IX. Comparing and selecting alternatives
  A. Comparison of alternative scores
  B. Conflict resolution (Rewriting/combining alternatives and determining impacts of new combinations) (11 &
  C. Selecting the strategy alternatives. 12)
X. Presenting results and conclusions
  A. Drafting the final strategy. (13 & 14)
  B. Evaluation of the strategy - case histories (Resource person - Natural Res. Dist. Mgr.) (15)
  C. Presentation of the strategy (A review of the strategy by a panel of state agency representatives - finals week)
  D. Course Summary and Conclusions (16)

Appendix B

The General System

A *system* is any set of interdependent components having relatively high external independence and internal interdependence. The general system is the complete set of components needed to describe all activities and interrelationships. The general system can be based on any geographical unit, farm, township, county, state or nation, but its boundaries must be specified. For the purposes of this course, four main classes of components were chosen for the general system. These components are production, allocation, control and staffing and are defined below:

Production components include such activities as agriculture, forestry, fishing, mining, manufacturing, etc.

Allocation components involve the distribution of goods and include such activities as transportation, communication retailing, marketing, etc.

Control components are those that maintain the smooth operation of the system such as governmental activities (agencies), courts, police, legislative bodies, public works, taxation, finance, etc.

Staffing components are those concerned with the quantity and quality of the general public. For the purposes of this course, the staffing component involves the size and makeup of the general public in the system including their socialization, education, skills, physical health, mental health, recreation, entertainment, etc.

Each component is characterized by certain subsystems or properties. The terms subsystem or property are somewhat interchangeable, but at times one seems more appropriate than the other. For the purposes of this course, these are classified into the three general categories of *physical*, *institutional*, and *behavioral* subsystems or properties. Physical subsystems or properties include physical, chemical and biological cycles, transformations, etc. Institutional properties are technology, economics and politics. Behavioral properties are sociology and ideology.

A COMPARISON

Native and Transfer Students

Donald M. Johnson, Walter N. Taylor, and Emmett T. Kohler

The enrollment of junior college transfer agriculture students at Mississippi State University has steadily increased during the past decade. In 1977, 38% of all undergraduate agriculture majors were junior college transfers; by 1987, junior college transfers accounted for 42% of the total undergraduate agriculture enrollment (Taylor, 1989).

According to Lee (1985), Mississippi has a well-established system of public junior colleges. Of the 15 public junior colleges in the state, 13 offer courses in agriculture. Owens (1986) studied agriculture majors enrolled at six Mississippi public junior colleges. He found that 110 (38%) of the 289 students enrolled were in programs designed for transfer to four-year institutions.

Research has indicated that significant differences exist between students beginning their collegiate career at two-year institutions and those initially enrolling at four-year institutions. Two-year college transfer students generally have lower achievement test scores and quality point averages (QPA) than students beginning college at four-year institutions. In addition, research has indicated that once enrolled in a senior college, transfer students are less likely to complete a baccalaureate degree than are students who initially enroll at four-year institutions (Cohen and Brawer, 1982). Finally, students transferring to four-year institutions and earning a baccalaureate degree require a longer period of time to complete degree requirements. Menke (1980) found that two-year college transfer students at UCLA required 1.4 years longer than non-transfer students to earn their degrees.

Research has also indicated that significant differences exist between agriculture students attending two-year and four-year institutions. Woods (1978) determined that two-year college agriculture students were more likely to be from rural areas or small towns and were more likely to have been 4-H or FFA members than were students at four-year institutions.

Owens (1986) determined that the typical agriculture transfer student attending a Mississippi public junior college was a white (92.8%), male (85.6%), approximately 20 years old ($\bar{X}$=19.77), with a rural farm background (48.5%). In addition, the typical student had graduated in a senior class of less than 100 students (70.9%), had an overall high school grade average of B (57.3%) and had taken one or more semesters of agriculture while in high school (52%).

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Grimes and Hausenfluck (1980) compared non-transfer (native) and transfer agriculture students at Texas A&M University. The researchers determined that transfer students had a lower level of academic aptitude (as indicated by ACT and SAT scores) than did native students. However, no significant differences were found between the two groups for their mean cumulative QPA at graduation or for their level of persistence in completing the bachelor's degree.

Problem Statement

The continued increase in the percentage of junior college transfer students majoring in agriculture at Mississippi State University (MSU), coupled with research which indicates that transfer students may not be as successful as native students, raises several important questions. Do transfer and native students at MSU differ in academic aptitude? Do the two groups differ in academic achievement? Do the two groups differ in degree persistence?

Definitive answers to these questions are not currently available; therefore, research is needed. Such research would provide information necessary to effectively advise agriculture students transferring to MSU from two-year colleges. In addition, information gained from this study could be used to determine if increased efforts can be legitimately targeted toward recruitment of junior college transfer students into agriculture majors at MSU.

Purpose and Objectives

The primary purpose of this study was to compare native and junior college transfer students at MSU to determine if significant differences exist between the two groups on measures of academic aptitude, academic performance and degree persistence. This study's specific objectives were to:

1. determine if significant differences exist between native and junior college transfer students on composite ACT scores,
2. determine if significant differences exist between native and junior college transfer students on cumulative undergraduate QPA, and
3. determine if significant differences exist between native and junior college transfer students in completing an undergraduate agriculture degree program at MSU.

Procedures

This study employed the ex post facto research design as described by Campbell and Stanley (1966). This design was selected since the researchers were unable to manipulate the independent variable of group membership (i.e. native or transfer student).

The population of native students (N=60) was composed of all undergraduate agriculture majors enrolled during the Fall 1987 semester who had: (a) initially enrolled at MSU as a full-time student (12 or more semester hours) for the Fall 1985 semester and (b) had met MSU requirements for classification as a new freshman (i.e. first enrollment at MSU and less than 12 semester hours of transfer credit).

The population of junior college transfer students (N=60) was composed of all students initially enrolling at MSU on a full-time basis (12 or more semester hours) for the Fall 1987 semester who had completed 12 or more semester hours at a regionally accredited junior college.

The data reported in this study were obtained by the Mississippi State University Office of Institutional Research from computerized official university student records. Specific data compiled for each individual included (a) classification as a native or transfer student, (b) composite ACT score, (c) major, (d) transfer QPA (where applicable), (e) cumulative QPA, (f) Fall 1987 academic classification and (g) Fall 1989 undergraduate status (i.e. graduated, enrolled or other).

The data were analyzed using descriptive and inferential statistics. The .05 alpha level was selected *a priori* as the critical standard for all tests of significance. The use of inferential statistics was based on the assumption that the students included in this study were representative of past and future native and transfer undergraduate agriculture students at MSU. According to Oliver and Hinkle (1982, p. 200), "Such an assumption permits the use of inferential statistics and, if made, must be defended by the researcher as being reasonable." Based on longitudinal studies of undergraduate MSU agriculture majors (Bowen and Lee, 1985; Taylor, 1989), the researchers felt that this assumption was warranted.

Limitations

One potential problem in ex post facto research is a lack of precision in defining group membership (Borg and Gall, 1983). This limitation is acknowledged for the present study. Information concerning the year in which transfer students initially enrolled in junior college was not available through MSU's Office of Institutional Research. Therefore, the possibility exists that not all transfer students began college in Fall 1985.

In an attempt to compensate for this limitation, the two groups were compared on the related variable of Fall 1987 academic classification. Chi square analysis indicated that there was no significant ($p>.05$) difference between the percentage of underclass and upperclass students in the native and transfer groups ($X^2 = 1.7760$, df=1). Therefore, it can be reasonably assumed that the potential problem of group definition is not a serious limiting factor in this study.

Findings

The findings of this study are reported by objective.

Objective 1.

The first objective of this study was to determine if significant differences existed between the composite ACT scores of native and transfer students. As indicated in Table 1, native students had achieved significantly higher mean ACT scores than had transfer students.

Table 1. ACT Scores for Native and Transfer Students.

Group	n	$\bar{X}$	S.D.	t	p
Native	60	20.53	4.32		
Transfer	60	17.08	5.04	4.03	.0001

Note. df=59,59.

Table 2. ACT Scores for Native and Transfer Students Within Departments or Program Areas.

Department or Program	Native n	Native $\bar{X}$	Native S.D.	Transfer n	Transfer $\bar{X}$	Transfer S.D.
Agricultural Economics	16	18.63	4.34	6	15.83	1.83
Ag. & Extension Ed.	2	20.50	0.71	12	14.67	4.91
Ag. & Bio. Engr. Tech.	3	16.67	3.51	2	16.50	4.95
Agronomy	5	20.00	4.06	0	--	---
Animal Science	6	22.67	4.76	7	16.57	5.97
Biochemistry	3	27.33	1.53	2	20.00	1.41
Dairy Science	0	--	--	3	16.67	5.51
Entomology	0	--	--	1	18.00	---
General Agriculture	2	23.00	1.41	0	--	---
Horticulture	5	22.00	5.00	4	20.25	9.00
Landscape Architecture	13	19.62	3.23	9	18.11	4.14
Poultry Science	2	20.50	4.95	10	16.00	4.57
Preveterinary Medicine	3	24.33	2.08	4	23.25	3.50

In addition, within each department or program area having both native and transfer students, the native students had earned higher composite ACT scores than had the transfer students. This data is reported in Table 2.

Objective 2.

The second objective was to determine if significant differences existed between the cumulative QPA of native and transfer students. Data in Table 3 indicate that no significant differences existed between the two groups on this variable.

Table 3. Cumulative QPA for Native and Transfer Students.

Group	n	$\bar{X}$	S.D.	t	p
Native	55	2.60	.68		
Transfer	58	2.57	.58	0.25	.8054

Note. df=54,57.

Analysis of Table 4 indicates that within departments or program areas differences did exist between the cumulative QPA of native and transfer students. In six cases native students had earned higher cumulative QPAs; in the remaining three cases, transfer students had earned higher cumulative QPAs.

Table 4. Cumulative QPAs for Native and Transfer Students Within Departments or Program Areas.

Department or Program	Native n	Native $\bar{X}$	Native S.D.	Transfer n	Transfer $\bar{X}$	Transfer S.D.
Agricultural Economics	14	2.71	0.73	6	2.46	0.61
Agricultural & Extension Ed.	2	3.06	0.08	10	2.39	0.50
Ag. & Bio. Engn. Tech.	3	2.13	0.11	2	1.75	0.91
Agronomy	4	2.47	0.81	0	--	---
Animal Science	5	3.05	0.20	7	2.52	0.49
Biochemistry	3	2.89	1.10	2	2.46	0.06
Dairy Science	0	--	--	3	2.73	0.43
Entomology	0	--	--	1	1.65	---
General Agriculture	2	2.83	1.18	0	--	---
Horticulture	5	2.64	0.39	4	3.22	0.43
Landscape Architecture	12	2.13	0.70	9	2.57	0.60
Poultry Science	2	2.77	0.45	10	2.52	0.49
Preveterinary Medicine	3	2.91	0.31	4	3.30	0.35

Table 5. Fall 1989 MSU Undergraduate Status for Native and Transfer Students.

	Undergraduate Status					
	Graduated		Enrolled		Other	
Group	n	%	n	%	n	%
Native	38	63.3	12	20.0	10	16.7
Transfer	25	41.7	16	26.7	19	31.7

Note. X^2 =6.05; df=2; p<.05.

Objective 3.

The final objective of this study was to determine if significant differences existed between native and transfer students in their level of persistence in completing an undergraduate agriculture degree at MSU. For purposes of this objective, students were classified into three mutually exclusive undergraduate degree categories: (a) graduated, (b) enrolled in an MSU undergraduate agriculture degree program in Fall 1989 or (c) other. The "other" category was composed of all students not graduated or enrolled for Fall 1989.

Table 5 indicates that a higher percentage of native students had completed undergraduate agriculture degrees than had transfer students. Transfer students composed a higher percentage of students in both the "enrolled" and "other" categories than did native students.

The chi square value of 6.04 (df=2, p<.05) indicated that undergraduate degree status was not independent of group membership (native vs. transfer). However, the contingency coefficient of .219 indicated that this relationship was low (Hinkle, Wiersma and Jurs, 1982).

Analysis of Table 6 indicates that within each department or program area a higher percentage of native students had graduated than had transfer students. Conversely, in each case a higher percentage of transfer students were in the "other" category than were native students.

Conclusions

The purpose of this study was to compare native and transfer students on measures of academic aptitude, academic performance and undergraduate degree persistence. The following conclusions were made as a result of this study.

1. Native students have higher academic aptitude (as measured by composite ACT scores) than do transfer students. The magnitude of this difference is of both statistical and practical significance.
2. Native and transfer students are equal in academic performance (as measured by cumulative undergraduate QPA).
3. Native students who have persisted at MSU for two years are more likely to complete an undergraduate agriculture degree from MSU than are transfer students.

Discussion

The finding that transfer students have a lower level of academic aptitude (as measured by composite ACT scores) than do native students is consistent with previous research (Cohen and Brawer, 1982; Grimes and Hausenfluck, 1980).

Junior college and university entrance requirements may contribute to this situation. According to Cross (in Cohen and Brawer, 1982):

> The groups new to higher education ...will be those of low socioeconomic status and those with low measured ability. The movement is already underway; the majority of students entering open-door community colleges come from the lower half of the high school classes... (p. 36).

Based on ACT score requirements in effect for Fall 1985, 38% (23 of 60) of the transfer students were not eligible for admission to MSU as new freshmen. This supports the contention by Cohen and Brawer (1982, p. 48) that, "In states where public institutions of higher education are arrayed in hierarchical systems, most of the students begin in community college, and the proportion of lower-ability students is greatest in such colleges."

The finding that native and transfer students do not differ in cumulative undergraduate QPA is consistent with research by Grimes and Hausenfluck (1980). This finding is somewhat perplexing in view of the first finding which indicates that transfer students exhibit a lower level of academic aptitude (as measured by composite ACT scores) than do native students.

In an attempt to gain insight into these two seemingly contradictory findings, the relationship between composite ACT score and cumulative QPA was examined. Recommendations by Hinkle, Wiersma and Jurs (1982) were used to interpret the magnitude of the resulting correlation coefficients.

When all students (native and transfer) were included in the analysis, a low relationship (r=.41) was found to exist between composite ACT score and cumulative QPA. However, when analyses were conducted by group (native or transfer), different results were obtained. For native students, a moderate relationship (r=.57) existed between the two variables; for transfer students, little or no relationship (r=.30) existed between the two variables.

The amount of variance in cumulative QPA explained by composite ACT score ranged from a low of 9% for transfer students to a high of 32% for native students. This finding supports researchers (Cole and Bokor, 1989; Rudolph and Yoder, 1987) who have suggested that non-academic factors, such as personal aspirations, play a dominant role in determining success in postsecondary education. This appears to be especially true for junior college transfer students.

The finding that transfer students were less likely than native students to complete the bachelor's degree was consistent with research reported by Cohen and Brawer (1982). However, this finding was inconsistent with research by Grimes and Hausenfluck (1980).

Transfer students were almost twice as likely as native students to have neither graduated nor maintained enrollment at MSU. The non-persistence rate of approximately 32% for transfer students should be a major concern for faculty and administrators at both MSU and at the junior colleges.

Table 6. Fall 1989 MSU Undergraduate Status for Native and Transfer Students Within Departments or Program Areas.

Dept or Program	Undergraduate Status					
Group	Graduated		Enrolled		Other	
	n	%	n	%	n	%
Agricultural Economics						
Native	10	62.5	2	12.5	4	25.0
Transfer	3	50.0	0	0.0	3	50.0
Agricultural & Extension Ed.						
Native	2	100.0	0	0.0	0	0.0
Transfer	7	58.3	1	8.3	4	33.3
Ag. & Bio. Engn. Tech.						
Native	2	66.7	1	33.3	0	0.0
Transfer	0	0.0	1	50.0	1	50.0
Agronomy						
Native	5	100.0	0	0.0	0	0.0
Transfer	--	--	--	--	--	---
Animal Science						
Native	4	66.7	1	16.7	1	16.7
Transfer	1	14.3	4	57.1	2	28.6
Biochemistry						
Native	2	66.7	0	0.0	1	33.3
Transfer	0	0.0	1	50.0	1	50.0
Dairy Science						
Native	--	--	--	--	--	---
Transfer	3	100.0	0	0.0	0	0.0
Entomology						
Native	--	--	--	--	--	---
Transfer	0	0.0	0	0.0	1	100.0
General Agriculture						
Native	0	0.0	2	100.0	0	0.0
Transfer	--	--	--	--	--	---
Horticulture						
Native	5	100.0	0	0.0	0	0.0
Transfer	1	25.0	1	25.0	2	50.0
Landscape Architecture						
Native	5	38.5	4	30.8	4	30.8
Transfer	0	0.0	5	55.6	4	44.4
Poultry Science						
Native	2	100.0	0	0.0	0	0.0
Transfer	9	90.0	0	0.0	1	10.0
Preveterinary Medicine						
Native	1	33.3	2	66.7	0	0.0
Transfer	1	25.0	3	75.0	0	0.0

Implications

The findings of this study have important implications for recruiting and advising junior college transfer students in undergraduate agriculture majors at MSU. Although junior college transfer students have lower composite ACT scores, they achieve cumulative QPAs which are equal to those earned by native students. This indicates that recruitment of junior college transfer students into agriculture majors at MSU is a legitimate method of maintaining and/or increasing student enrollment.

Junior college transfer students are less likely than native students to complete an undergraduate agriculture degree at MSU. Therefore, increased retention efforts targeted toward this group are warranted. In fact, one could question the ethics of increased recruitment efforts without corresponding increases in programs designed to enhance degree completion.

"Will This Question be on the Final Exam?"

Richard F. Stinson

Abstract

The idea of distributing the final exam at the first class meeting has positive and negative aspects that are explored. It has motivational implications for enrollees and instructor. Carrying out this plan requires careful course preparation to assure congruence of course objectives and instructional strategies, as well as appropriate evaluation of learning in both formative and summative forms. This proposition promotes effective teaching and learning of higher order thinking skills.

Introduction

The title of this paper was cited by a speaker at the Knoxville NACTA Annual Conference in 1989 as probably the most frequently asked question in college courses. If it is of such pervasive concern to students, shouldn't faculty give it serious thought? Why not distribute the final exam the first day of class?

Educational research and literature confirms -- even applauds this unorthodox behavior on the part of an instructor. How can this be? Let's take a closer look.

In thinking through this proposition the following questions come to mind:

- What are the arguments for and against distributing the final exam early in the course?
- How does this procedure influence student and teacher motivation?
- How does this approach to instruction enhance framing the course objectives?
- How does the instructor incorporate course objectives and higher order thinking skills into the final exam questions?
- How does one plan instruction that leads students toward fulfillment of the course objectives?
- What are the implications for formative and summative evaluation of a course when the final exam is distributed early?

Positive and Negative Aspects

Although there are several positive aspects to early distribution of the final exam, there are also some negative ones that should receive careful consideration.

The Positive View

When the final exam is handed out early in the course "-- the vision, the plan, and the consistency among curriculum, instructional activities, and assessment procedures are clearly communicated to students. The students know from the outset what is expected and what procedures will be followed to meet those expectations." (Guskey, 1989).

If a class session does not deal with a course objective, or a supporting objective, it should be eliminated. Whether the instructor is very experienced or relatively new in the teaching role, distributing the final first encourages the development of a very well organized course in which each class session is purposely planned as an important part of the whole course. Writing clear course objectives requires effort, and guidance in doing this is helpful (Mager, 1975). A well prepared syllabus is like following a road map, with appropriately spaced scenic stops along the way.

A well-organized plan helps students to focus their atten-

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COMPARISON (continued from previous page.)

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