

SYSTEM NOISE IN FEEDBACK MECHANISMS
PRESENTLY UTILIZED BY FLORIDA COMMUNITY COLLEGES

BY

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SYSTEM NOISE IN FEEDBACK MECHANISMS
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By

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The purpose of this study was to determine the extent to which noise, in the form of inaccurate or incomplete data, existed in the feedback mechanism presently utilized by Florida community colleges for collecting the placement data necessary to determine whether graduates are successful in achieving the terminal objective of their program.

Specifically, comparisons were made between self-reported data for university of attendance, grade point average, and program of study and matching data elements extracted from Florida State University System data files. Additional comparisons were made between self-reported area of employment and salary data and matching data elements from Florida State Department of Commerce Unemployment Insurance files.

Findings included inaccuracies in questionnaire data for grade point averages and salaries and differences between respondents and non-respondents for university of attendance, grade point averages and salaries.

The conclusion of the study was that the use of questionnaire data in the feedback mechanism for community colleges has obvious limitations, especially when the data are extrapolated to the total population of graduates.

Extensive efforts should be put forth to find alternative sources of data that can be shown to be more valid. If questionnaire data must be used, efforts must be made to validate the results and to correct for variations between responding and non-responding groups.

CHAPTER I
INTRODUCTION

The community college is an open, living system that attains a dynamic equilibrium or steady state by making changes based on feedback from its environment. This steady state exists when the equilibrium shifts to a new position of balance after disturbance (Chin, 1969, p. 205). The alternative is a closed system which is isolated from its environment and inevitably moves toward entropy (disorganization), a death state (Immegart, 1969, p. 168).

If a community college is to be successful in maintaining dynamic equilibrium, it must insure that it receives adequate feedback from its environment with a minimum amount of noise (inaccurate or incomplete data). This feedback is the process of receiving input or signals from the environment. Lonsdale (1964) defines feedback as ". . . the process through which the organization learns: it is the input from the environment to the system telling it how it is doing as a result of its output to the environment" (p. 175).

Norbert Weiner (1961, p. 11) coined the word cybernetics to cover the field of control and communications theory. The word has evolved to cover any process in which a system utilizes a feedback mechanism to provide input from its

environment. In this study, the community college would be the system, the graduate would be the output and placement studies of the graduate would be the feedback mechanism. If necessary, the system (community college) would react to the feedback bringing the output more in line with the expectations of the environment, thereby maintaining the community college in a steady state.

It should be noted that placement studies are only one of several feedback mechanisms utilized by community colleges. The total process of output evaluation of which placement studies are a part is called follow-up. While placement studies seek academic or employment status of community college graduates, follow-up studies are more comprehensive, seeking information concerning the adequacy of graduates' academic, skill or attitudinal preparation for their terminal objective.

Historically, the primary method of data collection in placement studies has been use of questionnaires sent to the entire population of graduates for an academic year. This is an expensive and time consuming procedure which usually results in a very low percentage of the survey instruments being returned. Utilizing techniques that increase the percentage of returns or test for representativeness can reduce the noise in the data but only at increased costs. Sampling techniques may be used to reduce the cost of the process, but extensive efforts must still be made to achieve the required percentage of returns for valid results. Further, in

order to represent all categories of students and the numerous programs offered in most community colleges, large numbers of cases are still required.

This study attempted to determine whether currently used feedback systems, that of questionnaires to collect placement data, result in the interjection of noise into the feedback mechanism. The study also attempted to determine the impact this noise had on the final results of the placement studies.

The Problem

Statement of the Problem

The problem in this study was to evaluate the extent to which noise, in the form of inaccurate or incomplete data, existed in the feedback mechanism presently utilized by Florida community colleges for collecting the placement data necessary to determine whether graduates are successful in achieving the terminal objective of their program.

Specifically, this study proposed to:

1. Determine the accuracy and completeness of transfer information pertaining to the graduates' self-reported university of attendance.
2. Determine the accuracy and completeness of transfer information pertaining to the graduates' self-reported grade point average at the receiving institution.
3. Determine the accuracy and completeness of transfer information pertaining to the graduates' self-reported program of study at the receiving institution.

4. Determine the accuracy and completeness of employment data pertaining to the graduates' self-reported area of employment.
5. Determine the accuracy and completeness of employment data pertaining to the graduates' self-reported salary information.
6. Determine the accuracy of extrapolations for the total population of graduates based on self-reported data from graduates who elect to respond to questionnaires.

Delimitations

The collection of student data was confined to Associate of Arts and Associate of Science graduates from a selected Florida community college. Transfer information was restricted to those graduates who attended an institution in the Florida State University System. Employment data were restricted to those graduates who were employed in Florida and whose employment files were included in the Florida State Department of Commerce Unemployment Insurance files.

Justification for the Study

Florida community colleges are required to submit annual reports that reflect the status of their graduates from the previous year. The importance of these reports has significantly increased as both state and federal agencies give closer scrutiny to their expenditures. Harold Kastner (1977) noted this point in an article concerning the cost/benefit of community college education.

Taxpayers and their legislative representatives at all levels are hard pressed to continue the level of support required to finance the ever expanding costs of education. Evidence justifying the investment in public community colleges should prove useful to those responsible for deciding between alternative uses of public funds. (p. 17)

Kastner later pointed out the importance of placement data as this justifying evidence:

The community college educational system is making a positive contribution to the economic well-being of the nation and the current trend indicates that the contribution will expand.

The attractiveness of this level of postsecondary education is destined to improve its relative position as the number of graduates from occupational programs, who receive higher beginning salaries than those who graduate from four-year institutions, is increased. Furthermore, cost data at the course and program level are now being identified in a number of states; and more detailed follow-up and placement studies concerning community college graduates are now being conducted. (p. 26)

The importance of these data is further emphasized by proposed legislation in Florida that would eliminate state funding for occupational programs that could not show that 50% of the graduates received employment in their area of training. The Veterans Administration has promulgated rules that require the 50% placement provision for all non-college degree programs before they can be approved for attendance by veterans under the G. I. Bill.

With this level of importance being relegated to the placement data, it is obvious that the introduction of noise in the feedback mechanism could result in the change or deletion of a program, contrary to the actual societal needs. Figure 1 depicts the role of placement data as a feedback mechanism in the programmatic decision process in the community college system.

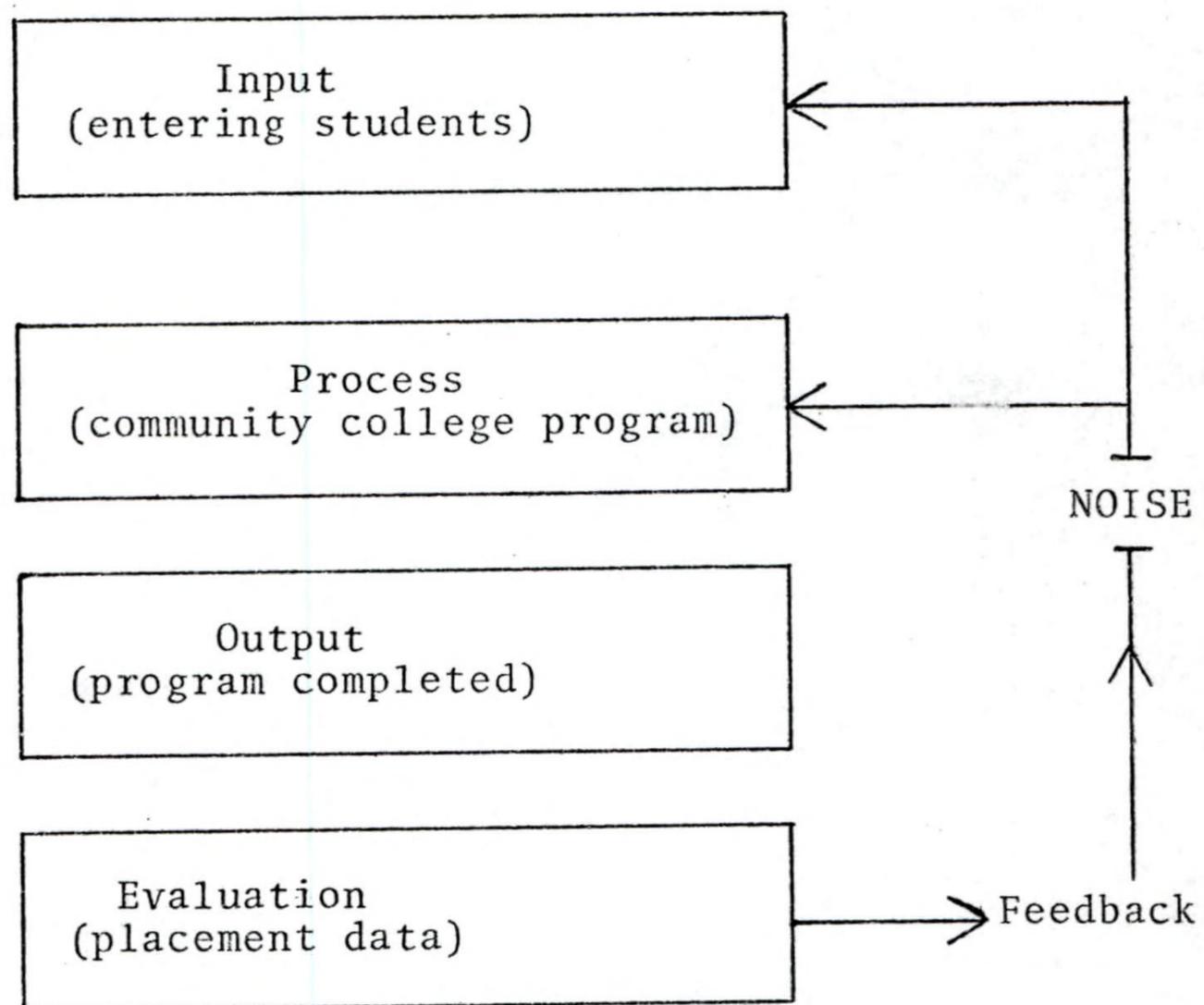


Figure 1

Based on the feedback of placement data, decisions may be made (1) to increase or decrease the number of students entering the program, (2) to change the program to enhance placement possibilities, (3) to delete the program or (4) to leave the program unchanged. It is obvious that inaccurate or incomplete data would increase the probability

of a specious decision. A series of these invalid decisions would significantly depreciate the value of the community college.

Definition of Terms

Community college--an institution supported by public funds and governed by a publicly appointed or elected board, which offers the first two years of postsecondary instruction; including university parallel programs, and programs in at least one of the following two areas: vocational/technical and continuing education.

Feedback--the use of parts or all of the output of a system as input back into some phase of the system to be used for self-correcting purposes.

Florida Community Junior College Inter-Institutional Research Council--a consortium of Florida community colleges established in 1968 to facilitate inter-institutional research and to foster institutional research.

Graduates--persons receiving either an Associate of Arts or Associate of Science degree from a Florida community college.

Noise--inaccurate data elements or incomplete data that results in erroneous feedback to a system from its environment.

Placement data--data that reflects the academic or employment status of community college graduates.

Self-reported data--data collected by questionnaires in which individuals report information about themselves.

Procedures

Study Design

This study was conducted in the following six phases:

- (1) The selected community college supplied a computer tape containing the name and social security number for selected graduates.
- (2) The graduates were matched by social security number with existing data files to obtain transfer and employment information.
- (3) The selected college used five questions to seek transfer and employment data from the same population of graduates.
- (4) Comparisons were made between the data from existing data files and the self-reported data from questionnaires.
- (5) Separate extrapolations for the total population of graduates were made from those graduates who responded to the questionnaire and from those graduates identified in existing data files. Comparisons were made between the extrapolated figures.

Sample

The sample for this study consisted of all Associate of Arts and Associate of Science 1976-77 academic year graduates from the selected community college.

It is assumed that the geographic location or size of the college does not relate to the veracity of self-reported data.

Instrumentation

Five questions were used by the college in the questionnaire phase of this study (Appendix, p. 53). The questions were designed to elicit information that could be coded, converted to machine readable form and then compared with data available from existing files.

Data Collection

The selected graduates were matched by social security number with Florida State University System data files to determine (1) university of attendance, (2) grade point average, and (3) program of study. The graduates were then matched by social security number with the Florida State Department of Commerce Unemployment Insurance files to determine (1) area of employment, and (2) monthly salary.

The same population of graduates were then mailed questionnaires asking that they report certain information concerning their current status. The questionnaire included the five questions necessary to determine their (1) university of attendance, (2) grade point average, (3) program of study, (4) area of employment, and (5) monthly salary.

The questionnaire was administered during the same time period covered by the two existing data files.

Data Treatment

Tabular comparison with descriptive analysis were made to:

1. Compare the relationship between university of attendance data from questionnaires and

from existing Florida State University System data files.

2. Compare the relationship between grade point average data from questionnaires and from existing Florida State University System data files.
3. Compare the relationship between program of study data from questionnaires and from existing Florida State University System data files.
4. Compare the relationship between area of employment data from questionnaires and from existing Florida State Department of Commerce Unemployment Insurance files.
5. Compare the relationship between salary data from questionnaires and from existing Florida State Department of Commerce Unemployment Insurance files.
6. Compare the relationship between extrapolations for the total population of graduates based on data from questionnaires and extrapolations for the total population of graduates based on data from existing data files.

Organization of the Research Report

This study is reported in four chapters. The first chapter has included an introduction, a statement of the problem, delimitations, justification for the study,

definition of terms and procedures. The second chapter provides a review of related literature concerning feedback mechanisms and the present state of placement studies as a segment of the community college follow-up process. Chapter three compares self-reported data with data from existing data files, and presents a comparison of extrapolations of self-reported data and extrapolations of data from existing files. The final chapter summarizes the study and presents conclusions and recommendations for further study.

CHAPTER II

REVIEW OF RELATED LITERATURE

The placement data collected by Florida Community Colleges is an integral component of the feedback process necessary to insure that the colleges are meeting a valid community need. This review of literature will develop the concept of the feedback mechanism as a necessary element in any system that aspires to attain a state of dynamic equilibrium with its environment. The review will also present an overview of the very limited information available concerning the accuracy of self-reported data.

The Feedback Mechanism In The Open System

Ludwig von Bertalanffy (1968), original proponent of a general systems theory, defined a system as a "set of elements standing in interaction" (p. 38). He felt that the concept of a "systems theory" would allow communication to exist between the sciences and would allow "formulation of principles that are valid for systems in general, whatever the nature of their component elements and the relations or forces between them" (p. 37) and that these are universal principles that apply to systems in general.

Immegart and Pilecki (1973) expanded slightly on von Bertalanffy's definition of a system:

A system is an entity composed of (1) a number of parts, (2) the relationship of these parts and (3) the attributes of both the parts and the relationships. (p. 30)

They perceived systems theory, not as a discipline in itself but as "a methodology, an approach, a mode of thought . . . for dealing with problems or situations" (p. 30).

Elaborating on these definitions of systems, Immegart (1969) stated:

The word system can be used to refer to a vast array of things from the smallest whole to the total universe. There are value systems, number systems, solar systems, school systems, spacecraft systems, and even betting systems. (p. 167)

Hearn (1958) stated:

General systems theorists believe that it is possible to represent all forms of animate and inanimate matter as systems; that all forms from atomic particles through atoms, molecules, crystals, viruses, cells, organs, individuals, groups, societies, planets, solar systems, even the galaxies, may be regarded as systems. They are impressed by the number of times the same principles have been independently "discovered" by scientists working in different fields. (p. 38)

Further:

. . . there are properties which are common to systems of every order, although manifest in different forms, and that there are universal laws which describe the structure of systems and their manner of functioning. (p. 38)

Morphet, Johns and Reller (1974) saw a direct application of systems theory to school systems:

A school system is an open, living social system which can be conceptualized in a number of ways in terms of system theory. For example, an individual school might be conceptualized as a system; its departments, sections, and divisions as subsystems; and the central staff, the board of education, the state education agencies, and, if present trends continue, even federal education agencies may all in the order listed be conceptualized as suprasystems. (p. 64)

If a school system, a community college, can be defined as a system then it is necessary to determine what properties of a system and what principles of systems theory apply to this particular system. Immegart (1969), summarizing the work of Griffiths (1964) and Hearn (1958), listed the following properties of all systems:

1. All systems exist in time-space.
2. All systems tend toward a state of randomness and disorder, the ultimate of which is entropy, or inertia.
3. All systems have boundaries, which are more or less arbitrary demarcations of that included within and that excluded from the system.
4. All systems have environment, which is everything external to (without the boundary of) the system.
5. All systems have factors that affect the structure and function of the system. Factors within the system are variables; factors in the system's environment are parameters.
6. All but the largest systems have suprasystems.
7. All but the smallest systems have subsystems. (p. 167)

There are two general types of systems, the open system and the closed system. While the above listed properties apply to all systems, their application for the purpose of

this study is limited to open systems since, as Morphet et al. (1974) noted, a school system "is an open, living social system" (p. 64).

Griffiths (1964), in a discussion of system theory as a model to use in the investigation of organizations, stated:

Systems may be open or closed. An open system is related to and exchanges matter with its environment while a closed system is not related to nor does it exchange matter with its environment. Further, a closed system is characterized by an increase in entropy, while open systems tend toward the steady state.

System theory deals only with systems having the properties of systems in general, together with certain characteristics which distinguish them from closed systems. (p. 115)

Griffiths listed the following six characteristics of an open system:

1. Open systems exchange energy and information with their environment; that is, they have inputs and outputs.
2. Open systems tend to maintain themselves in steady states.
3. Open systems are self-regulating.
4. Open systems display equifinality; that is identical results can be obtained from different initial conditions.
5. Open systems maintain their steady states, in part through the dynamic interplay of subsystems operating as functional processes.
6. Open systems maintain their steady states, in part, through feedback processes. In general, feedback refers to that portion of the output

of a system which is fed back to the input and affects succeeding outputs, and to the property of being able to adjust future conduct by past performance.

(p. 116)

Two of the properties listed by Griffiths relate directly to this study and need further clarification and emphasis. These are the tendency of open systems to "maintain themselves in steady states" and use of "feedback processes."

Chin (1969) defined two types of equilibrium:

A stationary equilibrium exists when there is a fixed point or level of balance to which the system returns after a disturbance. We rarely find such instances in human relationships. A dynamic equilibrium exists when the equilibrium shifts to a new position of balance after disturbance. (p. 205)

Chin felt that a system will react to any outside impingements by:

- (1) resisting the influence of the disturbance, refusing to acknowledge its existence, or by building a protective wall against the intrusion, and by other defensive maneuvers.
- (2) by resisting the disturbance through bringing into operation the homeostatic forces that restore or recreate a balance.
- (3) by accommodating the disturbance through achieving a new equilibrium. (p. 205)

Strategies 1 and 2 are designed to attain a stationary equilibrium without making changes. Strategy 3 is designed to attain a dynamic equilibrium or steady state by making changes and achieving a new point of balance (Morphet et al.,

1974). Strategies 1 and 2 are characteristic of a closed system while strategy 3 is characteristic of an open system.

Morphet et al. (1974) hypothesized that "If any social system (including the school system) fails to learn from its environment, it will eventually fail to survive in that environment" (p. 62). The process of learning from the environment is called feedback.

Norbert Wiener (1961) coined the word "cybernetics" to cover the entire field of control and communication theory. An integral factor in this new "science" was feedback which he defined as follows:

It is enough to say here that when we desire a motion to follow a given pattern the difference between this pattern and the actually performed motion is used as a new input to cause the part regulated to move in such a way as to bring its motion closer to that given by the pattern. (p. 7)

Chin (1969) stated:

While affecting the environment, a process we call output, systems gather information about how they are doing. Such information is then fed back into the system as input to guide and steer its operations. This process is called feedback. (p. 206)

Lonsdale (1964) formulated a similar definition:

As applied to organization, feedback is the process through which the organization learns: it is the input from the environment to the system telling how it is doing as

a result of its output to the environment. This feedback-input is then used to steer the operation of the system. (p. 173)

Miller (1965) pointed out that feedback is not an immediate nor infallible process:

The feedback signals have a certain probability of error. They differ in the lag in time which they require to affect the system.

Their lag may be minimal, so that each one is fed back to the input of the main channel before the next signal is transmitted. Or their lag may be longer and several signals may be transmitted before they arrive to affect the decision about what signal to transmit next. (p. 222)

Pfiffner and Sherwood (1960) agreed with the possibility for error and emphasized the importance of the instrument used to collect the feedback information:

Essential to feedback is the notion that the flow of information is actually having a reciprocating effect on behavior. This is why the term loop is frequently associated with feedback. This circular pattern involves the flow of information to the point of action, a flow back to the point of decision with information on the action, and then a return to the point of action with new information and perhaps instructions. A primary element in this process is the sensory organ, the instrument through which information is obtained. (p. 279)

The instruments of concern in this study were placement studies as a subset of the total community college follow-up process.

Accuracy Of Self-Reported Data

General texts on research in education discuss questionnaires as a means of surveying large groups relatively inexpensively (Best, 1977). Other advantages mentioned are that the questionnaire requires little time to administer and that it permits respondents to remain anonymous (Turney and Robb, 1971).

In discussing means of increasing response rates, Good (1966) stated that "follow-up usually is necessary in reaching a goal of a high percentage of questionnaire returns (above 95 percent)" (P. 225). In an earlier discussion, Good (1954) stated that a "high percentage of returns, above 95 percent, is now known to be important" (p. 625).

Best (1977) elaborated on the problems of low response rates:

As a result of sparse response, often as low as 40 percent to 50 percent, the data obtained are often of limited validity. The information in the unreturned questionnaires might have changed the results of the investigation materially. The very fact of no responses might imply certain types of reactions, reactions that can never be included in the summary of data.
(p. 157)

Smedley and Olson (1975) were even more blunt in their discussion of the questionnaire as a research instrument:

The mail survey has the advantage of being able to collect large amounts of data from large segments of the population inexpensively and for this reason enjoys wide popularity in areas where large sums of money are not available for research. Beyond the

advantage of being inexpensive, however, there is little to recommend its use. (p. 10)

Kerlinger (1965) went one step further:

The mail questionnaire has been popular in education, although it has serious drawbacks unless it is used in conjunction with other techniques. Two of these defects are possible lack of response and the inability to check the responses given. These defects, especially the first, are serious enough to make the mail questionnaire worse than useless, except in highly sophisticated hands. (p. 414)

He further stated:

If they are used, every effort should be made to obtain returns of at least 80 to 90 percent or more, and lacking such returns, to learn something of the characteristics of the non-respondents. (p. 414)

Turney and Robb (1971) reiterated the previously mentioned shortcomings of the questionnaire and questions the truthfulness of the respondent:

Although questionnaires can be used to advantage in many research projects, they are not without limitations. One rather obvious shortcoming is that, if the questionnaire is mailed, the number of returns may be small. If only 20 percent of the mailed questionnaires are returned to the researcher, it is very doubtful that the data collected are sufficient for use in the study. This is especially true if there is reason to believe that the sample of returns may be biased. Another limitation is that the respondents may not answer all of the questions asked; or, if they do, they may not answer them completely. Carelessness, faulty memory, faulty

perception, and lack of interest may adversely affect the quality of responses. Furthermore, there can be little assurance that all of the responses will be truthful. (p. 130)

Besides these general discussions of the questionnaire, the only research found were studies by Bruce Walsh that sought to determine the accuracy of responses while ignoring the problems with non-respondents. His first study (Walsh, 1968) involved college level students and concluded, "In general, questionnaire methods of collecting self-report data show evidence of validity under varied conditions for biographical information" (p. 186).

His second study (Walsh and Maxey, 1972) surveyed high school students and concluded:

In general, students gave accurate responses to the four academic items as evidenced by the high relationship between the self-reported grades and the school reported grades. (p. 564)

Summary

Community colleges are open systems and must maintain close contact with the environment if they are to attain a dynamic equilibrium, a necessary condition for survival of any open system.

The process of receiving input from the environment is called feedback. If the feedback is accurate and timely, it can be used in the decision-making process to insure that the college is meeting the needs of its community or environment.

The literature indicated that low response rates, incomplete and inaccurate responses and biased samples created problems with the use of questionnaire data in the feedback process. Even when total populations were used, the differences between respondents and non-respondents could result in use of biased data.

CHAPTER III
RESULTS AND DISCUSSIONS

Comparison of Self-Reported Data
With Data From Existing Data Files

There were a total of 992 1976-77 graduates of the selected community college who were identified for inclusion in this study. These graduates were matched by social security number with Florida State University System data files. Table 1 reflects the number and percent of these graduates who, according to the files, were attending each of the nine state universities during the Fall Term, 1977.

Table 1. Graduates Located on Florida State University System Files for Fall Term, 1977

University	Number of Graduates	Percent
Florida Agricultural & Mechanical	2	0.5
Florida Atlantic	8	2.0
Florida International	10	2.5
Florida State	36	9.1
University of Central Florida	9	2.3
University of Florida	306	77.3
University of North Florida	6	1.5
University of South Florida	17	4.3
University of West Florida	<u>2</u>	<u>0.5</u>
TOTAL	396	100.0

The same graduates were matched by social security number with the Florida State Department of Commerce Unemployment Insurance files. Table 2 indicates the number and percent of graduates who were located on the Department of Commerce files during the final quarter (October, November and December), 1977.

Table 2. Graduates Located on the Department of Commerce Unemployment Insurance Files, Final Quarter, 1977

Status	Number	Percent
Located	480	48.4
Not Located	<u>512</u>	<u>51.6</u>
TOTAL	992	100.0

After elimination of the 396 graduates who were located on the State University System files, Table 3 shows the number and percent of graduates who were located on the Department of Commerce files.

Table 3. Graduates Not Located on the Florida State University System Files Who Were Located on the Department of Commerce Unemployment Insurance Files

Status	Number	Percent
Located	313	52.5
Not Located	<u>283</u>	<u>47.5</u>
TOTAL	596	100.0

Table 4 indicates the total number of graduates who were located on either the State University System files or the Department of Commerce files.

Table 4. Total Graduates Located on Either State University System or Department of Commerce Files

Status	Number	Percent
Located	709	71.5
Not Located	<u>283</u>	<u>28.5</u>
TOTAL	992	100.0

The same 992 graduates were mailed questionnaires requesting that they report certain information concerning their present status. Table 5 indicates the number of graduates who responded to the questionnaire.

Table 5. Number of Graduates Responding to Questionnaire

Status	Number	Percent
Responded	541	54.5
Did Not Respond	<u>451</u>	<u>45.5</u>
TOTAL	992	100.0

Utilizing the population of graduates as identified and described above, each research question was approached separately.

Research Question Number 1	Compare the relationship between university of attendance data from questionnaires and from existing Florida State University System data files.
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Graduates were asked to indicate whether they were enrolled in a college or university by marking the name of the institution attended. They were given the choice of marking any one of the nine state universities or an "other" category with a space for writing out the name of that institution.

Table 6 shows those graduates who indicated attendance at one of the nine state universities but who were not located in the State University System files.

Table 6. Graduates Who Indicated Attendance in the State University System But Who Were Not Located in the State University System Files

University	Graduates Number	Not Located Percent
Florida Agricultural & Mechanical	1	3.0
Florida Atlantic	2	5.7
Florida International	1	3.0
Florida State	3	8.8
University of Central Florida	0	0
University of Florida	26	76.5
University of North Florida	0	0
University of South Florida	1	3.0
University of West Florida	<u>0</u>	<u>0</u>
TOTAL	34	100.0

Table 7 compares the university of attendance indicated on the questionnaire with the university of attendance extracted from the system files.

Table 7. Graduates' Indicated University of Attendance Compared to University of Attendance Extracted From State University System Files

University Indicated	University Located								
	UWF	USF	UNF	UF	UCF	FSU	FIU	FAU	FAMU
Florida Agricultural & Mechanical									2
Florida Atlantic								4	
Florida International							5		
Florida State				1		20			
University of Central Florida					4				
University of Florida									204
University of North Florida				6	1				
University of South Florida									7
University of West Florida					1				

Table 8 summarizes the discrepancies between the graduates' indicated university of attendance and attendance data extracted from the state university system files.

Table 8. Discrepancies Between Graduates' Indicated University of Attendance and Attendance Data Extracted From State University System Files

Status	Number	Percent
Indicated different university from one extracted from file	2	0.7
Indicated university but not located on SUS file	34	11.8
No discrepancy	253	87.5
TOTAL	289	100.0

Those graduates who had continued their education by transferring to a university in the State University System accurately reflected their attendance. The two who indicated attendance at a university different from the one extracted from the file could be explained by a mistake in completing the questionnaire or in the process of preparing the data for computer analysis.

The 34 graduates who indicated attendance but were not located on the State University System files cannot be as easily explained. While they might have attended the university in the past or they might have had intentions to attend in the future, they were not attending at the time indicated. Accepting the questionnaire data on these graduates would increase the number presumed to be attending the State University System from 255 to 289.

Research Question Number 2	Compare the relationship between grade point average data from questionnaires and from existing Florida State University System files.
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Graduates were asked to indicate their grade point average at the institution attended by placing a check mark beside the interval that included their average. The intervals offered were:

Less than 1.50
1.50 to 1.99
2.00 to 2.49
2.50 to 2.99
3.00 to 3.49
Over 3.50

Table 9 indicates the questionnaire responses.

Table 9. Graduates' Indicated Grade Point Average

Interval	Number	Percent
Less than 1.50	0	0
1.50 to 1.99	4	2.7
2.00 to 2.49	30	20.5
2.50 to 2.99	43	29.5
3.00 to 3.49	33	22.6
Over 3.50	<u>36</u>	<u>24.7</u>
TOTAL	146	100.0

Table 10 lists the extracted grade point average for those graduates who were located on the State University System files and who answered the question concerning their grade point average.

Table 10. Extracted Grade Point Average for Those Graduates who Responded to the Questionnaire and Indicated Their Grade Point Average

Interval	Number	Percent
Less than 1.50	13	8.9
1.50 to 1.99	16	11.0
2.00 to 2.49	42	28.8
2.50 to 2.99	24	16.4
3.00 to 3.49	29	19.9
Over 3.50	<u>22</u>	<u>15.0</u>
TOTAL	146	100.0

Table 11 lists the extracted grade point average for those graduates who were located on the State University

System files, who responded to the questionnaire but who did not answer the question concerning their grade point average.

Table 11. Extracted Grade Point Average for Those Graduates who Responded to the Questionnaire but did not Indicate Their Grade Point Average

Interval	Number	Percent
Less than 1.50	13	12.8
1.50 to 1.99	14	13.7
2.00 to 2.49	27	26.5
2.50 to 2.99	18	17.6
3.00 to 3.49	18	17.8
Over 3.50	<u>12</u>	<u>11.8</u>
TOTAL	102	100.0

Table 12 compares the grade point average extracted from the files for those graduates who answered the grade point average question on the questionnaire and those who did not.

Table 12. Comparison of Extracted Grade Point Averages for Those Graduates who Indicated a Grade Point Average and Those who did not Indicate a Grade Point Average

Interval	Total Number	Graduates Who Did Not Indicate GPA		Graduates Who Indicated GPA	
		Number	Percent of Column	Number	Percent of Column
Less than 1.50	26	13	12.8	13	8.9
1.50 to 1.99	30	14	13.7	16	11.0
2.00 to 2.49	69	27	26.5	42	28.8
2.50 to 2.99	42	18	17.6	24	16.4
3.00 to 3.49	<u>47</u>	<u>18</u>	<u>17.6</u>	<u>39</u>	<u>19.9</u>
Over 3.50					
TOTAL	248 ¹	102	100.0	146	100.0

¹NOTE: Seven graduates who responded to the questionnaire and who were located on State University System files did not have a computed grade point average.

Table 13 compares the grade point average extracted from the State University System files with the grade point average indicated on the questionnaire.

Table 13. Comparison of Grade Point Average Extracted From State University System Files With Grade Point Average Indicated on Questionnaire

		Extracted Grade Point Average						Total
		Less than 1.50	1.50 to 1.99	2.00 to 2.49	2.50 to 2.99	3.00 to 3.49	Over 3.50	
INDICATED GRADE POINT AVERAGE	Less than 1.50	0	0	0	0	0	0	0
	1.50 to 1.99	3	1	0	0	0	0	4
	2.00 to 2.49	5	7	16	2	0	0	30
	2.50 to 2.99	4	6	16	13	4	0	43
	3.00 to 3.49	1	2	7	8	12	3	33
	Over 3.50	0	0	3	1	13	19	36
	TOTAL	13	16	42	24	29	22	146

Table 14 summarizes the data in Table 13, reflecting the number of graduates who indicated a grade point average lower, the same as or higher than the grade point average extracted from the State University System files.

Table 14. Summary Comparison of Grade Point Average Extracted From State University System Files With Grade Point Average Indicated on Questionnaire

Indicated GPA was	Number	Percent
Lower than extracted GPA	9	6.2
Same as extracted GPA	61	41.8
Higher than extracted GPA	<u>76</u>	<u>52.0</u>
TOTAL	146	100.0

Only 146 of the 255 graduates who were in the State University System and who responded to the questionnaire answered the question concerning their grade point average.¹ This significantly reduced the already low response rate for these data. The 102 graduates who did not indicate a grade point average were distributed across the GPA intervals in approximately the same proportions as the 146 who indicated a grade point average.

More importantly, Tables 13 and 14 reflect that the indicated grade point averages were clearly higher than the grade point average extracted from the State University System files. While nine (9) or 6.2% of the indicated grade point averages were lower than the extracted, seventy-six (76) or 52.0% of the indicated were higher than the extracted. Sixty-one (61) or 41.8% of the indicated grade point averages were the same as the extracted.

Research Question No. 3	Compare the relationship between area of study data from questionnaires and from existing Florida State University System data files.
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Graduates were asked to indicate their area of study at the institution they were attending. This area of study was converted to the primary Higher Education General Information

1. NOTE: This difference can be partially explained by the number of graduates who were in their first term at the university and therefore did not have a grade point average when they completed the questionnaire. The end of term system file used in this study contained a computed grade point average.

System discipline code and compared with the same code extracted from the Florida State University System files.

Table 15 reflects, for each area of study, the number of graduates whose indicated area of study and extracted area of study were the same. It also reflects, for each area of study, the number of graduates who stated they were enrolled in that area when they were not and the number of graduates actually enrolled in the area when they had indicated some other area of study.

Table 15. Comparison of Area of Study Extracted From State University System Files and Area of Study Indicated on Questionnaire

Area of Study	Graduates Indicated and were Enrolled	Graduates Indicated and Were Not Enrolled	Graduates Did Not Indicate But Were Enrolled
Agriculture	7	3	3
Architecture	11	2	1
Area Studies	1	0	0
Biology	4	0	5
Business	27	6	0
Communications	16	1	3
Computer Science	1	0	0
Education	47	5	15
Engineering	16	0	0
Fine Arts	3	0	5
Health	6	8	2
Home Economics	3	3	2
Letters	5	0	5
Mathematics	1	0	0
Physical Science	4	2	0
Psychology	12	0	3
Public Affairs	1	9	7
Social Science	25	13	4
Physical Education	0	2	0
Interdisciplinary	2	2	1
TOTAL	192	56	56

The scattered nature of these data and its unsuitability for further aggregation made it extremely difficult to determine trends in the inaccuracies in reporting. Additionally the difference between the indicated area of study and the area of study extracted from the State University System files could have been the result of a change by the student that was not yet updated in the file rather than an inaccuracy in the questionnaire data.

Despite these reservations, it was possible to select areas of study that were indicated by more graduates than were actually enrolled (Table 16) and areas of study that had more graduates enrolled than the number that indicated they were in that area (Table 17).

Table 16. Areas of Study That Were Indicated by More Graduates Than Were Actually Enrolled

Area of Study	Graduates Indicating Area of Study	Number of Graduates Actually Enrolled
Architecture	13	12
Area Studies	1	0
Business	33	27
Computer Science	1	0
Health	14	8
Home Economics	6	5
Physical Sciences	6	4
Public Affairs	10	7
Social Science	38	29
Physical Education	2	0
Interdisciplinary	4	3

Table 17. Areas of Study Indicated by Less Graduates Than Were Actually Enrolled

Area of Study	Graduates Indicating Area of Study	Number of Graduates Actually Enrolled
Biology	4	5
Communications	17	19
Education	52	62
Fine Arts	3	5
Letters	5	10
Psychology	12	15

Table 16 reflects that certain areas of study were indicated by more graduates than were actually enrolled. Utilization of questionnaire data would tend to inflate the perceived enrollments in these areas. Table 17 reflects that certain areas had a lower indicated than actual enrollment. Questionnaire data would tend to deflate the perceived enrollments in these areas.

Research Question Number 4 Compare the relationship between area of employment data from questionnaires and from existing Florida State Department of Commerce Unemployment Insurance files.

Graduates who responded to the questionnaire were asked to indicate their present job title. To allow realistic comparison with data from Department of Commerce files, the job titles were grouped in the following areas of employment:

- Agricultural
- Business
- Health Occupations
- Industrial
- Public Service
- Unclassified

The Department of Commerce Unemployment Insurance files contained an industrial Classification Code for the business in which the graduate was employed. While this had obvious problems with large organizations that would utilize employees in several different areas of employment, an attempt was made to compare the two data sources. The Industrial Classification Codes were grouped in the same areas of employment as the job titles.

Table 18 compares the graduates indicated area of employment with the area of employment derived from the Florida State Department of Commerce Unemployment Insurance files. There were 191 graduates with data from both sources.

Table 18. Comparison of Graduates' Indicated Area of Employment With the Area of Employment Derived From Department of Commerce Files

		INDICATED AREA OF EMPLOYMENT					Uncl.	Total
		Agri- culture	Busi- ness	Health Occupa- tions	Indus- trial	Educa- tion & Public Service		
DERIVED AREA OF EMPLOY- MENT	Agriculture		1		1		2	
	Business		38	2	11	1	4	56
	Health Occupations		2	16				18
	Industrial		6		7	1	2	16
	Education & Public Service	5	30	24	15	17	3	94
	Unclassified	1	1	1	2			5
	TOTAL	6	78	43	36	19	9	191

The data, aggregated at this level, clearly reflected the problems involved with comparing the indicated area of employment with the area of employment derived from the business in which the graduate was employed. A community college may make the assumption that a graduate nurse working in education and public service is actually working as a nurse for the teaching hospital. Likewise, they may assume that a business graduate working for an industrial firm is actually working in his field of training.

These assumptions could not be made for the purpose of this study. Therefore, no further comparisons were attempted between the indicated area of employment and the derived area of employment.

Research Question Number 5	Compare the relationship between salary data from questionnaires and from existing Florida State Department of Commerce Unemployment Insurance files.
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Graduates who responded to the questionnaire were asked to indicate their present monthly salary. These salaries were then aggregated in the following ranges:

\$ 1 to \$200
\$201 to \$400
\$401 to \$600
\$601 to \$800
\$801 to \$1000
Over \$1000

The Florida State Department of Commerce Unemployment Insurance files contained monthly salary information that was aggregated in the same ranges. There were 160 graduates with data from both sources.

Table 19 lists the extracted monthly salary for all graduates who responded to the questionnaire and who answered the monthly salary question.

Table 19. Extracted Monthly Salary for Graduates who Responded to the Questionnaire and who Indicated Their Monthly Salary

SALARY RANGE	NUMBER	PERCENT
1 to 200	20	12.5
201 to 400	31	19.4
401 to 600	35	21.9
601 to 800	31	19.4
801 to 1000	22	13.8
Over 1000	21	13.0
TOTAL	160	100.0

Table 20 reflects the salary ranges for those graduates who were located on the Department of Commerce files and who did not respond to the questionnaire or who did not answer the salary question. Table 21 compares the extracted salary ranges for those graduates who responded to the salary question and those who did not.

Table 20. Monthly Salary Extracted From Department of Commerce Files for Graduates who did not Supply Salary Data on the Questionnaire

SALARY RANGE	NUMBER	PERCENT
1 to 200	86	26.8
201 to 400	75	23.4
401 to 600	67	20.9
601 to 800	32	10.0
801 to 1000	21	6.5
Over 1000	40	12.4
TOTAL	321	100.0

Table 21. Comparison of Extracted Monthly Salary for Graduates who Supplied Monthly Salary Data and Graduates who did not Supply Monthly Salary Data

Salary Range	Graduates Who Supplied Salary Data		Graduates Who Did Not Supply Salary Data	
	Number	% of Column	Number	% of Column
1 to 200	20	12.5	86	26.8
201 to 400	31	19.4	75	23.4
401 to 600	35	21.9	67	20.9
601 to 800	31	19.4	32	10.0
801 to 1000	22	13.8	21	6.5
Over 1000	21	13.0	40	12.4
TOTAL	160	100.0	321	100.0

Table 22 lists the indicated monthly salary for all graduates who responded to the questionnaire and who answered the monthly salary question. Table 23 compares the monthly salary extracted from the Department of Commerce files with the monthly salary indicated on the questionnaire.

Table 22. Graduates' Indicated Monthly Salary

Salary Range	Number	Percent
1 to 200	27	13.6
201 to 400	37	18.6
401 to 600	47	23.6
601 to 800	48	24.1
801 to 1000	26	13.1
Over 1000	14	7.0
TOTAL	199	100.0

Table 23. Comparison of Monthly Salary Extracted From Department of Commerce Files With Monthly Salary Indicated on Questionnaire

		EXTRACTED MONTHLY SALARY						
		1 to 200	201 to 400	401 to 600	601 to 800	801 to 1000	Over 1000	Total
INDICATED MONTHLY SALARY	1 to 200	13	3	2	1	1		20
	201 to 400	9	18	3	1			31
	401 to 600		9	21	4	1		35
	601 to 800		3	6	18	3	1	31
	801 to 1000			5	14	3		22
	Over 1000				3	8	10	21
	TOTAL		22	33	37	41	16	11

Table 24 summarizes the data in Table 23, reflecting the number of graduates who indicated a monthly salary lower, the same as or higher than the monthly salary extracted from the Florida State Department of Commerce Unemployment Insurance files.

Table 24. Summary Comparison of Extracted Monthly Salary and Indicated Monthly Salary

INDICATED MONTHLY SALARY WAS	NUMBER	PERCENT
Lower than Extracted Monthly Salary	20	12.5
The same as Extracted Monthly Salary	83	51.9
Higher than Extracted Monthly Salary	57	35.6
TOTAL	160	100.0

Tables 23 and 24 clearly reflect that the monthly salaries indicated on the questionnaire were higher than the salaries extracted from Department of Commerce files. Additionally, Table 20 reflects that the graduates who did not supply salary data have lower extracted monthly salaries than the extracted salaries of those graduates who supplied the data. These factors combined result in the inflation of questionnaire collected salary data.

Extrapolated Data

The purpose of this section is to present the final research question which sought to determine if inaccuracies in self-reported data noted in Research Questions 1 through 5 were compounded by extending the results from the portion of the population that responded to the questionnaire to the total population.

Research Question Number 6	Compare the relationship between extrapolation for the total population of graduates based on data from questionnaires and extrapolations for the total population of graduates based on data from existing data files.
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Data from each of the first five research questions will be treated separately.

University of Attendance

The 255 graduates enrolled in the Florida State University System who responded to the questionnaire, accurately reflected their university of attendance. However, there were 34 additional graduates who indicated enrollment in the system but were not located in the system files. Therefore, the

questionnaire data indicated that 289 of 541 or 53.4% of the graduates were enrolled in the State University System. This would extrapolate to 530 of the 992 graduates who were enrolled. Correcting for the 34 inaccurate responses, the ratio becomes 255 of 541 or 47.1% of the graduates enrolled. This extrapolates to 467 of the 992 graduates.

Table 25 compares these extrapolated numbers with the actual number of graduates who were enrolled in the State University System.

Table 25. Comparison of Extrapolated and Actual Numbers of Graduates Enrolled in the State University System

Source	Number	Percent of Total Graduates
Extrapolated from questionnaire data	530	53.4
Extrapolated from corrected questionnaire data	467	47.1
Actual enrollment from system files	396	39.9

Correcting for the inaccurate questionnaire data resulted in a number of graduates closer to the actual system enrollment. The remaining difference between extrapolated and actual enrollments must be explained by the varying characteristics of those graduates who responded to questionnaire and those who did not respond.

Grade Point Average

Since the grade point average was collected in an interval format, it was not possible to determine a mean for the total group. However, several inaccuracies that were obvious

in the data collected could only increase the distortion of the data if extrapolated to the total population. Over 52% of those graduates answering the question reported a grade point average at least one interval higher than the average extracted from the State University System files. Twenty-nine (29) or 19.9% reported their average at least two intervals higher.

Of the group that responded to the questionnaire but did not indicate their grade point average, 26.5% had an extracted average below a 2.00. Of the group that indicated their grade point average, only 19.9% had an extracted average below 2.00. Comparing these percentages with the questionnaire data that reflected only 2.7% of the graduates indicating an average below 2.00 further emphasizes the inaccuracies of the data.

Area of Study

Of the 396 graduates located on the State University System files, 388 had a code designating their area of study. Of these, 248 indicated an area of study on the questionnaire. Utilizing the number of graduates indicating each area of study, it was possible to determine the percentage and, thereby, the number of graduates from the total population that could be expected in each area of study. Table 26 compares the extrapolated number of graduates in each area of study with the actual number extracted from the State University System files.

Table 26. Comparison of Extrapolated Number of Graduates in Each Area of Study With the Actual Number Extracted From the State University System Files

Area of Study	Extrapolated From Indicated Area of Study		Actual Extracted From State University System Files	
	Number	Percent	Number	Percent
Agriculture	15.6	4.0	19	4.9
Architecture	20.3	5.2	17	4.3
Area Studies	1.6	0.4	1	0.2
Biology	6.3	1.6	18	4.6
Business	51.6	13.3	41	10.5
Communications	26.6	6.9	30	7.7
Computer Science	1.6	0.4	1	0.2
Education	81.4	21.0	93	24.0
Engineering	25.0	6.5	29	7.5
Fine Arts	4.7	1.2	13	3.3
Health	21.9	5.6	16	4.1
Home Economics	9.4	2.3	8	2.1
Letters	7.8	2.0	13	3.3
Mathematics	1.6	0.4	1	0.2
Physical Science	9.4	2.3	4	1.0
Psychology	18.8	4.8	20	5.2
Public Affairs	15.6	4.0	11	2.8
Social Science	59.4	15.3	49	12.6
Physical Education	3.1	0.8	2	0.5
Interdisciplinary	6.3	1.6	4	1.0
TOTAL	388.0	100.0	388	100.0

A close review of the data indicates that the relationship between the extrapolated enrollment and the actual enrollment was the same as the relationship between the questionnaire data and the extracted data of the 192 graduates who responded to the area of study question. That is, the 140 graduates who did not respond to the questionnaire, or did not indicate their area of study, are not grouped by area of study different from the graduates who responded to the questionnaire.

Area of Employment

The difficulties encountered in making comparisons between questionnaire data and data derived from Department of Commerce files also apply to extrapolated data. Therefore, no further attempted comparisons were made.

Salaries

There were 199 graduates who responded to the questionnaire and indicated their monthly salary and there were 481 graduates who had monthly salaries located on the Department of Commerce files. Utilizing the relationship between these numbers, it was possible to extrapolate from the indicated salaries, the total number of graduates who could be expected in each salary range. Table 27 presents these extrapolated numbers.

Table 27. Number of Graduates in Each Salary Range Extrapolated From the Indicated Monthly Salary of Graduates Responding to the Questionnaire

Salary Range	EXTRAPOLATED FROM INDICATED SALARY	
	Number	Percent
1 to 200	65	13.5
201 to 400	89	18.5
401 to 600	114	23.7
601 to 800	116	24.1
801 to 1000	63	13.1
Over 1000	34	7.1
TOTAL	481	100.0

There were 160 graduates who indicated monthly salary on the questionnaire and who had salary data extracted from the Department of Commerce files. By extrapolating the extracted salary of these graduates to the full number of graduates who had salary data located on the Department of Commerce files, it becomes possible to determine the impact of the inaccuracies in the questionnaire data and the impact of the different characteristics of the graduates who responded to the questionnaire and the graduates who did not respond. Table 28 presents the extrapolation of the extracted salaries and Table 29 compares the extrapolated numbers with the actual numbers extracted from the Department of Commerce files.

Table 28. Number of Graduates in Each Salary Range Extrapolated From the Extracted Monthly Salary of Graduates Responding to the Questionnaire

Salary Range	EXTRAPOLATED FROM EXTRACTED SALARY	
	Number	Percent
1 to 200	60	12.6
201 to 400	93	19.3
401 to 600	106	22.0
601 to 800	93	19.3
801 to 1000	66	13.7
Over 1000	63	13.1
TOTAL	481	100.0

Table 29. Comparison of Extrapolated Salary Ranges With Actual Salary Ranges Extracted From Department of Commerce Files

Salary Range	Extrapolated From Indicated Salary		Extrapolated From Extracted Salary		Actual Salary From Department of Commerce Files	
	#	%	#	%	#	%
1 to 200	65	13.5	60	12.6	106	22.1
201 to 400	89	18.5	93	19.3	106	22.1
401 to 600	114	23.7	106	22.0	102	21.2
601 to 800	116	24.1	93	19.3	63	13.1
801 to 1000	63	13.1	66	13.7	43	8.9
Over 1000	34	7.1	63	13.1	61	12.6
TOTAL	481	100.0	481	100.0	481	100.0

The difference between the extrapolation of the indicated salary and the actual salary is explained by inaccuracies in questionnaire data and by differences in the characteristics of the responding and non-responding groups. Differences between the extrapolation of the extracted salary and actual salary is explained only by the difference in characteristics of the two groups.

CHAPTER IV

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS FOR FURTHER STUDY

Summary

The purpose of this study was to determine if inaccurate or incomplete data were being collected in placement studies being conducted by Florida community colleges.

Nine hundred and ninety-two (992) Associate of Art and Associate of Science graduates of a selected Florida community college were mailed a questionnaire seeking information concerning their university of attendance, grade point average, program-of-study, area of employment and monthly salary. Data from the questionnaires were compared with data available from Florida State University System and Florida Department of Commerce data files. Additionally, comparisons were made between extrapolations of the questionnaire data and extrapolations of the data extracted from the existing data files.

Summary findings are presented for each of the first five research questions separately. The impact of extrapolating the questionnaire data to the full population (Research Question Number 6) is discussed in reference to each of the first five questions.

Research
Question
Number 1

Compare the relationship between university of attendance data from questionnaires and from existing Florida State University System data files.

Graduates accurately reflected which university they were attending. However, thirty-four (34) respondents indicated they were attending a college in the State University System but were not located on the system's data files.

Utilizing the questionnaire data and extrapolating to the total population resulted in a finding that 530 or 53.4% of the 992 graduates were continuing their education in the State University System. Data from the existing files reflected that only 396 or 39.9% of the graduates were actually enrolled. The combination of inaccurate data and variations between responding and non-responding graduates results in unacceptable differences between self-reported questionnaire data and actual graduate behavior.

Research
Question
Number 2

Compare the relationship between grade point average data from the questionnaires and from existing Florida State University System files.

Of the 146 graduates who answered the grade point average question on the questionnaire, 52% indicated an average at least one interval higher than the actual grade point average from the existing files. Of these, 19.9% reported their grade point average at least two intervals higher. The inaccuracies were particularly severe at the lower end of the grade point average scale where only 2.7% of the responding graduates indicated a grade point average below 2.00 while the system files reflected that 20% were below 2.00.

Research Question Number 3 Compare the relationship between area of study data from questionnaires and from existing Florida State University System data files.

Certain areas of study--business, health and social science--were indicated on the questionnaire by more graduates than were actually enrolled in these areas. Likewise, some areas of study--education and letters--were indicated by fewer graduates than were actually enrolled. However, these differences were not major and could possibly be explained by the failure to update university records as well as by the inaccuracies in the questionnaire data.

Research Question Number 4 Compare the relationship between area of employment data from questionnaires and from existing Florida State Department of Commerce Unemployment Insurance files.

The area of employment data from the questionnaire requested the graduates job title while the Department of Commerce data file gave the Industrial Classification Code for the company in which the graduate was employed. While either of these classifications might supply appropriate data for placement studies, it was not possible to make a realistic comparison of the data from these two sources.

Research Question Number 5 Compare the relationship between salary data from questionnaires and from existing Florida State Department of Commerce Unemployment Insurance files.

Of the 160 graduates who responded to the questionnaire and who were located on Department of Commerce files, 35.6% indicated higher salaries on the questionnaire than were found on the existing files. Additionally, graduates who did

not supply salary data on the questionnaire had much lower salaries than the graduates who responded to the salary question. Of the 160 graduates who supplied salary data, 46.2% had salaries on the Department of Commerce file of above \$600.00 per month. Of the 321 graduates who did not supply salary data, only 28.9% had salaries on the file of above \$600.00 per month.

The combination of inaccuracies in salary data and of variations between responding and non-responding graduates raised serious questions concerning the use of questionnaires as a means of collecting salary data.

Conclusions

It can be concluded that questionnaire data utilized in Florida community college placement studies is both inaccurate and incomplete. When the questionnaire data from the respondents is extrapolated to the total population, the errors are exaggerated, interjecting significant amounts of noise into the feedback mechanism.

Recommendations for Further Study

The use of questionnaire data in the feedback mechanism for community colleges has obvious limitations. When the questionnaire data are extrapolated to the total population of graduates, the inaccuracies in the data are magnified and become generally unacceptable.

Extensive efforts should be put forth to find alternative sources of data that can be shown to be more valid.

If questionnaire data must be used, efforts must be made to validate the results and to correct for variations between responding and non-responding groups.

APPENDIX A

Placement Questions

1. What is your present job title?

2. What is your present salary
per month? _____

3. If you are enrolled in a college or university,
please place a checkmark by the name of that
college or university.

- _____ 1. Florida A & M University
- _____ 2. Florida Atlantic University
- _____ 3. Florida International University
- _____ 4. Florida State University
- _____ 5. Florida Technological University
- _____ 6. University of Florida
- _____ 7. University of North Florida
- _____ 8. University of South Florida
- _____ 9. University of West Florida
- _____ 10. Other _____

4. What is your grade-point average at this
institution?

- | | |
|-------------------------|-----------------------|
| _____ 1. Less than 1.50 | _____ 4. 2.50 to 2.99 |
| _____ 2. 1.50 to 1.99 | _____ 5. 3.00 to 3.49 |
| _____ 3. 2.00 to 2.49 | _____ 6. over 3.50 |

5. What is your program of study at
this institution? _____

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BIOGRAPHICAL SKETCH

George Thomas Delaino was born in Gainesville, Florida, in 1942. He lived in Cedar Key, Florida, until his graduation from Cedar Key High School in 1960. He received his BSPE from the University of Florida in 1965 and his MAPE in 1966.

He served six years in the United States Air Force, two years as Training Officer and Squadron Commander of a Basic Military Training Squadron and four years as an Instructor, Assistant Professor and Executive Officer in the Department of Physical Education at the United States Air Force Academy.

He left the Air Force in the summer of 1973 to return to the University of Florida as an advanced graduate in Higher Education Administration. He spent two years in residence as a graduate research assistant for the Florida Community/Junior College Inter-Institutional Research Council (IRC). He then spent one year as a Legislative Intern with the Senate Education Committee and has worked since that time as Coordinator of Management Information Services for Santa Fe Community College.

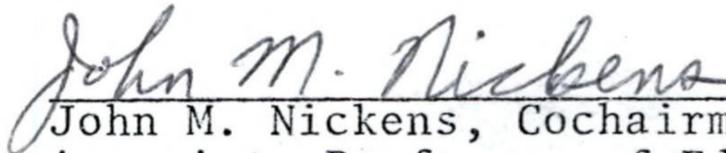
He is married to Frances Carroll of Lake Butler, Florida, and has three children; Tommy, E. J., and Lee Ann.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.



James L. Wattenbarger, Chairman
Professor of Educational
Administration and Supervision

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.



John M. Nickens, Cochairman
Associate Professor of Educational
Administration and Supervision

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.



Paul R. Varnes, Department Chairman
and Professor of Professional
Physical Education

This dissertation was submitted to the Graduate Faculty of the Department of Educational Administration and Supervision in the College of Education and to the Graduate Council, and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

December 1979

Dean, Graduate School

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