAS users being 28 percent. (None of the 85 respondents experienced a decrease in career certainty as a result of using either system.)

Despite the data in Table 5, it would be improper to conclude that Lane Community College counselors absolutely have more impact on students' career certainty than does OIAS. It is worth noting that 11 of the 50 students who used OIAS were very certain about their careers before using the system. It is, indeed, highly improbable that any system, regardless of its attributes, could make such persons more certain of their future careers. Furthermore, 50 percent of the OIAS users indicated that they were certain or very certain about their careers initially, compared with approximately 31 percent of the Counseling Center users. One might expect the career certainty of the OIAS group to be less malleable than the corresponding certainty of the counseled group.

It may be recalled that all but one student of the 35 who used the Counseling Center did so because of definite need for occupational information, while only 19 of the 50 OIAS users indicated such informational need. It might be expected, therefore, that the

Counseling Center would have had a larger effect on its users' career certainty, simply because the group that received counseling was probably more receptive to occupational information than the group that used OIAS.

Of the students who were motivated by personal need for occupational information (see Table 6), increased career certainty was reported by only 16 percent of the OIAS users compared with 62 percent of the Counseling Center users. (Credit must be given to OIAS for changing the career certainty of 80 percent of the students who used the system because of counselor or teacher recommendation.)

TABLE 6

PERCENTAGE OF USERS REPORTING INCREASED CAREER CERTAINTY (GROUPED ACCORDING TO REASONS FOR USING SYSTEM)

Reason for Using System	% Reporting Increased Certainty	
	OIAS Users	Counseling Center Users
a. Curiosity/recreation	20%	--
b. Individual choice/looking for occupational information	16	62%
c. Counselor/teacher recommendation	80	--
d. Class assignment	31	--

Perhaps a more valid measure of the two systems' performances would be their effects on students who were uncertain or very uncertain of their careers before using either system. Of the 25 OIAS users falling into these two categories, 8 students (32 percent) experienced increased certainty, whereas 17 (71 percent) of the 24 Counseling Center users reported increased career certainty after visiting counselors. These figures indicate that counselors had more influence than OIAS on the career certainty of those students who were quite unsure of their future careers.

Table 7 indicates changes in career certainty according to the type of information sought by respondents. The data reported in this table imply that counselors fared better than OIAS in each category of information sought by users.

Despite the reported data, it must be remembered that a counselor's role includes advising and counseling, as well as delivering occupational information; the computerized OIAS serves only as a delivery system for information. Because of these different roles, it might be logical to theorize that personal counseling should have more influence on a student's career plans than should OIAS. A counselor is expected to advise and to influence; OIAS is expected only to issue information.

Although study results indicate that students' career certainty

TABLE 7

PERCENTAGE OF USERS REPORTING INCREASED CAREER CERTAINTY, BY TYPE OF INFORMATION SOUGHT

Information Sought by Respondent	% Reporting Increased Certainty	
	OIAS Users	Counseling Center Users
a. Names of occupations to explore	28%	50%
b. General information about a particular occupation	54	67
c. Both (a) and (b)	9	50
d. Specific information about a particular occupation	0	64

was much more affected by counselors than by OIAS, it cannot be definitely concluded that Lane Community College counselors generally have more influence on career certainty. Three factors would make such a conclusion improper, although apparently true: (1) a much larger percentage of OIAS users than Counseling Center users was certain of future careers before obtaining information; (2) almost all students who talked with counselors were in need of occupational information, whereas less than 40 percent of OIAS users displayed real need; and (3) OIAS and counselors serve different functions in relation to career choice.

User Satisfaction

Each of the eighty-five respondents was asked "How satisfied were you with the information you received from OIAS (Counseling Center)?" Table 8 reports the students' answers to this question.

TABLE 8

PERSONAL SATISFACTION WITH OIAS/COUNSELING CENTER (ALL RESPONDENTS)

	Total	OIAS Users	Counseling Center Users
Personal satisfaction with information received from OIAS (Counseling Center):			
a. Very Satisfied	37	17	20
b. Satisfied	36	25	11
c. Dissatisfied	9	7	2
d. Very Dissatisfied	3	1	2
Total	85	50	35

An examination of Table 8 reveals that both groups of users generally liked the information they received. When the above data are divided into four categories according to the information sought by the respondents, the distributions indicating user satisfaction appear very similar to Table 8 (see Appendix).

Eighty-four percent of the students who used OIAS and approximately 89 percent of the students who visited counselors were either satisfied or very satisfied with the information delivered by the respective systems. These two figures are extremely impressive and, indeed, are tributes to both OIAS and the Lane Community College Counseling Center. It would obviously be impossible to deduce from the data that either system satisfied users more than the other.

Results and Costs of Information Search

Results of Information Search

Each of the fifty OIAS users and thirty-five Counseling Center users was asked three questions: "What information were you searching for? Did you find the information you were searching for? How much time did you spend searching for the desired information?" Table 9 reports results of the second and third questions for all eighty-five respondents. (A breakdown of responses according to the type of information sought is found in the Appendix.)

An examination of Table 9 reveals that 41 of 50 (82%) OIAS users, and 31 of 35 (89%) counsellees, obtained the information they were seeking. Both figures are impressive, and are not statistically different enough to permit a conclusion as to which system was more effective. It appears, therefore, that both OIAS and the

TABLE 9

RESULTS OF INFORMATION SEARCH
(ALL RESPONDENTS)

	OIAS Users	Counseling Center Users
1. Obtained desired information:	41	31
2. Search Time	35.75 Hours	54.25 Hours
3. Search Time/User	0.87 Hours/User	1.75 Hours/User
4. Failed to obtain desired information:	9	4
5. Search Time	6.50 Hours	4.75 Hours
6. Search Time/User	0.72 Hours/User	1.18 Hours/User
7. Total Users = (1) + (4)	50	35
8. Total User Search Time = (2) + (5)	42.25 Hours	59.00 Hours
9. Search Time/User = (8) ÷ (7)	0.85 Hours/User	1.69 Hours/User
10. Search Time/User obtaining desired information = (8) ÷ (1)	1.03 Hours/User	1.90 Hours/User

Counseling Center were equally capable of delivering the occupational information that students sought. (The breakdown of results according to type of information sought, included in the Appendix, substantiates this finding.)

A significant difference between OIAS and counselors is apparent when one examines the per user search times of items (3), (6), (9), and (10) in Table 9. OIAS delivered occupational information in much less time per user than did counselors. Particularly significant are lines (9) and (10). Line (9), which reports average search time for all users, reveals that students, on the average, spent 50 percent less time using OIAS than they did the Counseling Center. Line (10), which reports average search time per user obtaining desired information, indicates that OIAS users, on the average, spent 46 percent less time obtaining the information they sought than did Counseling Center users. All of the search time data of Table 9 lead to one conclusion: OIAS represents a significant cost saving over the Counseling Center in terms of student search time. In addition, assuming that counselors spend time searching for occupational information that students desire, keeping abreast of the latest labor market developments, and filing U.S. Department of Labor publications, OIAS also can decrease counselors' search time. The time previously spent searching for occupational information can be re-allocated, thus allowing counselors more time for advising and "pure counseling."

The data of Table 9 imply that OIAS delivers desired information as well as the Lane Community College staff in approximately one-half the time. In terms of information delivered and delivery time, OIAS

is more efficient than the Counseling Center as an occupational information delivery mechanism.

OIAS: A Cost Model
Given:[1]

10 Months/Year

200 Workdays/Year

8 Hours/Workday

Questionnaire Cost = $0.08/Questionnaire

Introductions Cost = $0.035/Introduction

Books Cost = $7.50/Set

Bibliography Cost = $6.00/Bibliography

1 Set of Tapes (25 Tapes) Cost = $112.50/Set

Tape Player Cost = $30.00

Terminal Rental Cost (Data Sets, Lease Lines, etc.) = $1,000.00/Year

Average System Use Time/User = 0.85 Hours/User

Terminal Cost = $3.00/Hour

Average Terminal Operation Time/User = 0.33 Hours/User

Updating Cost = $0.50/User

---

[1]The author appreciates the cooperation of the OIAS Project Director, Bruce McKinlay, in making OIAS data files available.

Federal Minimum Wage Standard[2] = $1.60/Hour

Given the preceding data, it is possible to calculate OIAS's costs of delivering occupational information on a per user basis. Assuming full usage of the system (e.g., a student using OIAS at all times, 8 hours per day, 200 days per school year), the per user costs can be figured in the following manner:

1. Per User Cost of Materials and Terminal Rental

   Assuming full usage of the system, the number of users per year can be found by dividing the average system use time per user (0.85 hours/user) into the total possible number of use hours in one year (1,600 hours):

$$\frac{1,600 \text{ Hours}}{0.85 \text{ Hours/User}} = 1,882 \text{ Users.}$$

   Assuming that each of the 1,882 users uses one OIAS questionnaire, the yearly cost of questionnaires is

   ($0.08/Questionnaire)(1,882) = $150.56/Year.

   Experience has shown that OIAS introductions are used by about 10 percent of OIAS users. The yearly cost of

[2]Figure received from U.S. Department of Labor, Wage and Hour and Public Contracts Division.

introductions, calculated on this basis, is

($0.035/Introduction)(0.10)(1,882) = $6.59/Year.

Each OIAS site uses one set of books and one bibliography per year. The yearly cost of these two items is therefore

$7.50/Year + $6.00/Year = $13.50/Year.

Assuming that tapes and tape recorder have useful lives of three years, their combined yearly cost is

(0.33) ($112.50 + $30.00) = $47.50/Year.

Including terminal rental cost @ $1,000.00/year, the total yearly cost of materials and terminal rental is

$150.56 + $6.59 + $13.50 + $47.50 + $1,000 = $1,218.15/Year.

Assuming full system usage, the per user cost of materials and terminal rental is found by dividing the yearly cost by the total number of users per year (1,882):

$$\frac{\$1,218.15/\text{Year}}{1,882\ \text{Users/Year}} = \$0.65/\text{User}.$$

2. Per User Cost of Terminal Operation

OIAS project data indicate that each user spends an average of 0.33 hours operating the terminal. (The rest of the 0.85 hours /user is taken up by reading the introduction, completing

the questionnaire, listening to tapes, etc.) Since the terminal costs approximately $3.00/hour to operate, the per user cost of terminal operation is

(0.33 Hours/User)($3.00/Hour) = $1.00/User

3. Per User Updating Cost

OIAS records indicate that it costs approximately $0.50/user to keep the information files up-to-date.

4. Per User Opportunity Cost

Each Lane Community College student who uses OIAS sacrifices a certain amount of time for obtaining occupational information. Since time has a value, and "time is money," the user's opportunity cost (value in alternative uses) must be included in a calculation of total per user cost. How to value such user time is indeed a problem, but a reasonable figure might be the federal minimum wage standard ($1.60/hour). Valued at this standard, the per user opportunity cost of using OIAS is

($1.60/Hour)(0.85 Hours/User) = $1.36/User.

5. Total Cost Per User

The total cost per user (assuming full system usage) can be computed by taking the sum of the foregoing per user

(1) materials and terminal rental cost, (2) terminal operation cost, (3) updating cost, and (4) opportunity cost. This sum is

$$\$0.65 + \$1.00 + \$0.50 + \$1.36 = \$3.51/\text{User}.$$

Experience has shown, however, that OIAS receives less than full usage. In fact, about 100 users/month, or 1,000 users/10-month school year, actually use the system. Calculated on this basis, the total number of use hours per year, instead of being 1,600 hours, is

$$(1{,}000\ \text{Users})(0.85\ \text{Hours/User}) = 850\ \text{Hours/Year}.$$

Using these figures, the yearly variable cost of OIAS questionnaires and introductions becomes

$$(\$0.08/\text{Questionnaire})(1{,}000.00) + (\$0.035/\text{Introduction})(0.10)(1{,}000.00)$$
$$= \$80.00 + \$3.50 = \$83.50/\text{Year}.$$

The total yearly cost of materials and terminal rental changes accordingly to

$$\$83.50 + \$13.50 + \$47.50 + \$1{,}000.00 = \$1{,}144.50/\text{Year}$$

and the per user cost of materials and terminal rental increases from $0.65/user to

$$\frac{\$1{,}144.50/\text{Year}}{1{,}000\ \text{Users/Year}} = \$1.15/\text{User}.$$

The decrease in number of users does not, however, affect the per user terminal operation cost ($1.00/user), per user updating cost ($0.50/user), and per user opportunity cost ($1.36/user). The total cost per user therefore increases from $3.51/user (for full system usage) to

$$\$1.15 + \$1.00 + \$0.50 + \$1.36 = \$4.01/\text{User}.$$

The Counseling Center: A Cost Model
Given:[3]

15 Counselors

10 Months/Year

200 Workdays/Year

8 Hours/Workday

Yearly Salary Cost = $200,000.00/Year

Total Counseling Center Space = 2,300 Sq. Ft.

Fair Monthly Rental Value of Counseling Center Space[4] =
$0.35/Sq. Ft. Per Month

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[3]The author is indebted to Lane Community College personnel John White, Director of Counseling, and William Cox, Dean of College Facilities, for making this data available.

[4]Estimate received from three industrial real estate appraisers employed in the Eugene-Springfield area: Don Amacher, Office Manager of Bullier and Bullier Realtors; Claude Irons of Dean Vincent, Inc.; and Joanne Rousseau of Sarah Land Company.

Yearly Cost of Occupational Information Materials
= $200.00/Year

Total Lane Community College Full-time Enrollment
= 5,000 Students

Average Counseling Center Use Time/User = 1.69 Hours/User

Federal Minimum Wage Standard = $1.60/Hour

Given the preceding data, it is possible to calculate the per user costs involved in delivering occupational information through the Lane Community College Counseling Center. Assuming that each of the school's 5,000 students seeks occupational information through the Counseling Center, the per user costs can be figured in the following manner:

1. Institutional Cost Per Year

The total yearly cost to Lane Community College of delivering occupational information through its Counseling Center can be approximated by taking the sum of yearly salaries, yearly fair rental value of Counseling Center space, and yearly cost of occupational information materials. (Note: the fair rental value of space must be computed on a twelve-month basis rather than a ten-month school year basis, since an educational institution incurs facilities costs regardless of whether school is in session.) The institutional cost per year is therefore

$200,000.00/Year + (2,300 Sq. Ft.) ($0.35/Sq. Ft. Per Month) (12 Months/Year) + $200.00/Year = $200,000.00/Year + $9,660.00/Year + $200.00/Year = $209,860.00/Year.

2. Counseling Hours Available Per Year

The total number of hours that can possibly be spent for counseling is found by multiplying the number of counselors (= 15) times the number of workdays in the school year (= 200) times the number of hours in a workday (= 8):

(15)(200 Workdays/Year)(8 Hours/Workday) = 24,000 Hours/Year.

3. Cost Per Counseling Hour

The cost per counseling hour equals the institutional cost per year divided by the number of counseling hours available per year:

$$\frac{\$209,860.00/Year}{24,000\ Hours/Year} = \$8.74/Hour.$$

4. Counseling Hours Available Per Student

Lane Community College has a full-time student enrollment of approximately 5,000 students. Assuming that each student visits a counselor for occupational information during the school year (i.e., that each student is a user of the Counseling Center), the number of counseling hours available per student

is

$$\frac{24,000 \text{ Hours/Year}}{5,000 \text{ Students/Year}} = 4.8 \text{ Hours/Student.}$$

5. Institutional Cost Per Student

Under the assumption that each of the 5,000 students uses the Counseling Center to search for occupational information, the per student institutional cost of delivering such information is

($8.74/Hour)(4.8 Hours/Student) = $41.95/Student.

6. Per User Opportunity Cost

Assuming that each Counseling Center user spends 1.69 hours with a counselor (figure derived from the 35 counsellees contacted by telephone), a per user opportunity cost can be calculated for the Counseling Center by the same method previously used for OIAS. Using the federal minimum wage standard, the per user opportunity cost for counsellees is

(1.69 Hours/User)($1.60/Hour) = $2.70/User.

7. Total Cost Per User

Assuming that each student is a user of the Counseling Center (i.e., that institutional cost per student equals institutional cost per user), the total cost per user is the sum of 5 and 6:

$$\$41.95 + \$2.70 = \$44.65/\text{User}.$$

It must be emphasized that this total cost per user figure ($44.65) is the minimum possible cost per user. If one assumes that less than the total number of students see a counselor for occupational information during the school year, then the institutional cost per user will be increased. For example, assume that only 2,500 students, or 50 percent of the college's total full-time enrollment, use the Counseling Center to search for occupational information during the school year. Rather than compute cost per student as before (which assumed that each student was a Counseling Center user), one must now compute cost per user (since only 50 percent of the students are now Counseling Center users). The number of counseling hours available per user doubles from 4.8 hours to

$$\frac{24{,}000 \text{ Hours/Year}}{2{,}500 \text{ Users/Year}} = 9.6 \text{ Hours/User}.$$

The institutional cost per user associated with these 2,500 users doubles to

$$(\$8.74/\text{Hour})(9.6 \text{ Hours/User}) = \$83.90/\text{User},$$

and the resulting total cost per user increases to

$$\$83.90 + \$2.70 = \$86.60/\text{User}.$$

Conclusions

The foregoing cost models indicate that OIAS delivers occupational information at less than ten percent of the corresponding cost per user of the Counseling Center. OIAS is, in fact, much less expensive than counselors as a system for delivering occupational information.

Coupled with the data presented earlier, the cost models allow one to reach the following conclusion: OIAS delivers occupational information of at least equal quality to the Counseling Center in approximately one-half the time per user, at a cost one-tenth or less that of the Counseling Center.

CHAPTER VI

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

Summary of Research Findings

The results of this study may be summarized as follows:

1. Compared with a model occupational information checklist comprised of characteristics on which most career counseling authorities agree, the computer-based Occupational Information Access System (OIAS) rated "good" and the Lane Community College Counseling Center "fair."
2. Student responses to a telephone questionnaire indicated that OIAS and the Lane Community College Counseling Center were both attractive, each in its own way. OIAS's unique teletype terminal was probably responsible for attracting a large number of students, as well as counselors and teachers who either recommended OIAS or assigned it in conjunction with classwork. All but one counsellee, in contrast, sought counseling out of definite need for occupational information. OIAS has a unique and fascinating means of attracting users; the Counseling Center does not.

3. Results of the telephone questionnaire indicated that counselors had more influence on counsellees' career plans than did OIAS on its users. This difference was due in part to (1) different student motivations for using the two systems, and (2) dissimilar system purposes: OIAS is designed solely to deliver information and to allow users to draw their own conclusions; counselors have a duty to deliver information and to counsel and advise. In light of the difference in system purposes, both OIAS and the Counseling Center fared well in regard to influencing users' career plans.
4. Questionnaire answers revealed that students' career certainty was much more affected by counselors than by OIAS. This result may be attributed in part to (1) different student motivations for using the two systems, (2) dissimilar system purposes, and (3) the fact that a much larger percentage of OIAS users than Counseling Center users was certain of future careers before accessing information.
5. All but a few students were either very satisfied or satisfied with the information they received from either system. Therefore, it cannot be concluded that either OIAS or the Counseling Center satisfied its users more than the other. (It should be noted, however, that user satisfaction is not

necessarily a true measure of user welfare. The mere fact that a person likes a particular system does not imply that he truly benefits from using it.)

6. Data received from the telephone questionnaire, OIAS project files, and Lane Community College personnel indicate that OIAS delivered occupational information of at least equal quality to the Counseling Center in about one-half the time per user, at a cost one-tenth or less that of the Counseling Center.

Conclusions

The preceding analysis was hindered in part by the different roles served by OIAS and the Lane Community College Counseling Center. OIAS's purpose is pure occupational information delivery; interpretation of the information delivered is left to the individual user. Counselors, in contrast, deliver occupational information plus counsel and advise students as to what the information means and how to interpret it.

Despite this difference in system roles or purposes, every attempt was made to compare objectively OIAS and the Counseling Center in terms of their effectiveness in delivering occupational information. Study results indicate that OIAS is at least as effective

and definitely more efficient as an information delivery system.

The ability of OIAS to deliver occupational information more efficiently and much less expensively than the Lane Community College Counseling Center does not mean that OIAS should be substituted for counselors. In fact, OIAS would be a poor substitute for a college counselor, since it only serves the purpose of information delivery. Counselors, whose tasks typically involve personal advising as well as delivering occupational information, could benefit from using OIAS to obtain information. The time previously spent filing occupational materials and searching through innumerable information sources could be spent offering personal, human advice to college students.

Implications for Future Research

It must be emphasized that this study was quite limited. Only eighty-five students participated and each was interviewed by telephone, not in person. Furthermore, each respondent was contacted only once. A more desirable approach, given a larger research staff and more time, would be to conduct several personal interviews with system users over a long period of time. By this method the longer-range effects of the information systems could be measured and incorporated into the analysis.

Such limitations by no means imply that the foregoing analysis

is invalid or without meaning. On the contrary, this study represents a relatively new approach to a fundamental question of today: Is a computer as effective as a man? Hopefully this paper will inspire additional contemplations of this urgent question.

APPENDIX

Dear L. C. C. Student:

You have been selected to participate in a relevant, worthwhile project to yourself and fellow students, designed to better link L. C. C. students to the real world and the job markets.

Would you please fill out the attached short questionnaire and mail it IMMEDIATELY? Your PROMPT reply will be greatly appreciated.

Many thanks,

LARRY L. ROSS
Department of Economics
University of Oregon

Your Return Address:

_____
_____
_____

Have you used the L. C. C. counseling center during this school year to search for information about occupations and careers?

Yes _

No _

Your Name: _____

Your Telephone Number: _____

BRUCE McKINLAY
c/o Department of Economics
University of Oregon
Eugene, Oregon 97403

TELEPHONE QUESTIONNAIRE: OIAS USERS

Sex_____
Age_____
Major_____
Full-time or Part-time Student_____
Vocational Plans_____.

1. Why did you use OIAS?

    a. Curiosity/recreation
    b. Individual choice/looking for occupational information
    c. Counselor/teacher recommendation
    d. Class assignment

2. What information were you searching for?

    a. Names of occupations to explore
    b. General information about a particular occupation
    c. Both (a) and (b)
    d. Specific information about a particular occupation

3. Did you find the information you were searching for?

4. What parts of OIAS did you use to search for this information?

    a. Questionnaire
    b. Job description printouts
    c. Interview cassette tapes
    d. Bibliography/books
    e. Personal visits

5. Specifically, what information did you find out?

6. As a result of using OIAS, did you change your immediate or long-range career plans? If so, in what way?

7. How certain of your future career were you before using OIAS?

    a. Very certain
    b. Certain

c. Uncertain
d. Very uncertain

As a result of using OIAS, did you become more certain of your future career?

How certain of your future career were you after using OIAS?

a. Very certain
b. Certain
c. Uncertain
d. Very uncertain

8. How much time did you spend searching for the desired information?

9. How satisfied were you with the information you received from OIAS?

a. Very satisfied
b. Satisfied
c. Dissatisfied
d. Very dissatisfied

TELEPHONE QUESTIONNAIRE: COUNSELING CENTER USERS

Sex_____
Age_____
Major_____
Full-time or Part-time Student_____
Vocational Plans_____

1. Why did you use the Counseling Center?

   a. Curiosity/recreation
   b. Individual choice/looking for occupational information
   c. Counselor/teacher recommendation
   d. Class assignment

2. What information were you searching for?

   a. Names of occupations to explore
   b. General information about a particular occupation
   c. Both (a) and (b)
   d. Specific information about a particular occupation

3. Did you find the information you were searching for?

4. What sources did the counselor either use himself or refer you to in order to search for the desired information?

   a. Books, printed materials, tests
   b. Tapes
   c. Slides/movies
   d. Names of persons to contact
   e. Counselor only

5. Specifically, what information did you find out?

6. As a result of using the Counseling Center, did you change your immediate or long-range career plans? If so, in what way?

7. How certain of your future career were you before using the Counseling Center?

   a. Very certain
   b. Certain
   c. Uncertain
   d. Very uncertain

   As a result of using the Counseling Center, did you become more certain of your future career?

   How certain of your future career were you after using the Counseling Center?

   a. Very certain
   b. Certain
   c. Uncertain
   d. Very uncertain

8. How much time did you spend searching for the desired information?

9. How satisfied were you with the information you received from the Counseling Center?

   a. Very satisfied
   b. Satisfied
   c. Dissatisfied
   d. Very dissatisfied

TABLE I

TELEPHONE QUESTIONNAIRE RESULTS
(ALL RESPONDENTS)

	Total	OIAS Users	Counseling Center Users
1. Used OIAS (Counseling Center) because of:			
a. Curiosity/recreation	10	10	0
b. Individual choice	53	19	34
c. Counselor/teacher recommendation	6	5	1
d. Class assignment	16	16	0
3. Obtained information sought:			
a. Yes	72	41	31
Total search time		35.75 hrs.	54.25 hrs.
Average search time/user		0.87 hrs.	1.75 hrs.
b. No	13	9	4
Total search time		6.50 hrs.	4.75 hrs.
Average search time/user		0.72 hrs.	1.18 hrs.
6. Changed career plans due to using OIAS (Counseling Center):			
a. Yes	19	5	14
b. No	66	45	21
7. Changed career certainty due to using OIAS (Counseling Center):			
a. Yes (Increased certainty)	35	14	21
Certain to very certain	10	6	4
Uncertain to certain	9	3	6
Uncertain to very certain	6	1	5

TABLE I--Continued

	Total	OIAS Users	Counseling Center Users
Very uncertain to uncertain	5	2	3
Very uncertain to certain	3	2	1
Very uncertain to very certain	2	0	2
b. No change in certainty	50	36	14
Very certain	14	11	3
Certain	12	8	4
Uncertain	17	12	5
Very uncertain	7	5	2
9. Personal satisfaction with information received from OIAS (Counseling Center):			
a. Very satisfied	37	17	20
b. Satisfied	36	25	11
c. Dissatisfied	9	7	2
d. Very dissatisfied	3	1	2

TABLE II

TELEPHONE QUESTIONNAIRE RESULTS (STUDENTS SEARCHING FOR NAMES OF OCCUPATIONS TO EXPLORE)

	Total	OIAS Users	Counseling Center Users
1. Used OIAS (Counseling Center) because of:			
a. Curiosity/recreation	6	6	0
b. Individual choice	20	10	10
c. Counselor/teacher recommendation	4	4	0
d. Class assignment	5	5	0
3. Obtained information sought:			
a. Yes	29	22	7
Total search time		20.75 hrs.	7.25 hrs.
Average search time/user		0.94 hrs.	1.04 hrs.
b. No	6	3	3
Total search time		1.75 hrs.	3.75 hrs.
Average search time/user		0.58 hrs.	1.25 hrs.
6. Changed career plans due to using OIAS (Counseling Center):			
a. Yes	9	5	4
b. No	26	20	6
7. Changed career certainty due to using OIAS (Counseling Center):			
a. Yes (Increased certainty)	12	7	5
Certain to very certain	3	2	1
Uncertain to certain	1	1	0
Uncertain to very certain	2	1	1

TABLE II--Continued

	Total	OIAS Users	Counseling Center Users
Very uncertain to uncertain	3	1	2
Very uncertain to certain	3	2	1
Very uncertain to very certain	0	0	0
b. No change in certainty	23	18	5
Very certain	2	2	0
Certain	5	5	0
Uncertain	11	8	3
Very uncertain	5	3	2
9. Personal satisfaction with information received from OIAS (Counseling Center):			
a. Very satisfied	14	9	5
b. Satisfied	18	14	4
c. Dissatisfied	2	2	0
d. Very dissatisfied	1	0	1

TABLE III

TELEPHONE QUESTIONNAIRE RESULTS (STUDENTS SEARCHING FOR GENERAL INFORMATION ABOUT A PARTICULAR OCCUPATION)

	Total	OIAS Users	Counseling Center Users
1. Used OIAS (Counseling Center) because of:			
a. Curiosity/recreation	3	3	0
b. Individual choice	17	6	11
c. Counselor/teacher recommendation	2	1	1
d. Class assignment	1	1	0
3. Obtained information sought:			
a. Yes	20	8	12
Total search time		7.75 hrs.	25.00 hrs.
Average search time/user		0.97 hrs.	2.08 hrs.
b. No	3	3	0
Total search time		2.25 hrs.	--
Average search time/user		0.75 hrs.	--
6. Changed career plans due to using OIAS (Counseling Center):			
a. Yes	7	0	7
b. No	16	11	5
7. Changed career certainty due to using OIAS (Counseling Center):			
a. Yes (Increased certainty)	14	6	8
Certain to very certain	5	3	2
Uncertain to certain	5	2	3
Uncertain to very certain	2	0	2

TABLE III--Continued

	Total	OIAS Users	Counseling Center Users
Very uncertain to uncertain	1	1	0
Very uncertain to certain	0	0	0
Very uncertain to very certain	1	0	1
b. No change in certainty	9	5	4
Very certain	3	2	1
Certain	3	1	2
Uncertain	3	2	1
Very uncertain	0	0	0
9. Personal satisfaction with information received from OIAS (Counseling Center):			
a. Very satisfied	11	4	7
b. Satisfied	9	5	4
c. Dissatisfied	2	1	1
d. Very dissatisfied	1	1	0

TABLE IV

TELEPHONE QUESTIONNAIRE RESULTS (STUDENTS SEARCHING FOR NAMES OF OCCUPATIONS TO EXPLORE AND GENERAL INFORMATION ABOUT A PARTICULAR OCCUPATION)

	Total	OIAS Users	Counseling Center Users
1. Used OIAS (Counseling Center) because of:			
a. Curiosity/recreation	0	0	0
b. Individual choice	3	1	2
c. Counselor/teacher recommendation	0	0	0
d. Class assignment	10	10	0
3. Obtained information sought:			
a. Yes	10	9	1
Total search time		6.00 hrs.	4.00 hrs.
Average search time/user		0.67 hrs.	4.00 hrs.
b. No	3	2	1
Total search time		2.00 hrs.	1.00 hrs.
Average search time/user		1.00 hrs.	1.00 hrs.
6. Changed career plans due to using OIAS (Counseling Center):			
a. Yes	0	0	0
b. No	13	11	2
7. Changed career certainty due to using OIAS (Counseling Center):			
a. Yes (Increased certainty)	2	1	1
Certain to very certain	1	1	0
Uncertain to certain	0	0	0
Uncertain to very certain	1	0	1

TABLE IV--Continued

	Total	OIAS Users	Counseling Center Users
Very uncertain to uncertain	0	0	0
Very uncertain to certain	0	0	0
Very uncertain to very certain	0	0	0
b. No change in certainty	11	10	1
Very certain	5	5	0
Certain	2	2	0
Uncertain	3	2	1
Very uncertain	1	1	0
9. Personal satisfaction with information received from OIAS (Counseling Center):			
a. Very satisfied	3	2	1
b. Satisfied	6	6	0
c. Dissatisfied	3	3	0
d. Very dissatisfied	1	0	1

TABLE V

TELEPHONE QUESTIONNAIRE RESULTS (STUDENTS SEARCHING FOR SPECIFIC INFORMATION ABOUT A PARTICULAR OCCUPATION)

	Total	OIAS Users	Counseling Center Users
1. Used OIAS (Counseling Center) because of:			
a. Curiosity/recreation	1	1	0
b. Individual choice	13	2	11
c. Counselor/teacher recommendation	0	0	0
d. Class assignment	0	0	0
3. Obtained information sought:			
a. Yes	13	2	11
Total search time		1.25 hrs.	18.00 hrs.
Average search time/user		0.63 hrs.	1.64 hrs.
b. No	1	1	0
Total search time		0.50 hrs.	--
Average search time/user		0.50 hrs	--
6. Changed career plans due to using OIAS (Counseling Center):			
a. Yes	3	0	3
b. No	11	3	8
7. Changed career certainty due to using OIAS (Counseling Center):			
a. Yes (Increased certainty)	7	0	7
Certain to very certain	1	--	1
Uncertain to certain	3	--	3
Uncertain to very certain	1	--	1

TABLE V--Continued

	Total	OIAS Users	Counseling Center Users
Very uncertain to uncertain	1	--	1
Very uncertain to certain	0	--	0
Very uncertain to very certain	1	--	1
b. No change in certainty	7	3	4
Very certain	4	2	2
Certain	2	0	2
Uncertain	0	0	0
Very uncertain	1	1	0
9. Personal satisfaction with information received from OIAS (Counseling Center):			
a. Very satisfied	9	2	7
b. Satisfied	3	0	3
c. Dissatisfied	2	1	1
d. Very dissatisfied	0	0	0

TABLE VI

RESPONDENTS' USE OF OIAS COMPONENTS, BY TYPE OF INFORMATION SOUGHT

OIAS Component	Information Sought by Respondent				Total
	Names of Occupations to Explore	General Information About a Particular Occupation	Names of Occupations and General Information	Specific Information About a Particular Occupation	
a. Questionnaire	25	8	11	3	47
b. Job description printouts	14	11	10	2	37
c. Interview cassette tapes	1	1	1	0	3
d. Bibliography/books	1	3	3	1	8
e. Personal visits	2	3	0	0	5

TABLE VII

SOURCES USED OR RECOMMENDED BY COUNSELORS, BY TYPE OF INFORMATION SOUGHT

Source	Information Sought by Respondent				Total
	Names of Occupations to Explore	General Information About a Particular Occupation	Names of Occupations and General Information	Specific Information About a Particular Occupation	
a. Books, printed materials, tests	6	9	1	10	26
b. Tapes	0	1	0	0	1
c. Slides/movies	0	1	0	0	1
d. Names of persons to contact	1	1	0	0	2
e. Counselor only	4	3	1	1	9

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