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A study of institutional change: Faculty reactions to a change from a quarter to a semester calendar

by

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INTRODUCTION

> "The operation of colleges and universities has become highly ritualized. Much of this ritual is keyed to the calendar, so fundamental functions are repeated on an annual or seasonal basis almost like clockwork: application deadlines, letters of acceptance, orientation, registration, class schedules, midterms, finals, vacation, commencement and so forth. These regularly programmed activities create an annual operation cycle that is repetitive, predictable and thus highly resistant to change" (Astin, 1976, p. 123).

In May 1978, however, the Iowa State University (ISU) faculty voted by a clear majority to recommend a change in the academic calendar from a quarter to a semester system. This action was preceded by 1) a two-year study by the Learning Environment Improvement Committee (LEIC) of the ISU All-University Community Council (AUCC), 2) further study and presentation of the advantages and disadvantages of various calendars by the administration and 3) university-wide, college and departmental discussions.

A major institutional change for ISU, this decision was one which had been discussed frequently in the past and was defeated by formal votes of the faculty in 1951 and 1958. The calendar had remained essentially the same since 1958 when, under the quarter system, the three quarters were adjusted to be more equal in length.

The presentation of information regarding the advantages and disadvantages of different calendars focused on the effect each calendar might have on academic programs

with some additional discussion of cost and other administrative efficiencies (Lendt and Gowan, 1977). Since the faculty at ISU has major responsibility for educational policies and procedures (Faculty Handbook, Sept. 1981, p. 6), the calendar issue was appropriately delegated to the faculty for discussion and a vote.

Following the faculty vote and approval by the Iowa Board of Regents, the ISU central administration moved quickly to implement the change favored by the faculty and developed a system to facilitate the move to the semester calendar in August 1981. As the planning took place, members of the Semester System Steering Committee (SSSC), appointed by Vice President for Academic Affairs George C. Christensen, discussed the importance of studying the impact of the shift on students and faculty and suggested that such studies be undertaken.

Further support came from Christensen, Dean of the College of Education Virgil S. Lagomarcino, Assistant Dean Larry H. Ebbers and the Director of the Research Institute for Studies in Education, Richard D. Warren. Sponsored by the Office of the Vice President for Academic Affairs, the Department of Professional Studies in Education and the Research Institute for Studies in Education, three studies were planned to evaluate the effects of the calendar change on the learning environment. One project was developed to

study student perceptions of the quarter system learning environment prior to the implementation of the semester calendar (Moore, 1982). A second project studied changes in student perceptions after several months on the semester plan (Kelley, in progress, 1983).

The present research project was designed, not only to study pre- and post-implementation faculty judgments about the quarter and semester systems, the transition and the academic environment, but also to study differences between and among faculty groups which varied on the following dimensions:

1. college
2. rank
3. tenure status
4. sex
5. years at ISU
6. years at another institution
7. voting position on quarter vs. semester
8. recent curriculum committee membership
9. appointment responsibilities (research, teaching and extension load)
10. advising responsibilities

This investigation includes a study of faculty reactions to the quarter-semester change, a summary of the ISU calendar discussions and changes prior to 1975 and a

chronology of events relating to faculty participation in the most recent calendar change.

The importance of this study to higher education is related not only to the importance of the role of the faculty in academic decision making but also to how a change was viewed by the faculty following its implementation. If it is true that the success of institutional change depends on the way faculty, administrators and students perceive the need for change and on their work to bring it about (Nordvall, 1982), then this study should yield useful information in understanding the immediate effects of this particular change.

CALENDAR DISCUSSIONS AND CHANGES AT IOWA STATE UNIVERSITY PRIOR TO 1975

The Semester Calendar

In a report entitled "The Academic Calendar of Iowa State", Arthur M. Gowan, Dean of Admissions and Records, summarized the significant calendar changes at the university throughout its history (1977). According to Gowan, Iowa State University had a semester calendar in its early days, but one that was quite different from semester calendars of today. In 1881-82, for example, first semester began March 3 and ended June 29. Second semester went from July 20 to November 9. In 1900 an early semester calendar was adopted, one which was similar to the early semester calendar popular today. Fall semester occurred August 28 to December 20, and spring semester went from February 12 to June 12. In 1914-1915 the college moved to a more traditional semester calendar, September 14 to January 29 and February 1 to June 4.

Change to a Quarter Calendar

Interest in considering a change in the calendar was reported in the minutes from the Division of Industrial Sciences (now the Sciences and Humanities College) faculty meeting held in December 1914. Faculty asked that a

committee be appointed to study the calendar. The committee made the following recommendations a year later in December 1915:

1. "Fall registration should be on the first Friday following the first Monday in September.

2. There would be a Thanksgiving vacation of 4 1/2 days starting at noon on the Wednesday before Thanksgiving.

3. There would be two weeks vacation at Christmas.

4. The first semester should end on Friday noon which is 20 weeks after the date of registration in September.

5. Short courses and conferences would start on the Monday following the close of the first semester and continue until Friday of that week.

6. Spring quarter registration would be on Monday and Tuesday following the short course class week, and classes would begin on the following Wednesday.

7. Easter vacation would be from Thursday noon before Easter Sunday to Monday noon following Easter.

8. Commencement Day would be on Thursday in the 18th week following the opening of spring semester.

9. Summer school would be for twelve weeks starting on the Monday following commencement and ending on Friday night preceding the first Monday in September." (Gowan 1977, pp. 1-2)

Acting on four of these recommendations, faculty approved item one 20 to 6, defeated item two 9 to 18, approved item three 19 to 9, and approved four full days of vacation in item seven. They recommended also that the calendar question be handled by the Calendar Committee and

the Registrar and that they be guided but not bound by the votes taken.

Dean R. E. Buchanan, Division of Sciences, at a later faculty meeting submitted the following resolution: "Resolved: that the faculty of the Division of Sciences recommend to the General Faculty that a committee be appointed to investigate the merits of the four-quarter system and compare with the present semester plan" (Gowan 1977, p. 2).

Minutes of the May 1917 meeting of the faculty indicate that progress was being made toward a four-quarter calendar. No further action of the faculty was noted in minutes. Since the faculty had empowered the Calendar Committee to act on this issue, further action was perhaps not necessary.

The change to the quarter system took place in the 1918-19 year. The catalog for that year contained a semester calendar, but the file copy in the Office of the Registrar had a stamped brief calendar with the following dates:

- First quarter October 1, 1918 to December 21, 1918
- Second quarter December 30, 1918 to March 22, 1919
- Third quarter March 31, 1919 to June 21, 1919

In faculty meeting minutes Gowan (1977) found several references to the changes which were necessary because of

the calendar revisions. No further references to the calendar were made until May 1932.

Discussion During the 1930s

In April 1932 the General Curriculum Committee submitted a report comparing quarter and semester plans listing advantages of each under four headings: educational efficiency, cost of instruction, student attendance and cost to students, and miscellaneous and general (Iowa State College 1932). Arguments for each calendar focused on the learning environment with less emphasis on cost and efficiency. The quarter system at that time was seen as providing less fragmentation as students would take only three to four courses, while a semester schedule would include five to seven. Coordination with other schools was mentioned as an advantage to the semester plan. The need to plan around traditional holidays was a general concern as it has been over the years.

The general faculty voted to table the report, and three and a half years later, in December 1935, voted to remove it from the table for purposes of discussion. A supplementary report was added in January 1936 and circulated to faculty along with the 1932 report. The supplement included a history of the American college calendar and a statement that some would consider still true

today. "While there has been much floundering about by colleges in organizing the calendar, three centuries of experience has not established a recognized superiority of one system over another" (p. 12).

A review of calendars from a number of colleges and universities was also included, as well as a report on the impact on noncollegiate instruction such as the two-quarter curriculum for herdsmen and the four-quarter curriculum for creamery operators, and a report on the problems of summer session as those related to the calendar.

Following discussion at the January 1936 faculty meeting where the advantages and disadvantages of quarter and semester calendars were discussed, no action was taken. In November 1936 the General Curriculum Committee report contained no reference to the calendar question; neither did reports of June and December 1937 nor March 1938 (Gowan 1977). The reasons for this were not readily apparent except that Buchanan appeared to be strongly in favor of the quarter and Vice President Charles E. Friley strongly in favor of the semester (L. M. Thompson, personal communication, April 1983), and there may have been the feeling that agreement could not be reached.

Quarter vs. Semester 1947-1952

In his historical review Gowan (1977) notes that the College Curriculum Committee in March 1947 asked the Administrative Board to discuss the advisability of moving from the quarter to semester system effective fall 1948. Supporting this recommendation, the committee listed several advantages of the semester plan.

In 1951 Friley, who was then President of the University, appointed a committee chaired by Dr. Louis Thompson to "gather information regarding the opinions of the faculty on the semester vs. quarter calendar" (Gowan 1977, p. 4). Nine hundred questionnaires were sent out asking for faculty opinions, and 542 (60%) were returned. Of these, 313 (58%) were in favor of the semester, and 200 (37%) in favor of the quarter. The Divisions of Agriculture and Engineering favored the quarter calendar, and Sciences and Humanities and Veterinary Medicine favored the semester. Questionnaire results were sent by Friley to the faculty in September 1952, along with an announcement of a special faculty meeting for October 7. Gowan (1977) reports that at the October faculty meeting Friley presented the history of the calendar at Iowa State and concluded with a statement that because of his strong interest in the semester system, he would leave the meeting so that faculty could freely express their opinions. Thompson summarized the ad hoc

committee report and led the discussion. Thompson (personal communication, April 1983) recalls that discussion was strongly in favor of the quarter system. Supporters of the quarter plan had attended the meeting and presented their arguments. The vote which followed was 57% in favor of the quarter system. Of the 211 voting, 91 favored the semester and 120 the quarter. Friley accepted the vote of the faculty present and did not pursue the matter further. Both Gowan and Thompson recalled that Friley was both surprised and disappointed by the vote (personal communication, April 1983).

Discussion During President Hilton's Administration (1953-1965)

President Hilton indicated to faculty at the opening fall faculty convocation in September 1957 a willingness to discuss the calendar issue again. His interest appeared to be primarily in facilitating discussion, and he stated an interest in following the wishes of the faculty. He turned to the Faculty Council to suggest schedules and procedures. They set up divisional meetings prior to February 1, 1958, and a second series during the month of February, an all-college meeting in March with a vote planned for April. Voting was to be by written ballot and counted on an all-college basis. Faculty Council leadership emphasized that

its stand was impartial and that its role was to facilitate debate.

Results of the vote which constituted 681, 83% of those eligible, were 286 (42%) for the semester and 395 (58%) for the quarter. Eligible voters at that time were those faculty of associate professor rank and above.

Again the quarter was retained; however, a significant change in the calendar was made for the year 1958-59. Instead of beginning the third week in September and ending just before Christmas, fall quarter started early in September and ended the Friday before Thanksgiving. Winter quarter began after Thanksgiving, ended late in February; spring quarter began early March and was completed before Memorial Day permitting students to be available for summer jobs earlier. The major impact of this change was to come closer to equalizing the length of the three quarters than had been possible before.

Other Calendar Discussions

Other reports and discussions surfaced between 1958 and 1975. The presidents at the State University of Iowa, Iowa State University and State College of Iowa submitted recommendations for year-round operation at these three institutions (Hancher, V., Hilton, J., and Maucker, J. W., 1961). They discussed, but did not recommend, a common

calendar and noted that "a move to a truly common calendar, that is, placing all three schools on the semester plan or all three on the quarter system, is a step that should be carefully considered . . ." (p. 35).

This report referred to the 1961 University Calendar study done by the American Association of Collegiate Registrars and Admissions Officers which states, "One certainty in any calendar change is that it will involve a great deal of time and effort to effect and that the cost will be high. The high cost is made up of the time and the number of people who must be assigned to work on the change, the printing of the multitude of revised forms and publications necessary and the cost of communication and publicity to all interested parties. A careful weighing of the work and cost factors against the possible advantages of a calendar change is a necessary step" (p. 36).

In 1973, Virgil S. Lagomarcino, Dean of the College of Education, drafted a proposal for discussion at the Deans Council suggesting rejuvenation of the quarter system "grounded in good learning theory and in pragmatic good sense" (p. 1). He proposed:

1. A longer quarter
2. The elimination of finals week
3. The elimination of quarter break

4. A consolidation of three-credit courses into four- and five-credit courses
5. The establishment of an annual academic plan

These and other discussions led to university-wide consideration once again during the late 1970s of what the academic calendar should be.

Throughout Iowa State's history, faculty played a key role in discussions and decisions about the calendar. The general college curriculum committees and Faculty Council, with administrative support (sometimes impartial and sometimes with strong opinions), were the vehicles for setting up procedures for providing information, facilitating discussion and implementing a faculty vote. When put to vote, the wishes of the faculty were followed in all cases.

A CHRONOLOGY OF EVENTS AND STUDIES LEADING TO THE 1981 CALENDAR CHANGE AT IOWA STATE UNIVERSITY

In March 1975 the All-University Community Council (AUCC) at Iowa State University, chaired by George C. Christensen, Vice President for Academic Affairs, voted to establish a committee to study ways to improve the learning environment at Iowa State University. Faculty and administrators appointed to the committee included: George W. Thomson, Head, Department of Forestry; Donald K. Hotchkiss, Professor of Statistics; William A. Hunter, Professor of Secondary Education; Bernard O. Randol, Comptroller and University Secretary; Paul E. Morgan, Associate Dean, College of Engineering; Ruth P. Hughes, Head, Home Economics Education; Jeannette S. Bohnenkamp, Assistant Professor, Food and Nutrition; and John P. Mahlstede, Associate Dean, College of Agriculture. Mahlstede chaired the committee.

Following initial discussions five subcommittees were appointed to study selected topics in depth: human relations, educational pedagogy, post college, extracurricular activities and physical plant.

Members of the educational pedagogy subcommittee, chaired by Hunter, selected those factors for study which seemed to them to be most significantly related to the improvement of the learning environment of the university.

These included 1) university scope and structure, 2) curriculum, 3) programs of study, 4) instruction, 5) grading and evaluation of student achievement, 6) the university calendar and 7) the identification of academic impediments in the channels of the learning environment. Each of these topics was studied in depth, and recommendations were made to the total Learning Environment Improvement Committee.

Calendar Study

In studying the university calendar the subcommittee looked at the restructuring of courses, the university catalog, the extended catalog and the quarter versus semester system. They noted that faculty and students had expressed concern for a number of years that the large number of courses students took during a quarter, sometimes six or more, produced a fragmented learning experience. Furthermore, the Government of the Student Body (GSB) had passed a resolution in 1971 urging the University Curriculum Committee "to accept no departmental curriculum which has not been reevaluated and restructured to provide at least one-third of the courses offered as four-or-more hour courses and another one-third of the courses offered as five-or-more hour courses" (Mahlstede, May 1977, p. 31).

The committee found that although a few departments made changes in the 1971-1973 and subsequent catalogs, most

courses remained at three credits, and a number remained at one and two credits. Edwin C. Lewis, Associate Vice President for Academic Affairs (personal communication, May 1983), noted that where departments did offer four- and five-credit courses, these were selected less often by students than three-credit courses. Students asked for this change but did not follow up by taking those courses. While recognizing the advantages of exposing students to a variety of courses, the subcommittee remained concerned about fragmentation, particularly during an 11- to 12-week quarter. The subcommittee on educational pedagogy took an extra year, until May 1977, to study and report on the academic calendar. In considering the quarter versus the semester system, they reviewed information from other universities, as well as the history of the ISU calendar (Gowan, 1977).

Recommendations regarding the academic calendar were listed as follows in the May 1977 Learning Environment Improvement Committee Report:

1. "The committee feels that an in-depth analysis should be made to assess the effect of a change from the quarter process, the economics, and the benefits that would accrue to the students, to the faculty and to the university.

2. Such a comprehensive study should take into account recommendations made by former committees, and the results of these studies should be made available to faculty.

3. In considering the issue of change, the analysis should address questions about the operational details of the alternatives in terms of their influence on the effectiveness of the university's academic programs. These questions should include but not be limited to the following:

   - Which plan (quarter vs. semester) has the greatest number of advantages with respect to the content and presentation of the courses offered by a department?

   - Which plan has the most advantages with respect to the utilization of laboratories and equipment?

   - Which plan has the most advantages with respect to the administrative work of a department, including that done by members of the staff other than the departmental administrators?

   - Which plan has the most advantages with respect to the research and extension programs of the staff?

   - Which plan has the most advantages with respect to the utilization of the staff's time, exclusive of that directly connected with teaching?

   - Which plan has the most advantages with respect to other functions of the department or staff?

   - How might the two plans compare budgetwise in terms of faculty salaries, support personnel, et al.?

   - Can classrooms and other physical plant facilities be utilized equally well under the two plans?

   - What if any would be the annual projected difference in the noninstructional cost of operating under the two plans? Comparisons should be made in relative costs for such offices as: Office of Business and Finance, Registrar's Office, College Registration

> Offices, Student Health Service, Press, Graduate Office, etc." (Mahlstede, 1977, pp. 38-39)

These recommendations also called for studying the impact of a calendar change on students as well as on faculty and staff.

Christensen then asked Arthur M. Gowan, Dean of Admissions and Records, and Assistant to the Vice President for Information and Development, David L. Lendt, to prepare materials for the faculty on the pros and cons of the various academic calendars.

The comparison of academic calendars report (Lendt and Gowan, 1977) contained a description of five major calendars: traditional semester, early semester, quarter, trimester and 4-1-4. Two trends were apparent in the 1970s. First of all, 14 states had adopted a uniform calendar for public institutions. Secondly, there had been "a dramatic move toward the early semester calendar" (p. 2).

Comparisons were made with institutions who were members of the Association of American Universities, the Big Ten Conference, and the Big Eight Conference, the University of Iowa and the University of Northern Iowa. The most popular calendar clearly was the early semester calendar which has the strengths of the traditional calendar and combines the semester break with the traditional Christmas

holiday. Second semester ends around mid May, which facilitates summer employment for students and faculty.

Christensen also appointed another ad hoc committee to develop a process for the university community to use to decide whether the quarter or semester plan would be best for ISU. Morgan, who had served on the Learning Environment Improvement Committee 1975-77, was selected as chair. By February 1978 the committee had completed its informational phase and had submitted a report. Christensen sent the Lendt and Gowan report to the general faculty with a letter announcing two meetings sponsored by the Faculty Council for the purpose of open discussion on the topic. He mentioned further that Faculty Council would encourage each college and department to hold meetings to discuss the calendar issue as it concerned their majors and curricula. Reactions to changes in calendars from other universities were included (The Chronicle of Higher Education, Jan. 1978; Shriver, 1977).

Individual faculty were encouraged to comment directly to ad hoc committee chairperson Morgan. Comments were summarized and copies sent to each faculty member, and a vote by mail ballot was announced for May 1978. The calendar issue was discussed by Faculty Council, in two university-wide meetings sponsored by Faculty Council and in departmental and college meetings. Two university-wide

meetings were held for students. In total, 12 open meetings were held (Richtsmeier, 1980).

As the university-wide meetings were taking place, the AUCC, composed of faculty, staff and student leaders, discussed who should be given the responsibility for making the calendar decision for the university. There was unanimous agreement that the faculty was in the best position to make the decision and that while faculty should be encouraged to listen to the ideas and concerns of students and staff, its judgment should prevail (G. C. Christensen, personal communication, May 1983).

President of the University, W. Robert Parks, concurred with this decision and pledged to take to the Board of Regents the results of the vote and to support the faculty majority (personal communication, May 1983). He saw his role as a facilitator of open discussion and felt that the decision needed to be strictly an academic one. He saw faculty as having the "most mature judgment in the university community" to make the decision and that they have the "longest range interest in the calendar." Furthermore, many faculty have experienced both semester and quarter collegiate programs while most students have not. Unlike President Friley, Dr. Parks had no strong personal preference for the quarter or semester calendar. He had

found no strong evidence for improved learning in one system over the other.

Asked whether they felt any pressure from the President or other administrators to promote or not promote the change, those closely involved said no, that they felt it was indeed an academic issue to be discussed and decided by the faculty (J. P. Mahlstede, L. M. Thompson and P. E. Morgan, personal communication, April 1983). Each indicated that emphasis was placed on a full and open discussion and a decision based on what would provide the best learning environment at Iowa State University. The question of a calendar change had come up often enough over the years to warrant a full discussion and decision. Gowan, from his perspective of Dean of Admissions and Records stated, "No registrar in his right mind would vote for quarters over semesters, but the question needed to be decided on the basis of the learning environment" (personal communication, April 1983).

There was a vocal group of students opposed to a calendar change, and responses to a questionnaire indicated that those responding favored retaining the quarter system. A resolution by the Senate of the Government of the Student Body asked the faculty to vote to retain the early quarter system and requested that faculty and administration make a commitment to work to improve the present quarter system.

On April 26, 1978, 1873 ballots were mailed to the faculty and by May 10, when they were counted, 1452 (78%) had been returned. As recommended by the AUCC with the concurrence of Christensen and Parks, total faculty votes were tallied. Votes were not tabulated by individual colleges (A. M. Gowan, personal communication, April 1983; E. C. Lewis, personal communication, May 1983). Those voting for the semester calendar numbered 859 (59.2%), and those voting to retain the quarter plan were 592 (40.8%). One write-in vote for a 4-1-4 calendar was submitted.

Board of regents action

In order to present the results of the calendar change vote to the Iowa Board of Regents as soon as possible, the item became a part of the supplemental agenda of the May 18, 1978 Regents' agenda.

On that date President Parks summarized the events that had taken place since March 1975 and relayed the results of the faculty referendum. He assured the Board that if the shift in the academic calendar were approved, the university would "develop procedures which would ensure an orderly change from the quarter to the semester system through appropriate university committees" (Iowa Board of Regents Minutes, 1978, p. 701).

Discussion followed, and then Fred Schuster, President, Government of the Student Body (GSB) reported on the reasons

the student body opposed the proposal, summarizing his comments stating that, "the students favoring the quarter system at Iowa State University could not see how changing to the semester system could improve the academic environment. They felt that if the time, energy and dollars necessary to make the change were spent on overhauling the present system, the academic environment would be improved" (Iowa Board of Regents Minutes, 1978, p. 702). Other students spoke about the hardships to farm students who might need to miss a quarter due to farm activities. This presentation was somewhat unexpected since GSB leadership had agreed to abide by the faculty decision. Faculty had not attended the meeting, thinking the presentation by Parks and Christensen would suffice. Former GSB officer, Mary Beth Howe confirmed that as a student member of the committee studying the calendar change she had understood that faculty would make the decision after studying the issue which included being aware of student concerns (Iowa Board of Regents Minutes, 1978, p. 705).

Following further discussion, the vote on the motion to approve Iowa State University's request to change its academic calendar from the quarter to the semester system as soon as possible was defeated five to three. Then after further comments by members of the Board and President Parks, Willard Boyd, President of the University of Iowa, in

asking the Board to consider its actions carefully, commented that the Board's negative vote would have a "very substantial impact" on all the faculties at the state universities and stated furthermore that "this matter involving curriculum is the basic responsibility of the faculty" (Iowa Board of Regents Minutes, p. 707). Christensen summarized some of the earlier discussion, emphasizing the fairness of the process that had taken place.

A motion to reconsider passed unanimously. Another motion to delay the vote until October 1978 failed two to six, and then a vote on the original motion passed five to three.

Semester transition process

Several committees were formed to facilitate the transition to semesters between the vote in April 1978 and the beginning of the first semester, August 1981. These ranged from the large Semester System Steering Committee (SSSC), with representatives from all areas of the university affected by the change, to smaller committees with specific assignments. The entire process was monitored by the AUCC, the council which took the initiative in 1975 to establish the Learning Environment Improvement Committee (LEIC). Christensen chaired the SSSC as well as the AUCC (AUCC, 1979). Parks gives credit to Christensen for

assuming major responsibility for the transition and for its success (personal communication, May 1983).

The SSSC approved all major recommendations for implementing the change. On a weekly basis major actions approved by the President or the steering committee and items under discussion were listed in the university and staff newsletters in sections entitled "Semester Scoreboard" or "Semester Update." The student newspaper also published transition information.

The Academic Guidelines Committee, chaired by Lewis, was a smaller working group with representatives from each college. This committee studied academic issues relating to improvement of the learning environment and semester changes and developed proposals for consideration by the SSSC.

Discussion and action on the calendar revision began soon after the committees began work and a chronology of decisions by the SSSC is listed below (Richtsmeier 1980):

1. The semester system will begin in fall 1981, and the first semester will end before Christmas. (October 31, 1978)

2. Each semester will have 16 full weeks of instruction, with or without finals (80 class days). (October 31, 1978)

3. The spring semester shall end prior to the first of June. (October 31, 1978)

4. Two reports, "Timetable for Preparation of the 1981-83 Catalog" and "Guidelines for Preparation of 1981-83 Catalog" were approved. (October 31, 1978)

5. Graduation will be held on Saturdays whenever possible. (December 5, 1978)

6. Fall semester should end on December 22, or shortly before if necessary to be consistent with the calendar in any given year. (February 6, 1979)

7. Classes should not be held on Labor Day. (February 6, 1979)

8. Classes should not be dismissed in conjunction with Homecoming. (February 6, 1979)

9. Classes should not be scheduled on the Wednesday preceding Thanksgiving nor on the Friday following it. (February 6, 1979)

10. On years in which final examinations begin on a day other than Monday, classes should not be held on the day prior to the beginning of finals; when finals begin on Monday, however, classes should be held on the preceding Friday. (February 6, 1979)

11. A vacation period of one week should be scheduled in the middle of spring semester, immediately following mid-term examinations. (February 6. 1979)

12. No classes should be scheduled on the Monday after Easter, to allow those students who go home for Easter sufficient time to have a safe and convenient return trip to the campus. (February 6, 1979)

Calendar committee

On February 1980 the calendar committee met and drafted semester calendars for 1981-82 and 1982-83. (See Appendix A.) The 1982-83 calendar was subsequently revised following a request by the Government of Student Body to allow the spring festival VEISHEA to continue to occur the first

weekend in May. A request for a holiday at homecoming was denied.

Summer session

Deciding on the summer calendar was expected to be one of the biggest challenges of the change but was not a key issue prior to the faculty vote. University administrators recognized from studying calendar changes at other universities that deciding on the summer calendar would require a great deal of discussion and consideration of plans and combinations of plans (A. M. Gowan, personal communication, April 1983 and E. C. Lewis, personal communication, May 1983). To illustrate some of the difficulties, Herman Richtsmeier (1980), in a report on the calendar change, listed the following possibilities that were considered before a decision was reached:

> "April 3, 1979 - The SSSC considered: 1) an eight-week course session divisible into two four-week sessions 2) a four-week session prior to an eight-week session 3) two six-week sessions.
>
> April 18, 1979 - The SSSC ended their meeting favoring: 1) a pre-session of three to four weeks, and 2) a main session of six weeks plus three weeks, or eight weeks, or two five-week sessions.
>
> September 25, 1979 - The SSSC discussed a three-five-five and a two and one half-five-five summer plan with certain courses being taught for six or eight or ten weeks.
>
> October 12, 1979 - The Academic Deans suggested a three-week pre-session in the summer to be

followed by an eight week session, which would include the option of two four-week sessions.

October 26, 1979 - The SSSC discussed the summer session with general favor for an eight-week

session as long as flexibility within the eight-week session was allowed.

November 15, 1979 - At the general faculty meeting the eight-week core summer session was discussed. Several faculty members suggested having some courses start immediately after spring semester, and thereby conclude earlier than the other normal eight-week courses.

December 5, 1979 - The Semester Guidelines Committee discussed the summer calendar regarding the single eight or overlapping eight-week decisions.

January 15, 1980 - The SSSC voted unanimously to recommend that the semester summer session: 1) be a single eight-week term 2) begin whenever possible, the first week in June 3) allow for flexibility of components within the eight-week term and 4) be based on a sixty minute class session." (pp. 4-5)

Semester transition information committee

In October 1979 the SSSC discussed the need for a handbook for students and advisors which would compare the 1979-81 catalog courses with those to be offered during 1981-83. Chaired by Ruth W. Swenson, Assistant Dean, College of Sciences and Humanities, the Semester Transition Information Committee (STIC) was formed to develop materials to provide information to help students plan coursework toward their degree programs during the transition time. Information on sequence courses, equivalent courses and

prerequisites for both quarter and semester courses was included. Two thousand copies were printed and distributed to advisors, departmental and college offices, residence units, the university library and community colleges in Iowa.

Academic planning

In order to give departments, colleges and the administration an indication of course demand and to involve students and advisors in planning for the transition period, the associate deans working with the undergraduate curriculum recommended that the Registrar's Office develop a procedure to help students submit course plans for the period of spring 1981 through spring 1982. This was done.

Catalog

So that students might have more time to plan their schedules for the beginning of the semester system in fall, 1981, the 1981-83 catalog was scheduled for delivery in February instead of its usual April or May. Guidelines to the academic departments for the Catalog Committee included the following:

1. "Departments are strongly urged to develop semester curricula that require no more than 2/3 the number of credits now required on the quarter system and in some instances slightly fewer credits should be considered to reduce the pressure on students.

2. Each department's total semester credit offering should be 2/3 of its present total quarter system offering.

3. The development of four and five credit semester courses should be considered, and two credit courses should be rare, with three credit courses probably most common.

4. The conversion of three credit quarter courses to two credit semester courses is strongly discouraged." (Richtsmeier, 1980)

Other semester transition committees

In October 1979 a Media Committee was formed to develop media presentations about the conversion to the semester system. A 15-minute slide/tape presentation was prepared and available by April 1980 for use in student informational seminars.

Appointed to develop a deferred payment plan or billing system for payment of tuition, the Fee Payment Committee recommended that the plan in place, payment of tuition at the beginning of the semester, be continued.

Other issues

The issue of administrative cost was not a major one in the decision to change. John V. Sjoblom, Registrar, (personal communication, May 1983) reported some, but not major, cost savings in reducing the total number of registration and grade reporting times during the year.

The advantages of the semester system to the athletic program were discussed but did not become a major issue

either. Athletic Department staff were advised (P. E. Morgan, personal communication, April 1983) that they would do well to stay out of the discussion in order to avoid a negative vote on the part of the faculty. Thus, for the most part, the discussion centered on what would provide the most optimal learning environment for Iowa State University.

Studying the change

As the time for the change to semesters approached, the SSSC proposed that studies should be undertaken to assess the transition and the impact of the change to semesters on the learning environment.

The first study was designed to assess students' perceptions of the learning environment and the quarter and semester systems, first while still under the quarter system, then several months after the change to semesters, and finally four to five years later. This study, sponsored by the Office of Vice President for Academic Affairs, the Research Institute for Studies in Education and the Department of Professional Studies, was carried out by James Moore (1982) who gathered baseline data in spring 1981 and by David Kelley (1983) who compared student perceptions in 1981 with those in 1982.

The present study, under the same sponsorship is a companion study to the student studies. Moore and Kelley researched the reactions of observers of the change,

the students. This study researches those who played a key role in the decision, the faculty.

LITERATURE REVIEW

The Process of Academic Change in Higher Education

More is unknown than known about the conditions under which change decisions are made (Conrad, 1978). "When change does come, it may be by the slow process of pursuasion, or by subversion as through the inside-outside alliance, or by external decision. The academic community, regardless of the particular process involved, is more changed than changing; change is more unplanned than planned" (Kerr, 1963, p. 102).

Receptivity to change

The organization's receptivity to change is the most important influence on the success of a change (Conrad, 1978; Nordvall, 1982; Bruenig, 1980). Organizations open to change generally have an open structure with more lateral than vertical communication. They also have agreement on major operating goals, are comfortable with self-examination, have resources to cover the cost of change and have influence on decision making (Nordvall, 1982). Support from the top administrators and from existing groups is also important. Bruenig (1980) states that it is sometimes necessary to raise some dissatisfaction with the status quo, but that this may be counterproductive if it results in emotions being raised to an unmanageable level. Noting that

the change plans should deemphasize the variance of shift from current practices, Levine (1980) suggests that a needs assessment along with developing understanding of the need for a gradual change process is important.

Proposers of change are advised to look at the values of those opposed and to try to tailor the proposal to preserve those values (Klein 1976). For example, in a proposed calendar change faculty find it difficult to argue against improving the quality of the academic environment. Indeed, however, there is little evidence that the academic calendar is of major importance to student learning. Innovations that challenge traditional values like the experiences generally considered necessary in order to become an educated person or the importance of the university research effort are certainly not welcomed (Lindquist, 1974). The university's reputation is built on traditions of long standing, like teaching and research, not on its record of innovation (Hefferlin, 1969; Ladd, 1970).

Resistance to change

Resistance to change comes from at least three factors: the structure and function of the university, the traditional roles and personalities of faculty and administrators and external demands of society. Of these, faculty are the most influential (Astin, 1976).

Aspects of change

Change, though it may happen slowly, does occur, and successful change proposals have some common elements (Levine, 1980):

1. Relative advantage. Is the new idea better than the old? Does it insure the personal survival needs of the faculty?
2. Compatibility. Is it compatible with the values and traditions of the university? Can it fit into the current structure?
3. Complexity. Is the change easy to understand?
4. Trialability. Can it be tried out?
5. Diversibility. Must it be adopted totally?
6. Communicability. Can the plan be easily explained?

University change can often be slowed by fragmentation with students, faculty and administration divided into small groups; e.g., departments, colleges, and living units located in different facilities. Finding the change process not just slowed down but at times at a standstill, Parker (1976) notes from her experience as a faculty member and then as a college president that "instead of coming to grips with any of the real issues confronting higher education, professors (and others) spend most of their time waging

symbolic power struggles which prevent anyone from making decisions" (p. 39).

Change models

Various models have been developed to describe academic change and decision making. Conrad (1978) lists four: the complex organization, diffusion of innovations, planned change and political models. Nordvall (1982) also describes four, all of which lead to a decision, even the political model:

1. Collegial where a community of scholars makes shared decisions.
2. Bureaucratic where decisions are made formally within a well defined hierarchical structure.
3. Political where negotiation and compromise among power blocs lead to a decision.
4. Atomistic where units are more autonomous and make their own decisions without relying on the institution.

Another model proposed by Lindquist (1978) is called open collaboration. In this plan leaders and staff (administration and faculty) are involved in open two-way communication. Problems are worked out through rational discussion as well as through discussion of emotional concerns and issues. In collaboration the competition of

the political model is replaced by cooperation. This model appears to be an expanded version of the collegial model.

There seems to be broad agreement that change in an academic institution cannot be ordered by top administrators and that it must be brought about through proper channels which include the faculty even though this is time consuming and may be cumbersome. This is cumbersome, partly because universities have become highly bureaucratized (Astin, 1976). The faculty advisory system has become a maze of ad hoc and standing committees, task forces and councils. Decision-making power is diffused as change proposals must go through committees, departments, councils and administrators. The formal administrative structure also has become layered with a number of assistant and associate deans and vice presidents.

Administrators can facilitate change through procedures which help the institution explore the need to change. This can happen through an institutional research program, through a review of the literature on academic change and through recognition of a need for change. While knowledge about change does not insure success, it does make a successful shift more likely (Nordvall 1982).

A theory of change

Using the constant comparative method, Conrad (1978) developed a theory he called a grounded theory of academic change. He identified several stages which link pressures for change with a decision to change.

1. Social structure. Internal, external forces which threaten the status quo are the underlying sources of change.
2. Conflict and interest group formation. Interest groups form as conflict becomes known, and these groups seek to influence the decision-making process.
3. Administrative intervention. Responding to pressures for change, an administrative agent selects a mechanism to broker the change. This agent may facilitate or resist the change and may wield substantial power at this point in the change process.
4. Policy-recommending stage. A recommendation is made to change the existing program.
5. Policy-making stage. Policy is determined by the appropriate body within the institution.

Conrad sees stage three, administrative intervention, as the critical stage in the theory. The focus is on how power is used to influence administrators and the outcome of

that influence rather than on just the process of change. He describes the role of the competent administrator who may facilitate the change process and make it less divisive by "providing channels of communication between varying interest groups and by attempting to establish university goals and values in concert with the entire university environment" (p.10). Conrad describes administrators as assisting in the reexamination of programs and negotiation of compromises more often than serving as agents of academic change.

Impetus for change

Forces of change usually occur externally even though universities may attribute them to local and personal occurrences (Hefferlin, 1969; Nordvall, 1982). External forces which may provide the impetus for institutional change from time to time are boards of trustees or regents, alumni groups and local, state and federal governments. These agencies, however, do rely on universities to perform traditional services, and this makes them also a strong force in supporting the status quo.

Some of the changes that have taken place over the last two decades have led faculty to believe that some changes in academic institutions are needed, perhaps more than just a calendar change. The number of students rose significantly and now is declining. Public funds increased and now are

decreasing. Students have gone from being passive to active to much less active politically.

Faculty roles in decision making

While faculty at larger universities have broad authority in such matters as appointment and promotion of faculty, degree requirements and curriculum, only a small percentage take part is this decision making (Stadtman, 1980). Most faculty are more interested in departmental affairs than in decision making at the institutional level, and only about 18% consider themselves active in governance (Baldridge et al., 1978). Baldridge further reports from the Carnegie Council survey of presidents in 1978, that university presidents find that faculty interest in governance has increased since 1969. Some of this, but not all, he feels, is due to faculty unionism.

While faculty develop skills in their academic disciplines and in their roles as educators and scholars, some do develop a strong identification with the traditions and goals of the university, particularly when they are able to be involved in decision making and see themselves as "agents for the mission of the university" (Stadtman, 1980, p. 109).

The faculty are the most effective bearers and collective memory of institutional traditions, and an academic institution depends on these traditions for its

continued existence (Mayhew, 1979). Students tend to remain at a university depending on their satisfaction with both the social environment and academic programs, and both of these, Mayhew feels, are strongly influenced by the faculty.

In order to study the process of institutional change, Astin (1976) established a program at 19 colleges and universities to stimulate each to undertake changes in their policies and programs in order to improve the educational environment for students. Each institution was provided with longitudinal student data comparing its student output with output from students at other institutions. Output variables included career choice, major field, degree aspirations, religous preference, life goals, self-ratings, daily activities, satisfaction with college, satisfaction with specific aspects of the college environment and ratings of the sufficiency of certain aspects of the college. Statistical controls were used to match students at the time of matriculation, and a committee was set up at each of 19 schools to study the report and make recommendations.

Along with general resistance to change, he found less change taking place in the large research universities and the highly selective institutions. More change occurred in less selective schools where there was a pattern of more innovative programming. Astin lists three major tasks in bringing about institutional change:

1. The design and implementation of overall strategy
2. The development of an appropriate student data base for feedback
3. The selection and monitoring of the institutionally based committee or task force

He found that the clear support of top administration greatly enhances the chance for recommendations to be carried out, and that any change in the academic program must involve faculty. Recognizing as have others (Nordvall, 1982) that faculty, particularly in large universities, are oriented towards their academic departments, Astin noted the necessity for departmental support and suggested involving those who are resisting unless they are too hostile or defensive. If that is the case, he recommended avoiding involving them unless their involvement is essential to the change. He found faculty easily threatened by outside consultants and by their own offices of institutional research.

In order to preserve the status quo, faculty have become adept at academic games which Astin finds are more declarative than interactive. He describes several of these.

1. Rationalization - a highly verbal approach dependent on abstract reasoning; e.g., compared to other institutions, we're doing pretty well.

2. Passing the buck - sidetracking an issue by asking the committee to study it further.
3. Obfuscation - over generalizing proposed changes and losing the potential for action in a sea of words.
4. Co-optation - accepting the existence of a problem while suggesting it has already been solved, thus closing further inquiry.
5. Displacement or projection - discrediting the data by shifting attention away from the issues to some external source like resorting to criticizing the way the data are presented or pointing out inaccuracies of interpretation.

Suggesting a number of active countermeasures to these games, Astin included diversion (moving to another topic, isolating the gamesman), asking him/her to prepare a written analysis and challenging the gamesman directly by asking for elaboration or explanation. He found that good committee members have a substantive rather than a methodological orientation. They are secure and nondefensive, action oriented rather than contemplators and thinkers. Their status in their disciplines is either high or irrelevant. They are personal or impersonal leaders and, if administrators, are highly respected or at least not disrespected.

On the other hand a problem committee member may be someone who is either a methodologist or a substantive critic, an antidata or prodata person, a passive resister, interpreter, an opportunist with his or her own pet ideas or an exhibitionist.

Selecting the committee chairperson is a critical decision. Astin suggested that it needs to be someone with a commitment to long range development and improvement who commands the attention and respect of the administration. A strong and determined leader is important. He feels that often faculty members in large research universities make poor chairpersons as they are too far removed from day to day administration and policy making functions.

Faculty play an important role in academic change in that even when they do not initiate change, they legitimize it (Mayhew, 1979). London (1976) confirmed this in his discussion of experimental programs when he stated that their continuing existence is contingent on the support of the faculty.

Faculty support for change

Wilson and Gaff, in a study of faculty supporters of change (1970), found general support for change in several areas and that faculty favored an increase in the:

1. proportion of students from minority groups

2. amount of informal interaction between faculty and students
3. proportion of interdisciplinary courses
4. use of independent study
5. proportion of courses directed at contemporary problems
6. use of student ideas in determining course content

In a study of faculty attitudes toward change and reform at Big Eight universities, Duensing (1973) found that faculty supported certain changes in the academic calendar. They particularly favored those which could accommodate flexible class schedules for students and faculty and those which would facilitate opportunities for students to be involved in independent study, both on and off campus.

Wilson and Gaff's study (1970) found faculty wanting to examine the traditional academic calendar along with wanting to preserve institutional diversity, promote a mix of work and education as well as continuing education and off-campus instruction. These authors also found that faculty favoring educational reform tend to be from the junior ranks and from the humanities and social sciences. Those opposed came from the senior ranks and from the natural and applied sciences. Reporting on a study of attitude toward change in the North Carolina Community College System, Thigpen (1971) found that

faculty in general were receptive to change and that attitudes were not related to personal characteristics such as sex and age. Duensing (1973) also found that it was the change or reform, not the member's rank, tenure, status, age or discipline that determined the response.

While faculty may say they are receptive to educational change, in fact, when confronted with it, faculty tend to resist most changes (Astin, 1976). Faculty have a great deal of autonomy which they value. They may view proposals for change as a threat to this autonomy and may resist a shift even when the proposal comes from the faculty. Partly because of their training in critical thinking, faculty may tend to see new proposals first in terms of their defects.

Calendar Changes at Other Institutions

The trend today is for all institutions in a state to be on the same calendar. In 1916 only two states tried to coordinate activities in their state-supported colleges and universities, but by 1960 six states had superordinate boards, and by 1970 twenty-seven states had off-campus boards (Metzger, 1975).

Loyd C. Olesen, Registrar at Doane College, in conducting a survey of academic calendars, was cited as reporting (The Chronicle of Higher Education, 1978) that in 1976-77 48% of those institutions surveyed followed the

early semester system. He found 7% on what has been called the traditional (mid-September to late May) semester calendar. This represented a major change from the mid-sixties when 83% of those reporting used the traditional semester calendar.

Besides the early and traditional semester calendars, Olson indicated that 24% were on the quarter system with three 12-week sessions plus summer school, and 13% on the 4-1-4 program with four-month terms in the fall and spring and a one-month winter term in January. Only 3% of the 2500 surveyed institutions were using the trimester calendar consisting of three 16-week sessions.

Olson found that the reasons for the changes were most often related to energy conservation and economical use of facilities. Furthermore, the semester system compared to the quarter arrangement provided administrative cost savings with two registrations, examination periods and grade reports instead of three. No mention was made of any major educational advantages of one calendar over another.

By 1980-81 the number of calendar changes had slowed considerably (see Table 1) (Walz, 1981). The only calendar change that represented an increase in 1980-81 was the early semester calendar which added 36 institutions. Use of the early semester calendar increased each year for the last 11 years while use of traditional calendar decreased each of

those years (Walz, 1981). The quarter calendar has declined for the last six years.

TABLE 1. Number of Calendar Changes, by Years

Effective Year	Number of Changes	Number of Institutions Reporting	Percentage Making Changes
1970-71	357	2475	14.4%
1971-72	336	2475	13.6%
1972-73	239	2450	9.8%
1973-74	314	2722	11.5%
1974-75	269	2821	9.5%
1975-76	264	2786	9.6%
1976-77	116	2472	4.7%
1977-78	189	2452	7.7%
1978-79	73	2534	2.9%
1979-80	86	2763	3.1%
1980-81	69	2833	2.4%

Reporting on use of the 4-1-4 calendar, Walz noted that since that calendar was first implemented, 279 institutions used it for one or more years and then changed to other calendar types. The largest number was reached in 1973-74 when 393 institutions followed it.

In a study of 12 colleges on the 4-1-4 calendar, Lightfield (1973) gave special consideration to the interim term and its impact on institutional change. He found that faculty felt positively toward this calendar change in that it changed instructor work patterns and instructional

methods, some of which carried over into the regular semester. Although the 4-1-4 system provided opportunities for innovation, information Lightfield obtained from the schools studied indicated that the interim term had not made a major impact. Noting that the institutions involved had not had the personnel and funds to study the effects and to make appropriate modifications, he called for development of a methodology for colleges to use to evaluate interim terms and innovations and to share this information among institutions.

Olsen (1971) studied the effects of calendar change and year-round operation on the utilization of resources at public colleges and universities. Using the number of student credit hours as a measure of output at an institution, he compared output to five factors: total square feet of instructional space, total investment in physical plant, total amount paid in instructional salaries, total number of full-time equivalent faculty members and total amount of annual operational expense. He compared operating efficiency of schools operating year round to those not operating year round. Considering the institutional variables as a whole, he found that public institutions operating year round required more resources per student credit hour than those not operating year round. This may be due to a lack of full enrollment for all terms,

and, of course, student clock hours are not the only measure of output for a public university. Nevertheless, Olson cautioned that operating year round may not produce expected cost savings.

To provide a program for faculty development, and to encourage curriculum innovation, staff at the University of Wisconsin - Oshkosh developed a new calendar which combined the traditional semester with elements of the 4-1-4 and modular plans (Birnbaum, 1975; Adams and Hoyt, 1977).

Finding that the demands of classroom responsibilities prevent faculty from finding time to read, to create and to think, the Oshkosh plan involved an attempt to reallocate faculty time in order to provide an environment more favorable to faculty development. By reorganizing the faculty teaching load, faculty were able to engage in more professional activities, research and curriculum development and to participate in the faculty college, an extensive faculty in-service educational program, or in university institutes and interdisciplinary programs.

Recognizing the "steady-state environment" with fewer resources, decreased faculty mobility and high tenure density occurring in higher education and expected to continue for some time, Birnbaum presented this plan as an urgent priority in higher education.

Larry H. Ebbers, ISU Assistant Dean, College of Education, and James E. Moore, ISU Assistant Dean, Office of Student Life, presented a paper at the spring 1983 National Association of Student Personnel Administrators on "Academic Calendar Change: Its Impact on the Student Learning Environment". They reported considerable interest from representatives of institutions considering such a change, as did Herman Richtsmeier, ISU Associate Registrar, when he made a similar presentation from the point of view of the Registrar's Office at the American Association of Collegiate Registrars and Admissions Officers in April 1980.

The Learning Environment

Definitions and importance

The college learning environment is "the interplay among its people, processes and things" (Baird and Hartnett and associates, 1980, p. 2). Baird further explains that the perceptions, expectations, satisfactions and dissatisfactions of the people involved are the important aspects of a college environment. The Iowa State University Learning Environment Improvement Committee's Subcommittee on Educational Pedagogy defined the learning environment broadly. "The general backdrop of ideas regarding the university learning environment is a general rubric of factors and influences including the nebulus but important

entity called the 'university atmosphere'" (Mahlstede, 1977). Within this framework the subcommittee considered relevant to its concerns all elements within the university created or operating for the central purpose of facilitating learning.

Information about the environment and how it is perceived by the university community is important to decision makers as they try to make changes to improve the learning environment and as they try to avoid actions which might be detrimental. Environmental information can also be used to study differences in perceptions between significant subgroups and subenvironments and their relationship to an institution's priorities, policies, facilities and goals.

In Surviving the Eighties (1979) Mayhew notes that improving the learning environment is one way to maintain enrollment, an important concern in an era of declining student populations.

The academic learning environment includes all the programs, policies, procedures and personnel with which a university tries to influence the teaching, learning and living that occurs (Gaff and Wilson, 1971). These are the factors that provide opportunities as well as set limits for individuals involved. Since people act on the basis of their perceptions, they maintain that the perceived environment is actually the real environment. In their

study of college environments from the perspective of college teachers, Gaff and Wilson found that three aspects of the environment had a significant impact on teaching: 1) institutional policies and practices concerning teachers, 2) the nature of the student body, and 3) the character of faculty colleagues. They recommended the following:

1. Institutions should maintain policies and procedures which support effective teaching.
2. Faculty members should be informed about general developments in higher education, especially those directly related to teaching and learning.
3. There should be a comprehensive program to assist the personal and professional development of faculty members.
4. There should be ways for faculty to obtain feedback from students about their teaching.
5. There should be regular reviews of the instructional program and proposals for its improvement.
6. Systematic research should be conducted on teaching environments, particularly their innovative aspects.

Recommendation six concurred with Lightfield's (1973) recommendation from his study of the 4-1-4 calendar. None of these important aspects of the learning environment or

recommendations refer directly to the impact of a particular calendar although the recommendation for the Iowa State calendar change resulted from a committee studying ways to improve the learning enviroment (Mahlstede, 1977).

Trow's (1960) three reasons for studying education all relate to the learning environment: 1) concern with outcomes of education, 2) discovery of the role of informal social relations in socializing the student and 3) discovery of informal social processes of mutual education among students.

Development of learning environment studies and instruments

The following is a brief review of the major instruments developed to study the learning environment. A more extensive review may be found in Moore's Student Perceptions of the Learning Environment Under a Quarter System (1982). Most of the literature on college environments relates to its impact on students. In reviewing the early studies on college environments, Spangler (1971) cites one of the best known studies done by Newcomb at Bennington College in the late 1940s. She names Newcomb's study as the first to consider the college environment as an important variable in student change and the first to relate change to the values of the students and the values of the college. Jacob's studies of students in the 1950s, found that students tend to conform more and more

to the norms of the institution as they progress through school (Baird, 1976).

An American Council on Education (ACE) committee report in the mid-fifties stated that learning is affective as well as cognitive and that emotional behavior is affected along with the intellect (Dressel and Mayhew, 1954). Serving on this committee was George Stern, whose later work developed into a measurement of both student personality and institution personality through measurement of environmental perceptions. In conjunction with C. Robert Pace, Stern developed an instrument which he hoped would objectively quantify this subjective milieu (Pace and Stern, 1958). The instrument, The College Characteristics Index (CCI), was based on Murray's need/stress taxonomy.

Using the CCI for research in a number of institutions, Pace and Stern (1958) found that the college environment is a complex of characteristic pressures, stresses, rewards and other influences of the culture as they are related to personal needs of students. They came to the conclusion that the total pattern of personal needs and environmental stress is more predictive of achievement and change than any single part of the person or environment.

Pace ran a factor analysis on the items in the CCI and identified five factors. He called these: Practicality, Community, Scholarship, Awareness, and Propriety. From

these, he developed the College and University Environment Scales (CUES) (Pace, 1963). This instrument has been widely used during the past 20 years, particularly in studying differences among colleges and among groups within a particular institution.

The Institutional Functioning Inventory (IFI) was developed by the staff of the Educational Testing Service (1970) for use with faculty as well as students to determine how well the institution was functioning in a number of areas, e.g., in democratic governance. Following the IFI the Institutional Goals Inventory (IGI) (1975) was developed to study the degree of consensus about institutional goals and whether or not groups perceive that these goals are being met. Both the IFI and IGI have been used more with faculty than the CCI and CUES.

Moore and Kelley study

In studying student perceptions of the learning environment at Iowa State University, Moore (1982) and Kelley (1983) reviewed existing instruments and ultimately reached the decision that none of the instruments were completely satisfactory. Therefore they decided to develop an instrument specifically to study the calendar changes at Iowa State University. While many instruments are useful in comparing college environments, often they are not helpful in studying a particular university environment or specific

aspects of a university environment (Aulepp and Delworth, 1976). Baird (1976) also suggested that to assess a particular situation it may be wise to develop a questionnaire pertaining to local conditions. It not only increases the applicability of the results, but may have a high degree of acceptance with respondents (Aulepp and Delworth, 1976).

Using the process suggested by Aulepp and Delworth (1976), Moore and Kelley

1. studied possible formats
2. reviewed environmental factors commonly studied
3. chose the most important factors for their study
4. wrote sample items for each factor
5. critiqued sample items and revised them
6. determined an answer format designed to maximize returns
7. pilot tested and revised the instrument twice, eliminating and merging items while continuing to measure content factors adequately (Moore, 1982).

Moore's and Kelley's instrument contained 90 items as well as 14 demographic questions. Academic life, interpersonal relationships and extracurricular activities were the major categories from which individual items were developed. Items were critiqued by administrators, faculty and student leaders. After revision, the instrument was

pilot tested with ISU students. Following further revision, another pilot test was conducted and with minor changes the final list of items was determined. A Likert-type five-point scale was developed with responses from strongly agree to strongly disagree.

Questionnaires were distributed to 1340 students between the beginning of spring quarter and midterm examinations during 1981 and at the same time and to the same students during 1982.

In the first phase of the student study prior to the change to semesters, Moore (1982) found that students perceived the learning environment differently depending on their grade point averages (GPAs) and their year in school. Students with GPAs of 3.5 and above found the curriculum to be more challenging, expressed a stronger desire to learn and saw student-faculty relations more positively. Students with GPAs below 2.0 found more hard work, pressure, fragmentation and felt more behind in assignments. This group saw more advantages to the semester system.

Seniors compared to freshman felt they had more opportunity to work closely with faculty and found more advantages to the quarter system. Freshmen on the other hand reported expecting a smoother transition to the semester system, saw more advantages and were more satisfied with the change than seniors. Graduate students compared to

undergraduates were more strongly in favor of moving to a semester program and reported a stronger desire to learn and a higher level of student-faculty relations.

Few significant differences were found when college affiliation and involvement in student organizations were used as independent variables.

In Phase two of the student study, Kelley (1983) studied the differences in responses between year one and year two using data from 531 students who had responded to the questionnaire both years. He found that students viewed the advantages of the quarter system, usually mentioned in the literature, more positively in the second year after the change to the semester plan. They viewed the advantages of the semester system, as mentioned in the literature, more negatively in year two. While female students were more positive than male students in regard to the semester system in year one, they were more negative in year two.

With the exception of the work done by Moore (1982) and Kelley (1983), no one has studied a calendar change as a significant environmental variable in researching student perceptions. Likewise, nothing appears in the literature about faculty judgments or changes in faculty judgments following a major shift in programming such as a calendar change. It is interesting that while faculty, particularly in four year institutions, are considered to carry major

responsibility for academic planning decision making (Nordvall, 1982), their views afterwards about decisions that have been made or changes that have occurred have not been reported in the literature.

METHOD

The current study of changes in stated faculty perceptions regarding the learning environment from just prior to a calendar change to a year later was initiated as a companion study to projects designed to ascertain student perceptions about the learning environment and the shift in calendar.

Instrument Development

The questionnaire designed to obtain student responses (Moore, 1982), was reviewed, and the rationale for its use studied by the researcher. The student questionnaire was then modified for use with faculty. Questions concerning nonacademic student life were deleted, and questions regarding the role of the faculty and the semester transition were added. A few statements were reworded to avoid the more informal student language. Copies of both questionnaires are included in Appendix B.

The revised questionnaire was reviewed by the author's Program of Study Committee and by Moore and Kelley. Following additional revisions, faculty from each College were asked to review the profile critically and to make suggestions. The committee met to incorporate their suggestions and approve further changes, and the final

questionnaire was reviewed once again before being typed and printed.

Faculty were asked to respond to the questions using a five-point Likert-type scale with responses of strongly agree, agree, neither agree nor disagree, disagree and strongly disagree.

The questionnaire was divided into three parts. In Section One 19 statements concerned the quarter system, 19, the semester system and 8, the transition itself. Section Two contained more general statements about the academic learning environment for students. In Section Three faculty were asked to provide demographic information about their college affiliation: rank, type and base of appointment; full or part-time status; graduate faculty status ; sex; length of time at ISU and elsewhere; whether they voted on the change and how they voted; their research, teaching, extension, administrative and advising load; and whether they had served on a curriculum committee the past two years. A page was provided at the end of the questionnaire for written comments about the learning environment at ISU and the transition to the semester system.

Sample

To select the sample, a list of faculty was obtained through the University President's Office. Called the "C"

list, it included all faculty except those holding administrative positions. Administrators excluded were the president; vice presidents; associate and assistant vice presidents; deans, associate and assistant deans; directors; and departmental executive officers.

To provide a large enough sample for comparisons between the initial survey and data collected during subsequent years, an initial sample of 903, half the faculty, was considered appropriate. In order to draw a systematic random sample, faculty were listed alphabetically by rank within undergraduate college; and every other name was drawn beginning with the first name. Thus, the sample was stratified by college and rank. This was done to bring about a sample representative of faculty from each rank in each college.

Procedures

The project was approved by the ISU Human Subjects Review Committee on April 16, 1981 following its review of the questionnaire and project proposal summary. Questionnaires were coded in order to be able to follow up on nonrespondents and in order to protect participant confidentiality. In April 1981 the questionnaires were mailed to faculty, via campus mail, along with a letter of explanation from Vice President Christensen encouraging

their participation. (See Appendix C.) Two weeks later a follow-up questionnaire was mailed to those who had not responded. This questionnaire was accompanied by a letter from Richard D. Warren, Director of the Research Institute for Studies in Education, again encouraging a prompt response. (See Appendix C.) With the return address on the back of the instrument, the participants were instructed to tape or staple it and return it through campus mail. Following another ten days phone calls were made to nonrespondents. Those who returned the blank questionnaire saying they had no teaching responsibilities and indicated that the quarter/semester change did not affect them (28 total) were excluded from the study. Those faculty were primarily Cooperative Extension staff, University Library personnel and Computation Center staff. Six hundred thirty-eight out of 875 (73%) responded to the questionnaire.

In April 1982 the second set of questionnaires was mailed to 751 faculty, and follow-up was carried out in the same way as in 1981. The 1982 questionnaire was identical to the 1981 survey except for a change in the color of the cover page and verb changes required by the change to the semester system in fall 1981. The population included those from the 1981 sample who remained at Iowa State. Some of the 1981 group had resigned from the university; others had died or retired. Those who had changed ranks or colleges

were retained in the sample. Those who had been removed from the 1981 sample due to lack of contact with students or the quarter/semester change were not sent questionnaires. In 1982 some additional library and extension personnel and a few other faculty (26 total) returned the questionnaire saying either that they had had no contact with the semester system at Iowa State University or were on leave. Seven of the 26 were on a leave of absence. Of the 26, 19% had responded in 1981. Although they may have had enough involvement with students during the quarter system to respond in 1981, one year of the semester system may not have given them enough experience to feel able to respond in 1982. Five hundred thirty-one questionnaires were completed and returned, again 73%. (See Table 2.)

TABLE 2. Questionnaires Mailed and Returned

Year	Number Sent	Returned Nonrespondents	Retained in Sample	Returned Completed	
				No.	%
1981	903	28	875	638	73
1982	751	26	725	531	73

Four hundred sixty-five faculty responded to both the 1981 and 1982 questionnaires, and the responses from these people were merged to form one data set.

Prior to keypunching, a codebook was developed to specify the location for each item and number of columns. For each questionnaire, responses were coded. The coded questionnaires were then keypunched at the ISU Computation Center. Frequencies were run, the data checked for errors, and the verified data set for each year was then stored in the computer.

Summary of Responses to Requests for Demographic Information

Table 3 reports the respondents by college and rank. The largest number of respondents were in the full professor category and from the Sciences and Humanities College.

Table 4 shows that 152 nontenured and 307 tenured faculty responded.

In 1981, 143 subjects reported having been at ISU five years or less and 318 more than five years. (See Table 5.) In reporting the number of years as faculty at another institution (see Table 5), 235 reported spending five years or less at another institution while 149 reported spending more than five years at another institution with 81 not responding at all. The large number of nonrespondents may indicate a lack of understanding of the question or that subjects did not consider it important. While for each variable there were a few nonrespondents, none approached

the magnitude of nonrespondents for this particular question.

TABLE 3. Respondents: College by Rank

		Rank				
		Instructor	Assistant Professor	Associate Professor	Full Professor	Total
Agriculture	N	7	27	22	52	108
	%	1.5	5.9	4.8	11.3	23.4
Design	N	3	7	7	1	18
	%	0.7	1.5	1.5	0.2	3.9
Education	N	12	9	11	8	40
	%	2.6	2.0	2.4	1.7	8.7
Engineering	N	2	15	19	27	63
	%	0.4	3.3	4.1	5.9	13.7
Home Economics	N	8	16	10	7	41
	%	1.7	3.5	2.2	1.5	8.9
Sciences & Humanities	N	15	52	42	53	162
	%	3.3	11.3	9.1	11.5	35.1
Veterinary Medicine	N	3	3	9	14	29
	%	0.7	0.7	2.0	3.0	6.3
TOTAL	N	50	129	120	162	461
	%	10.8	28.0	26.0	35.1	100.0

TABLE 4. Respondents' Tenure and Nontenure Status

	Nontenured	Tenured	Nonrespondents	Total
No.	152	307	6	465
%	32.7	66.0	1.3	100.0

TABLE 5. Respondents' Years at ISU, Years as Faculty at Another Institution

		Years at ISU	Years, Other Institution
Five or less	No.	143	235
	%	30.8	50.5
More than five	No.	318	149
	%	68.3	30.0
Did not respond	No.	4	81
	%	0.9	19.5
TOTAL	No.	465	465
	%	100	100

The number who reported that they voted and the direction of the vote is summarized in Table 6. Asked if they voted on the quarter-semester change, 367 reported that they voted, and 92 reported that they did not vote. Six did not answer the question. Of those reporting their vote, 189

reported a vote to change and 169 a vote not to change. Fifty-three percent of the sample responding stated that they voted to change to semesters, a majority but not quite as high a percentage as the actual vote. The actual faculty vote was 59.1% (of 1452) in favor of change to the semester and 40.9 in favor of retaining the quarter (Richtsmeier, 1980).

TABLE 6. Respondents Voting on the Quarter/Semester Change and Direction of Vote

		Vote	Direction
Yes	No.	367	189
	%	78.9	40.6
No	No.	92	169
	%	19.8	36.3
Do not remember	No.	---	10
	%	---	2.2
Nonrespondents	No.	6	97
	%	1.3	20.9
TOTAL	No.	465	465
	%	100	100

As shown in Table 7, a two-thirds majority of the faculty responding (293) reported half time or more teaching load. Table 8 shows that most faculty (about 75%) were involved in advising graduates or undergraduates. Slightly less than half had served on a curriculum committee the previous two years. (See Table 9.)

TABLE 7. Assignments of Respondents

		Teaching	Research	Extension
Half time or more	No.	311	96	46
	%	66.9	20.6	9.9
Less than half time	No.	108	238	132
	%	23.2	51.2	28.4
No assignment	No.	34	118	271
	%	7.3	25.4	58.3
Nonrespondents	No.	12	13	16
	%	2.6	2.8	3.4
TOTAL	No.	465	465	465
	%	100	100	100

TABLE 8. Respondents' Advising Responsibilities

Undergraduates	No.	122
	%	26.2
Graduates	No.	83
	%	17.8
Both	No.	133
	%	28.6
No advisees	No.	117
	%	25.2
No response	No.	10
	%	2.1
TOTAL	No.	465
	%	100

TABLE 9. Respondents' Membership on Department, College or University Curriculum Committee the Past Two Years

	Yes	No	No Response	Total
No.	198	261	6	465
%	42.6	56.1	1.3	100.0

Table 10 shows the number and percentages of male and female respondents with over three times as many men as women responding.

TABLE 10. Male and Female Respondents

	Female	Male	No Response	Total
No.	99	360	6	465
%	21.3	77.4	1.3	100.0

At the end of the questionnaire a page was left for written open-ended comments about the learning environment at ISU or about the transition to the semester system. As shown in Table 11, 29.5% or 137 commented in 1981 and 31.8% or 148 wrote comments in 1982. There was no consistent grouping or pattern of comments.

TABLE 11. No. of Comments at End of Questionnaire

		1981	1982
Yes	No.	137	148
	%	29.5	31.8
No	No.	328	317
	%	70.5	68.2

Factor Analysis of Perception Items

In order to examine the clustering of those items which asked respondents to state their perceptions, a factor analysis (iteration method and varimax rotation) was completed. Tables 12 to 15 show the items and factor coefficients relating to the questions about the quarter system, semester system, transition and academic environment, respectively. Table 16 lists the individual items comprising each factor. Each factor included at least two items with one having 10 items. The three factors identified from questions about the quarter system were labeled:

1. Instructional Advantages
2. Variety
3. Achievement

The five factors from semester system questions were called:

1. Nonteaching Time
2. Teaching Time
3. Administrative Advantages
4. Improved Services
5. Easier Planning

Under the transition section, factors included:

1. Faculty Responsibility
2. Student Reaction

Under the more general academic environment section, factors were named:

1. Challenge
2. Class Interactions
3. Student Attitude toward Instruction
4. Fragmentation
5. Instructor Sensitivity

TABLE 12. 1981 Factor Matrix I: Items Related to the Quarter System

Items	Factor Coefficients		
	Factor 1	Factor 2	Factor 3
1	0.061	0.720[1]	0.016
2	0.563[1]	0.262	0.143
3	0.400	0.421	-0.050
4	0.630[1]	0.380	0.064
5	0.654[1]	0.229	0.046
6	0.191	0.169	0.678[1]
7	0.239	0.355	0.443[1]
8	0.771[1]	-0.071	-0.001
9	0.677[1]	-0.025	0.054
10	0.049	0.503[1]	0.244
11	0.515[1]	-0.062	0.121
12	0.696[1]	-0.171	0.146
13	0.613[1]	0.103	0.173
14	0.523[1]	-0.103	0.187
15	0.708[1]	0.058	0.147
16	0.050	0.695[1]	0.074
17	-0.401	-0.252	0.090
18	-0.119	0.354	0.084
19	0.398	0.187	0.053

[1]Items selected for each factor.

TABLE 13. 1981 Factor Matrix II: Items Related to the Semester System

Items	Factor Coefficients				
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
1.	0.373	0.474[1]	0.200	0.224	0.213
2.	0.265	0.245	0.196	0.177	0.511[1]
3.	0.173	0.778[1]	0.085	0.174	0.117
4.	0.293	0.290	0.206	0.479[1]	0.142
5.	0.090	0.244	0.515[1]	0.179	0.206
6.	0.000	0.056	-0.094	0.216	-0.426
7.	0.232	0.204	0.432[1]	0.550[1]	-0.146
8.	0.139	0.699[1]	0.104	0.163	0.044
9.	0.214	0.215	0.086	0.279	0.656[1]
10.	0.211	0.173	0.048	0.260	0.555[1]
11.	0.147	0.310	0.211	0.037	0.135
12.	0.004	0.038	-0.066	0.337	0.011
13.	0.316	0.238	0.392	0.539[1]	0.153
14.	0.264	0.358	0.360	0.402[1]	0.192
15.	0.267	0.322	0.377	0.021	0.115
16.	0.793[1]	0.194	0.171	0.085	0.182
17.	0.852[1]	0.163	0.182	0.148	0.172
18.	0.663[1]	0.351	0.213	0.204	0.185
19.	0.149	0.035	0.652[1]	-0.057	0.042

[1] Items selected for each factor.

TABLE 14. 1981 Factor Matrix III: Items Related to the Transition

Items	Factor Coefficients	
	Factor 1	Factor 2
1	0.735[1]	-0.187
2	0.702[1]	-0.066
3	0.548[1]	-0.237
4	0.519[1]	0.041
5	0.307	0.245
6	0.246	-0.367
7	-0.046	0.698[1]
8	-0.006	0.658[1]

[1]Items selected for each factor.

TABLE 15. 1981 Factor Matrix IV: Items Related to the Academic Environment

Items	Factor Coefficients				
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
1.	0.039	-0.16	-0.012	0.722[1]	-0.013
2.	-0.002	-0.224	-0.127	0.766[1]	0.017
3.	0.278	0.295	0.300	-0.098	0.176
4.	0.140	0.567[1]	0.352	-0.020	0.017
5.	0.049	0.094	-0.059	0.115	-0.072
6.	0.209	0.453[1]	0.111	0.073	-0.098
7.	0.040	-0.213	-0.053	0.084	-0.034
8.	0.409	0.274	0.424[1]	-0.012	-0.011
9.	0.056	0.099	0.345	-0.030	0.120
10.	-0.038	-0.134	-0.102	0.165	0.007
11.	0.147	0.458[1]	0.027	-0.097	0.027
12.	0.069	0.317	0.050	-0.154	0.160
13.	-0.131	0.487[1]	0.043	-0.038	0.112
14.	0.064	0.061	0.119	-0.221	0.112
15.	0.455[1]	-0.046	0.115	0.144	-0.127
16.	0.041	0.102	0.088	0.086	-0.018
17	-0.061	-0.071	-0.526	0.146	-0.120
18.	0.163	0.079	0.301	-0.101	0.121
19.	0.005	0.141	0.471[1]	-0.093	0.216
20.	-0.309	0.062	-0.190	0.082	0.075
21.	-0.043	0.023	0.044	-0.077	0.138
22.	0.118	0.181	0.427[1]	-0.000	0.147
23.	0.124	0.020	-0.007	-0.119	0.077
24.	-0.012	0.026	-0.076	0.452	-0.024
25.	0.515[1]	0.053	0.305	-0.142	0.196
26.	0.613[1]	0.141	-0.027	-0.048	0.081
27.	0.601[1]	0.122	-0.064	0.008	0.079
28.	-0.452	-0.097	-0.113	-0.017	0.117
29.	0.066	0.102	0.231	-0.219	0.114
30.	0.027	0.537[1]	0.140	-0.163	0.244
31.	0.010	0.196	0.251	-0.023	0.677[1]
32.	-0.007	0.097	0.216	0.011	0.696[1]

[1]Items selected for each factor.

TABLE 16. Individual Items (K=78) Comprising Each Factor

Factor	Items
QUARTER	
1. Instructional Advantages	2. Class preparation was easier for faculty.
	4. Faculty were better able to organize their courses.
	5. There were better opportunities for evaluation.
	8. Students had more time to get into the subject matter.
	9. Students got to know their classmates better.
	11. Final exams covered more content.
	12. The learning pace was more leisurely.
	13. Textbooks tended to fit the course outline better.
	14. There were fewer deadlines.
	15. The spacing of exams was better.
2. Variety	1. There were more opportunities for teaching different courses.
	10. It was easier for students to change from one major to another.
	16. There was more course variety for students.
3. Achievement	6. Students tended to get better grades.
	7. Students graduated sooner.
SEMESTER	
4. Nonteaching Time	35. Time for research and writing has increased.
	36. Faculty have more time to pursue their careers in a manner satisfactory to them.
	37. There is more time for faculty to explore and discuss ideas with other faculty and with students.
5. Teaching Time	20. Instructors have more time to prepare for their classes.
	22. There is more time for students to assimilate classroom materials.
	27. There is more of a leisurely learning pace.

TABLE 16 (Continued)

Factor	Items
6. Administrative Advantages	24. Registration is less complicated. 38. There is less university adminstrative cost.
7. Improved Services	23. Departmental clubs are stronger. 26. The quality of advising has improved. 32. Academic advisors have been more available to students. 33. Library resources (personnel, materials, and space) have been used more fully.
8. Easier Planning	21. Laboratory and studio facilities are less crowded. 28. Students are better able to enroll in classes they need. 29. It is easier for students to include a minor or double major in their programs.
TRANSITION	
9. Faculty Responsibility	39. A great deal of time and energy has been expended by faculty to effect this change. 40. Extensive cooperation among faculty within and between departments has been necessary. 41. Extensive time for course preparation has been required. 42. Departmental course requirements have been re-evaluated by faculty.
10. Student Reaction	43. Overall students are glad ISU changed to the semester system. 44. The transition to the semester system has gone smoothly for students.
ACADEMIC ENVIRONMENT	
11. Challenge	25. ISU courses provide an intellectual challenge. 26. A lot of reading is expected in most courses. 27. Most courses at ISU require extensive out-of-class preparation for students.

TABLE 16 (Continued)

Factor	Items
12. Class Interactions	4. Class discussions are usually vigorous and intense.
	6. Students at ISU have developed strong communication skills.
	11. Group projects are encouraged in classes.
	13. Classes are taught so that students can learn at their own pace.
	30. Instructors get to know students in their classes quite well.
13. Attitude Toward Instruction	8. Students have a strong desire to learn.
	19. Students generally feel that course goals are clearly explained.
	22. Students find that the quality of instruction at ISU is excellent.
14. Fragmentation	1. Students take too many courses during a term.
	2. The learning experience is too fragmented.
15. Instructor Sensitivity	31. Faculty members are sensitive to student needs.
	32. Most instructors will go out of their way to help students.

A test of homogeneity, Cronbach's alpha, was run to check the internal consistency, the extent to which faculty responded similarly item to item within a factor. This was done with the 1981 responses, then with total 1982 responses and finally with the responses of the 465 who answered the questionnaire both years. The alpha coefficients for the merged sample are reported in Table 17. Reliability was quite similar from year to year on each of the factors and

TABLE 17. Homogeneities of 15 Factors: 1981-1982

Factors	1981 Alpha Coeff.	1981 Standard Alpha Coeff.	1982 Alpha Coeff.	1982 Standard Alpha Coeff.
Quarter				
1. Instructional Advantages	0.8755	0.8759	0.8878	0.8880
2. Variety	0.6926	0.6905	0.7010	0.6987
3. Achievement	0.5764	0.5859	0.4727	0.4729
Semester				
4. Nonteaching Time	0.8901	0.8905	0.8967	0.8965
5. Teaching Time	0.7611	0.7685	0.7288	0.8965
6. Administrative Advantages	0.5478	0.5501	0.5793	0.5810
7. Improved Service	0.8199	0.8221	0.7486	0.7462
8. Easier Planning	0.7391	0.7404	0.7197	0.7176
Transition				
9. Faculty Responsibilities	0.7276	0.7281	0.7438	0.7475
10. Student Reaction	0.6136	0.6157	0.6752	0.6765
Academic Environment				
11. Challenge	0.6608	0.6598	0.6380	0.6366
12. Class Interactions	0.6637	0.6637	0.5862	0.5875
13. Attitude toward Instruction	0.5506	0.5582	0.5075	0.5115
14. Fragmentation	0.7905	0.7938	0.5364	0.5369
15. Instructor Sensitivity	0.7389	0.7395	0.7595	0.7612

above .50 except in one instance. Thus the same factors were represented in both 1981 and 1982, and the reliabilities for these factors were highly similar in both years.

Since the factors were nonorthogonal, i.e., there was some overlap between them, Pearson correlation coefficients between factors were computed for each year to see how much of the variation of one factor could be explained by another factor. Correlations of .50 or more (25% or more overlap) between factors for both 1981 and 1982 are reported in Table 18. For 1981 the high overlap occurred between six combinations within the semester system grouping. Common variance of over 25% was also found between the Quarter/Semester factors of Instructional Advantages and Teaching Time, and between the Semester/Academic Environment factors of Easier Planning and Fragmentation. Correlations of less than .50 were found for the remaining nine factor pairs.

In 1982, similar overlap occurred between four of the same combinations of Semester factors. There was also common variance of over 25% between the Academic Environment factors of Class Interactions and Attitude toward Instruction.

TABLE 18. Factor Intercorrelations over .5000

Year	Factors	Corr.	% overlap
	SEMESTER		
81	Nonteaching Time, Teaching Time	.5693	32
82		.6044	37
81	Nonteaching Time, Improved Services	.6034	36
82		.5645	32
81	Nonteaching Time, Easier Planning	.5386	29
82		.4957	25
81	Teaching Time, Improved Services	.6101	37
82		.5265	28
81	Teaching Time, Easier Planning	.5130	26
82		.3745	14
81	Improved Services, Easier Planning	.5567	31
82		.5174	27
	ACADEMIC ENVIRONMENT		
81	Class Interactions, Attitude	.4468	20
82	toward Instruction	.5780	33
	QUARTER - SEMESTER		
81	Instructional Advantages, Teaching	-.4236	18
82	Time	-.5644	32
	SEMESTER - ACADEMIC ENVIRONMENT		
81	Easier Planning, Fragmentation	.5035	25
82		-.1348	2

Statistical Procedures

In addition to the correlation and measurement statistics used with the factor analysis procedures, paired *t* tests, correlations and analysis of variance were used to analyze the data. The paired *t* tests were used with the 15 factors and 78 individual items since the study focused on the change in responses between 1981 and 1982 for the merged sample (same individuals both years). Correlations were used to examine the interrelationships among the factors between 1981 and 1982. A difference score between the 1982 and the 1981 response of each individual on the factors was calculated. Analysis of variance procedures were completed on these difference scores for factors with significant differences on the paired *t* tests and 13 independent variables. If the overall *F* was significant, and there were more than two categories for the independent variable, Tukey B tests were run to determine significant differences among the category means. Only differences significant beyond the .01 and .05 levels are reported for these tests. The data were processed and analyzed using Wylbur and SPSS.

FINDINGS

Following the factor analyses of the perception items, which identified 15 factors, *t* tests were run between the mean factor scores for 1981 and 1982, as well as between the individual item means for the two years. In those ten instances where significant factor differences ($p < .05$) were found, difference scores between 1981 and 1982 were calculated, and ANOVAs were performed for each of the independent variables. Thus, a total of 130 analyses of variance were calculated. Tukey B tests were run where there were significant *F*'s and more than two levels of the independent variable.

The independent variables studied were: college affiliation, rank, type of appointment (tenured, nontenured), sex, number of years on the faculty, number of years at another institution, whether a faculty member voted on the change, direction of the vote, assignment (teaching, research, extension), advising responsibilities, and participation on a curriculum committee. Finally a Pearson Product Moment Correlation between years was calculated for each of the 15 factors to ascertain the degree of relationship of scores between year 1 and year 2.

Paired *t* tests -- 15 Factors

Table 19 provides comparisons of mean ratings between 1981 and 1982 for each of the 15 factors. Eight were significant at $p < .01$ and two at $p < .05$.

Of the three factors concerning the quarter system, two had significant mean differences on the paired *t* tests, the Instructional Advantages and Achievement factors. In both cases, mean scores on those factors shifted from slightly disagree in 1981 to a more neutral mean response in 1982. There was no significant difference on the Variety factor. Mean responses in both years were close to agree indicating agreement between years on Quarter Variety.

Three of the five factors concerning the semester system had significant mean differences. For Nonteaching Time ($p < .05$) the mean score in 1981 was just above the neutral or neither agree nor disagree response. In 1982 it was just below. On the Easier Planning factor respondents disagreed both years but less so in 1982. Administrative Advantages under the semester system were seen positively both years, slightly less, however, in 1982. Teaching Time was seen positively both years with no significant difference between them. Improved Services mean responses were just below the neutral, neither agree nor disagree rating, with again no significant difference between years.

TABLE 19. Comparisons of Mean Differences Between Factors in 1981, 1982: Paired *t* tests

	Year	N	Mean	S.D.
QUARTER				
1. Instructional Advantages	'81	445	2.2512	0.598
	'82		2.3434	0.646
2. Variety	'81	447	3.9224	0.730
	'82		3.8576	0.758
3. Achievement	'81	451	2.8237	0.623
	'82		2.9889	0.656
SEMESTER				
4. Nonteaching Time	'81	454	3.0184	0.919
	'82		2.9244	0.935
5. Teaching Time	'81	451	3.5528	0.803
	'82		3.5255	0.779
6. Administrative Advantages	'81	449	3.6392	0.765
	'82		3.5033	0.759
7. Improved Service	'81	439	2.9715	0.614
	'82		2.9510	0.451
8. Easier Planning	'81	443	2.3777	0.689
	'82		2.4801	0.628
TRANSITION				
9. Faculty Responsibilities	'81	451	4.0549	0.579
	'82		4.0333	0.613
10. Student Reaction	'81	454	2.6156	0.767
	'82		2.7709	0.811
ACADEMIC ENVIRONMENT				
11. Challenge	'81	438	3.4011	0.619
	'82		3.4658	0.590
12. Class Interactions	'81	431	2.5865	0.521
	'82		2.7081	0.488
13. Attitude toward Instruction	'81	449	3.2517	0.552
	'82		3.1871	0.495
14. Fragmentation	'81	456	3.2018	0.917
	'82		2.8925	0.664
15. Instructor Sensitivity	'81	446	3.5527	0.700
	'82		3.5785	0.682

*Significant at $p < .05$.
**Significant at $p < .01$.

Mean Differences	S.D.	T-Value
-0.0921	0.586	-3.32**
0.0649	0.781	1.76
-0.1652	0.753	-4.66**
0.0940	0.845	2.37*
0.0273	0.715	0.81
0.1359	0.695	4.14**
0.0205	0.499	0.86
-0.1023	0.632	-3.41**
0.0216	0.586	0.78
-0.1553	0.765	-4.32**
-0.0647	0.551	-2.46*
-0.1216	0.529	-4.77**
0.0646	0.562	2.43**
0.3092	1.080	6.11**
-0.0258	0.710	-0.77

For the two factors dealing with the transition, there was no difference on the Faculty Responsibility factor with agreement both years that faculty responsibilities for the change to semesters were heavy. There was, however, a significant difference ($p < .01$) from year to year on Student Reactions as seen by faculty, more negative in 1981 ($M = 2.61$), and less so, but still negative ($M = 2.77$), in 1982.

Four out of five of the Academic Environment factors were significantly different between years. These items related more generally to the learning environment rather than to the specific quarter/semester calendar. Faculty responded to items about Instructor Sensitivity in a positive way both years with no difference between years. They also reported a positive attitude toward students' Attitude toward Instruction, slightly less, however, in 1982 ($p < .01$). On the Challenge factor, they found students perceiving the learning environment positively in 1981 and slightly more so in 1982 ($p < .05$). Faculty reported more Fragmentation in 1981 and less in 1982 ($p < .01$). Class Interactions were seen somewhat negatively both years but less so in 1982.

Paired t tests--Individual Items

Overall, mean responses ranged from 1.89 to 4.29 with strongest agreement on the work required by faculty during the transition. Also strong positive responses both years were made to statements that under the quarter system there were more opportunities for teaching different courses and there was more course variety for students. This was not unexpected. Item 7 under academic environment also produced means each year over 4.0 although the 1981 responses differed from 1982 ($p < .05$). This item was "Students do a lot of last minute cramming," again not a surprising response but interesting that faculty report it to be true when they tended to respond more neutrally to items relating to student attitudes.

Mean responses under 2.0, indicating fairly strong disagreement, were found only for two items both in the statements relating to the quarter system. "Students have more time to get into the subject matter" and "The learning pace is more leisurely" both produced mean responses under 2.0 for both years. The same question about the leisurely learning pace, asked under the semester system evoked a less strong but consistent response from 1981 to 1982, a mean score of 3.61 for 1981 and 3.48 for 1982. This difference was significant ($p < .01$) in this case, but when the same

question was asked under the quarter system, it was not significantly different from year to year.

These individual item differences are interesting, but in multiple t tests a few significant differences can occur by chance. The factor differences described previously should be considered more meaningful than the mean differences on individual items.

Quarter system items

Individual item paired t tests are shown in Appendix D. Of the 19 items concerning the quarter system, 5 were significant at $p < .01$ and 1 at $p < .05$. Of these responses, all six in 1982 moved in the direction of neither agree nor disagree. The question, "Students tend to get better grades" provided the largest mean difference. This may relate, not to the quarter/semester shift, but to the implementation of plus-minus grading at the undergraduate level beginning fall 1981, the same time ISU changed to the semester system. Faculty reported more agreement that students tend to get better grades under the quarter system in 1981 than in 1982. In 1982 the mean response, 2.91, was fairly neutral.

Other significant differences where respondents disagreed with the item but less so in 1982 were:

1. "Faculty were better able to organize their courses."

2. "Students graduated sooner."
3. "Textbooks tended to fit the course outline better."
4. "The spacing of exams was better."

Faculty agreed in 1981 and 1982 but less so in 1982 on the item "Too much information was crammed into each course."

On those items where there were no significant differences, there was strongest agreement both years on "There were more opportunities for teaching different courses," and "There was more course variety for students." There was strongest disagreement both years with "The learning pace was more leisurely," and "Students had more time to get into the subject matter."

Semester system items

Of the 19 statements relating to the semester system, 6 show differences at $p < .01$ and 2 at $p < .05$. In most cases in this section, where significant differences occurred, 1982 mean responses moved toward the neutral neither agree nor disagree category. Mean scores ranged from 3.86 to 2.27, a more limited range than in the other sections. Highest mean scores were found for the question "There is more time to assimilate classroom material." Most disagreement was found for the "Students are better able to enroll in classes they need." Neither of these items yielded significantly different mean scores between 1981 and 1982.

For six of the items with significant differences between years there was some agreement with the item each year. Those items were:

1. Registration is less complicated.
2. Class sizes have increased.
3. There is a more leisurely learning pace.
4. Faculty expend less energy in introducing and ending courses.
5. Faculty have more time to pursue their careers in a manner satisfacory to them.
6. There is more time for faculty to explore ideas with other faculty and with students.

On "The quality of advising has improved" faculty responded just above the neutral, neither agree nor disagree, response in 1981 and just below in 1982.

They disagreed, but disagreed less, in 1982 with the items "Laboratory and studio facilities are less crowded," and "It is easier for students to include a minor or double major in their programs."

Transition items

Among the items relating to the transition, three had significant mean differences, one at $p < .01$ and two at $p < .05$. Again the 1982 responses moved closer to the neither agree nor disagree response. The range of mean scores was 2.36 to 4.29. There was fairly strong faculty agreement

with six of the eight items each year with strongest agreement both years on the item "A great deal of time and energy has been expended by faculty to effect this change," and next highest agreement, with a significant difference between years, on "Extensive time for course preparation has been required," ($p < .05$).

Faculty disagreed but disagreed less in 1982 with the items "Overall students are glad ISU changed to the semester system," and "The transition to the semester system has gone smoothly for students."

Academic environment items

Of the 32 items related to the general academic environment, significant differences were found for 5 items at $p < .01$ and 6 at $p < .05$. Again responses in 1982 moved closer to neither agree nor disagree on 8 out of these 11 items.

Mean responses on the items in this section ranged from 4.19 to 2.22 with highest agreement on differences between years ($p < .05$) for the item "Students do a lot of last minute cramming" and highest disagreement on the item "Classes are taught so students can learn at their own pace" ($p < .05$).

Agreement was found both years with significant differences between the two years on the items "A lot of reading is expected in most courses" ($p < .01$); "It is easy

to pass most courses at ISU" ($p < .01$); and "Students like the current learning environment at ISU" ($p < .05$). Disagreement occurred both years on "Class discussions are usually vigorous and intense" ($p < .05$); "The quality of laboratory equipment is good" ($p < .01$); "Students are given too many tests" ($p < .05$); and "Instructors get to know their students quite well ($p < .01$).

On two other items, responses shifted from one year to the next. These were from agreement in 1981 to disagreement in 1982 ($p < .01$) on "The learning experience is too fragmented" and from disagreement to agreement ($p < .05$) on "Group projects are encouraged in class."

Analysis of Variance

For each of the 10 factors where significant differences were found between 1981 and 1982, an analysis of variance was computed with each of the 13 independent variables. A Tukey B test was run where there was a significant F and more than 2 levels of the independent variable.

Of the 130 ANOVAs, 19 were significant--12 at $p < .01$ and 7 at $p < .05$. Table 20 identifies the significant ANOVAs, and Tables 21 to 28 detail the significant result-

TABLE 20. Summary of Significant ANOVAs: Ten Factors by Thirteen Independent Variables

	Independent					
Factors	College	Rank	Type of Appt	Sex	Years at ISU	Years at Other Inst
QUARTER:						
Instructional Advantages					X	
Achievement						
SEMESTER:						
Nonteaching Time				X		
Administrative Advantages						
Easier Planning					X	
TRANSITION:						
Student Reaction						
ACADEMIC ENVIRONMENT:						
Challenge						
Class Interaction			X		X	X
Attitude toward Instruction			X			
Fragmentation	X			X		X

Note: Each X represents analysis in which the test was significant at $p < .05$ or $p < .01$.

Variables						
Vote?	Vote Direction	Teach Load	Res Load	Advis Load	Exten Load	Curric Comm
X	X					
X						
		X			X	
	X					
	X					
	X					
	X					
	X					

Overall, faculty disagreed that there were more instructional advantages for the quarter system in 1981 and disagreed less in 1982. As noted in Table 21, those working five years or less shifted positions less, though in a positive direction, than those working more than five years ($p < .01$). Likewise, faculty who participated in the vote on the change shifted positions positively but significantly less on instructional advantages items ($p < .01$) than those who did not vote. Those who voted for the semester system disagreed more strongly in 1982 that there were instructional advantages to the quarter system.

TABLE 21. ANOVA I: Quarter Instructional Advantages By Three Significant Independent Variables

	Quarter Instructional Advantages			
Independent Variables	N	Mean	S.D.	F
Working Years at ISU				
Five and Under	116	0.2345	0.6366	9.447**
More Than Five	329	0.2551	0.5776	
Voting Incidence				
Did Vote	340	0.0415	0.5786	9.617**
Did Not Vote	89	0.2551	0.5776	
Direction of Vote				
For Semester	196	-0.0051	0.5959	5.005**
For Quarter	141	0.1326	0.4991	

**Significant at $p < .01$.

On the Nonteaching Time factor (see Table 22), faculty overall reported having less time for nonteaching activities in 1982 after experiencing the semester system than they anticipated they would have prior to the change (spring 1981). Mean scores were 3.02 just above neither agree nor disagree in 1982 and 2.92 or just below neither agree nor disagree in 1982. On the Nonteaching Time factor, there was a significant mean difference ($p < .05$) between men and women, women shifting to more disagreement on this factor than men. Those who did not vote on the calendar question issue also shifted more toward disagreement than those who did vote.

TABLE 22. ANOVA II: Nonteaching Semester Time By Two Significant Independent Variables

	Nonteaching Semester Time			
Independent Variables	N	Mean	S.D.	F
Sex				
Female	99	-0.2357	0.8360	4.043*
Male	338	-0.0424	0.8426	
Voting Incidence				
Did Vote	348	-0.0383	0.8384	5.464*
Did Not Vote	90	-0.2704	0.8434	

*Significant at $p < .05$.

On the Semester Administrative Advantages factor (Table 23), faculty found more agreement that there were administrative advantages in 1981 than in 1982. Those with half-time or more or no teaching responsibilities had more agreement in 1981 than in 1982, and those with less than a half time teaching load agreed more in 1982 ($p < .01$). A Tukey B test showed a significant difference ($p < .05$) between half-time or more and less than half-time. On the extension work load variable, there was also a significant difference ($p < .01$) with all scores shifting towards less agreement in 1982, less than half-time shifting the most, then followed by half-time or more, and then those with no extension load shifting the least. The Tukey B test showed significant differences between less than half-time and no extension responsibilities. This extension difference between less than half-time and no extension responsibilities is less meaningful than other variables since most of those with no extension or less than half-time responsibilities have other part-time or full-time duties not defined by this variable but probably in teaching, research or administration.

There were significant differences ($p < .05$) on the semester Easier Planning factor and number of years at ISU. (See Table 24) Overall, faculty responded negatively to these items (towards disagree) in 1981 and less negatively

TABLE 23. ANOVA III: Semester Administrative Advantages by Two Significant Independent Variables

Independent Variables	Semester Administrative Advantages N	Mean	S.D.	F
Teaching Load				
Half-time Or More	288	-0.1858	0.6926	4.763**
Less than Half-time	115	0.0435	0.6406	
No Teaching	36	-0.1806	0.7285	
Note: Tukey B Test showed significant difference exists between Half-time or more and Less than Half-time at .05 level				
Extension Work Load				
Half-time or More	43	-0.2442	0.6846	6.045**
Less than Half-time	127	-0.2756	0.6065	
None	266	-0.0357	0.7135	
Note: Tukey B Test showed significant differences exist between Less than Half-time and None at .05 level				

**Significant at $p < .01$.

in 1982. Both those working at ISU more than five years and those who had worked at ISU five years or less responded less negatively in 1982 with the more than five years group shifting more ($p < .05$).

Under the Challenge of the Academic Environment factor (Table 25), faculty gave a mean response of 3.40 in 1981 and 3.46 in 1982 indicating more agreement the second year. Those voting for the change to semester and those voting to

TABLE 24. ANOVA IV: Easier Planning for Semester by One Significant Independent Variable

Independent Variables	Easier Planning for Semester N	Mean	S.D.	F
Working Years at ISU				
Five and Under	115	0.0029	0.6189	3.871*
More than Five	328	0.1372	0.6336	

*Significant at $p < .05$.

TABLE 25. ANOVA V: Academic Environment Challenge by One Significant Independent Variable

Independent Variables	Academic Environment Challenge N	Mean	S.D.	F
Direction Of Vote				
For Semester	196	0.1344	0.5695	4.775*
For Quarter	146	0.0046	0.5059	

*Significant at $p < .05$.

retain the quarter shifted to more agreement in 1982 with those voting for the change to semester shifting more positively ($p < .05$).

As shown in Table 26, on the Academic Environment Class Interactions Factor faculty responded somewhat negatively

TABLE 26. ANOVA VI: Academic Environment-Class Interaction by Four Significant Independent Variables

Independent Variables	Class Interaction N	Mean	S.D.	F
Appointment Type				
Tenured	304	0.0730	0.4730	8.836**
Nontenured	127	0.2378	0.6318	
Working Years at ISU				
Five and Under	117	0.2120	0.5967	4.722*
More than Five	314	0.0879	0.4989	
Years at Other Institution				
Five and Under	219	0.1735	0.5511	4.318*
More than Five	212	0.0679	0.5017	
Direction of Vote				
For Semester	194	0.2691	0.5020	44.539**
For Quarter	141	-0.0823	0.4369	

*Significant at $p < .05$.
**Significant at $p < .01$.

(mean = 2.59) in 1981 and less negatively (mean = 2.71) in 1982 ($p < .01$). Nontenured and tenured faculty shifted to a more positive position in 1982 with nontenured faculty making more of a shift ($p < .01$). Likewise those working more than five years and less than five years at Iowa State responded more positively in 1982 with those working five years and under shifting more ($p < .05$). Those working five years or less at ISU are more likely to be in the nontenured

group and thus would be expected to respond similarly. Those working five years or less and more than five years at another institution also responded more positively in 1982 than in 1981 with those working five years or less again making the greatest shift ($p < .05$). Those voting for the semester also responded more positively in 1982; however, those reporting that they voted for the quarter responded more negatively in 1982 ($p < .01$).

On the general Attitude towards Instruction factor, faculty were slightly positive 3.25 in 1981 and less so 3.19 in 1982. (See Table 27.)

As indicated in Table 27, tenured faculty shifted more negatively or towards a more neutral position in 1982 while nontenured faculty responded more positively about students' attitude towards instruction ($p < .05$).

Both those voting for the semester and those voting for the quarter shifted in a negative way or toward a more neutral position in 1982 with those voting for the quarter shifting more ($p < .01$).

Looking at Fragmentation (Table 28), one finds a mean of 3.25 in 1981 and 3.18 in 1982, indicating a perception of less fragmentation for students in 1982. There was an overall difference ($p < .01$) between colleges with a difference as shown by the Tukey B test between Agriculture and Design, Agriculture and Sciences and Humanities,

TABLE 27. ANOVA VII: Academic Environment-Attitude Toward Instruction by Two Significant Independent Variables

	Attitude towards Instruction			
Independent Variables	N	Mean	S.D.	F
Appointment Type				
Tenured	311	-0.1029	0.5572	4.738*
Nontenured	138	0.0217	0.5656	
Direction of Vote				
For Semester	194	-0.0017	0.5733	11.370**
For Quarter	147	-0.2063	0.5297	

*Significant at $p < .05$.
**Significant at $p < .01$.

Engineering and Design, and Engineering and Sciences and Humanities at $p < .05$.

Agriculture shifted to a finding of more fragmentation in 1982 as did Engineering with Home Economics, Veterinary Medicine, Education, Sciences and Humanities and Design shifting to a report of less fragmentation the second year, Home Economics shifting the least and Design shifting the most.

Men and women both found less fragmentation in 1982 with women shifting more ($p < .01$). Those voting for the semester also found less fragmentation in 1982; however,

TABLE 28. ANOVA VIII: Academic Environment-Fragmentation by Four Significant Independent Variables

Independent Variables	Fragmentation N	Mean	S.D.	F
College				
Agriculture	98	0.0561	1.2011	7.228**
Design	18	-0.7500	0.9115	
Education	41	-0.4634	0.8688	
Engineering	62	0.1210	1.2567	
Home Economics	39	-0.2821	1.0374	
Science & Humanities	160	-0.6406	0.9045	
Veterinary Medicine	26	-0.4615	0.9584	
Note: Tukey B Test showed significant difference between Agriculture and Design, Agriculture and Sciences and Humanities, Engineering and Design and Engineering and Sciences and Humanities at the .05 level.				
Sex				
Female	97	-0.5155	0.9277	3.988*
Male	342	-0.2661	1.1272	
Years at Other Institution				
Five and Under	227	-0.4956	1.1091	11.536**
More than Five	217	-0.1498	2.0328	
Direction of Vote				
For Semester	198	-0.8662	0.8207	148.521**
For Quarter	149	0.3557	1.0467	

*Significant at $p < .05$.
**Significant at $p < .01$.

those voting to retain the quarter system reported more fragmentation in 1982 ($p < .01$, $F = 148.52$) than in 1981.

Pearson Product Moment Correlation

A correlation was computed to see how the dependent variables were correlated and to determine the amount of relationship of scores between year 1 and year 2. factor scores in each of the two years.

Correlation coefficients are shown in Table 29
All but the Fragmentation factor were highly significant ($p < .01$).

TABLE 29. Correlation Coefficients on Factors 1981 - 1982

Factors	Coefficients
Quarter	
1. Instructional Advantages	0.5590 **
2. Variety	0.4496 **
3. Achievement	0.3066 **
Semester	
4. Time Nonteaching	0.5852 **
5. Time Teaching	0.5921 **
6. Administrative Advantages	0.5845 **
7. Improved Service	0.5984 **
8. Easier Planning	0.5430 **
Transition	
9. Faculty Responsibilities	0.5184 **
10. Student Reaction	0.5311 **
Academic Environment	
11. Challenge	0.5850 **
12. Class Interactions	0.4512 **
13. Attitude toward Instruction	0.4280 **
14. Fragmentation	0.0943 *
15. Instructor Sensitivity	0.4724 **

*Significant at $p < .05$.
**Significant at $p < .01$.

DISCUSSION, RECOMMENDATIONS AND CONCLUSIONS

Summary and Discussion of Findings

T tests

A review of the data from this study indicates that the calendar change implemented in the fall of 1981 at Iowa State University appears to have been effected quite smoothly.

For the most part, even where significant differences were found between years, the shift was minimal. Significant differences between the 1981 and 1982 mean factor scores occurred on 10 of the 15 factors, but on 7 of these responses shifted closer to the neutral, neither agree nor disagree, response the second year.

The Fragmentation factor, however, yielded one of two changes from a positive to negative mean response from year 1 to year 2. Faculty reported agreement during the last year of the quarter calendar in spring 1981 that the learning environment was fragmented and disagreed with the same factor during spring 1982 several months after the change to the semester program. This factor was also the only one where the correlation between 1981 and 1982 mean responses was not highly significant.

One of the issues of interest to faculty in considering the quarter/semester calendar change was the impact on their

use of time. Would the semester system provide more time for research and writing, for discussing ideas with other faculty and students and for pursuing their own careers in a satisfactory manner? These issues were included under the Nonteaching Time factor. Faculty agreed, as shown by their responses to the 1981 questionnaire, that they felt there would be more time for nonteaching activity under a semester calendar. In spring 1982, however, after several months on the new calendar, they disagreed that there was more nonteaching time under the semester system. It is not clear at this time whether the lack of more time for these activities occurred as a result of the newness of this calendar and the adjustments that needed to be made the first year. It will be interesting to see how responses to this factor change over time. After five years will faculty have found ways to organize their schedules so as to optimize the time for their nonteaching activities? Is this really one of the advantages of a semester calendar? While finding less time for nonteaching activities than expected in year 2, faculty do report agreement on the time necessary both years to bring about the calendar change and to develop a viable program under the semester system. Thus it might be expected that by the end of year 5 the expectation of more nonteaching time will be fulfilled.

The Challenge factor under the general academic environment section encompassed the intellectual challenge found at Iowa State along with the extensive reading and outside preparation expected. Faculty agreed that the academic environment was challenging in both 1981 and 1982 with stronger agreement in 1982. This was the only shift from positive to more positive and one that did not follow the 1982 trend of shifting toward a more neutral response.

Faculty disagreed both years that the quarter system had such instructional advantages as easier class preparation and course organization for faculty; better opportunities for evaluation, spacing of exams and coverage of content; more time for students to know classmates and cover the subject matter; and textbooks that fit the course outline better.

Faculty also disagreed each year that the semester system provided opportunities for easier planning such as students being better able to enroll in courses they need, finding less crowded laboratory and studio facilities, and including a minor or double major. They disagreed (also both years) that the transition was easy for students and the students were happy about the change. They also disagreed with statements under the Class Interactions factor that discussions were vigorous and intense, that students have strong communication skills, that classes are

taught so students can learn at their own pace and that instructors get to know students well and encourage group projects. On each of these last three factors where disagreement occurred, there was less disagreement in 1982.

Faculty agreed both years ($p < .01$) with the Administrative Advantages (less cost and less complicated registration) but agreed less in 1982. They also agreed both years, but less in 1982, that students have a positive attitude toward instruction. This included students having a stronger desire to learn and finding excellent instructors at ISU with course goals clearly explained.

There were five factors where no significant differences occurred. These included:

1. Variety (quarter system)
2. Teaching Time (semester system)
3. Improved Services (semester system)
4. Faculty Responsibilities (transition)
5. Instructor Sensitivity (academic environment)

The Variety factor included more opportunities for faculty to teach and for students to take different courses and the ease of changing from one major to another under the quarter system. Faculty agreed both years on quarter variety. They also agreed both years with the positive aspects of teaching time under the semester system. These included a more leisurely learning pace with instructors

having more time for class preparation and students more time to assimilate the material. It would appear from responses to the Teaching and Nonteaching factors that any excess time during year 2 went into teaching rather than nonteaching activities.

Faculty disagreed slightly each year with Improved Services under the semester system. This factor included increased availability of advisors and improved quality of advising, greater use of library resources and stronger departmental clubs. Strongest agreement occurred on the transition factor, Faculty Responsibilities. This factor included the time and energy and cooperation between departments needed to effect the calendar change as well as the extensive course preparation that was necessary.

On the Instructor Sensitivity factor, faculty agreed that instructional staff are sensitive to student needs and go out of their way to help students. It would be interesting to compare faculty responses to those of students on this factor.

Near the end of the first year, faculty were still feeling the effects of the implementation of the change. Comparisons of year 1 and year 2 responses with those from year 5 will provide another dimension of faculty perceptions of the learning environment under the quarter and semester calendars.

ANOVAs

The largest number of significant differences on the ANOVAs were found between faculty who voted for the change to the semester system and those who voted to retain the quarter system than on any other independent variable. As would be expected, those who voted to retain the quarter calendar saw the change more negatively than those who had voted for the semester plan. Those who voted for the semester system found fewer instructional advantages to the quarter system than those who had voted to retain that system.

Those voting for the change made more of a positive shift in 1982 on the Challenge factor than those voting against the change. On the Class Interaction factor, those voting for the semester responded more positively in 1982 than in 1981 while those voting for the quarter responded more negatively in 1982. On Attitude toward Instructor, while the response was positive, the shift for both groups was in a less positive direction with those voting against the change shifting more.

Some significant differences occurred depending on whether the faculty member voted or did not vote at all on the change issue. Some who did not vote may not have been on the faculty at Iowa State at the time. On the Instructional Advantages quarter factor, faculty who voted

shifted positions positively but less so than those who did not vote. On Nonteaching Time, one of the semester factors, faculty found less time for nonteaching activities in 1982, but those who did not vote found less time than those who did. Perhaps those who did not vote were not as organized and found less time for other activities as well.

The number of years at ISU variable yielded different responses on the Instructional Advantages, Easier Planning and Class Interaction factors. Faculty generally disagreed that there were more Instructional Advantages to the quarter system, but those working at ISU five years or more shifted toward a more neutral position in 1982 than those working at ISU five years or less. On the Easier Planning for the Semester factor, responses were negative but less negative in 1982 with the more than five years group again shifting to a more neutral position. The same trend appeared on the Class Interactions factors with more positive responses in 1982 and the greater shift in the more than five years group. Likewise, on this same factor the tenured group responded similarly to the more than five years at ISU group, and the nontenured faculty's responses were similar to those at ISU for five years or less. The tenured faculty shifted to a more negative position on Attitude Toward Instruction and the nontenured faculty toward a more positive position in 1982.

The only college differences occurred on the Fragmentation factor which, as mentioned above, was the only factor where the correlation between 1981 and 1982 was not highly significant and where the mean response for 1981 was positive and the 1982 response was negative. This may be due to the college differences in response changes. Significant differences on this factor were found between Agriculture and Design, Agriculture and Sciences and Humanities, Engineering and Design, and Engineering and Sciences and Humanities. Faculty in the Colleges of Agriculture and Engineering reported finding more fragmentation the second year with Home Economics, Veterinary Medicine, Education, Sciences and Humanities, and Design reporting less.

Thus the ANOVA findings do show some differences between groups of faculty. Studying and understanding these differences in perceptions before and after change takes place is important in the decision making process and may lead eventually to being able to predict responses and changes in responses and to predicting more easily under what conditions which changes would be acceptable to faculty. This could then lead to a less stressful and more efficient and effective change process.

Academic Change Models

Studying the literature on academic change was helpful in understanding the shift to a semester calendar at Iowa State University.

With the exception of trialability, the ISU calendar change met five of Levine's six criteria for a successful change plan (1980).

1. Relative advantage. ISU faculty found the new (semester) plan better than the old (quarter) plan.
2. Compatibility. The semester program seemed to fit into the values and traditions of the university.
3. Complexity. The semester plan was relatively easy to understand and explain, particularly since many of the faculty had had experience as students or faculty with the semester system.
4. Trialability. The semester system could not really be tried out. Faculty seemed to understand that once changed, the calendar would not be easily changed again. No promises were made to try it out.
5. Diversibility. The new plan did need to be adopted in total; yet, some flexibility remained

in planning exact dates for starting and stopping and for vacation and breaks.

6. Communicability. The new calendar could be explained fairly easily particularly since summer school was not a big issue during the discussion and voting stages and since the discussion just prior to the vote centered on just two calendars.

Several researchers provide a framework for explaining change. Conrad (1978) discusses several stages that occur during academic change. In the social structure stage he described internal and external forces threatening the status quo and becoming the underlying sources of change. At ISU the external forces of the 1980s included the threat of declining enrollment and need for retrenchment, the economic recession as well as the desire to join the majority of universities in Iowa and nationwide who are using an early semester calendar. Internally, change discussions had taken place for a number of years and with fewer faculty changing jobs and more working a longer number of years in their jobs, they may have felt more receptivity to an internal change. Furthermore, with the expansion of the humanities programs at Iowa State, more faculty have come from undergraduate and graduate programs using a semester calendar (P. E. Morgan, L. M. Thompson, personal communication, April 1983). While Conrad refers to both the

external and internal forces impacting on change, Hefferlin (1969) and Nordvall (1982) stated that forces of change are usually external.

Considering the second stage, conflict and interest group formation, one finds little well-organized opposition to the status quo or the change. If it is true that athletic department staff wished to promote the change actively, they were effectively discouraged from doing so as most of the discussion about the calendar and athletics seemed to have been based on personal comments by individual faculty rather than an organized effort. There seemed to have been no organized pressure from the Board of Regents or from alumni; however, individual alumni expressed some concern about the change (D. L. Lendt, personal communication, May 1983).

As Conrad described in his administrative intervention stage, the ISU central administration did provide the mechanics and support for full discussion and a faculty decision. President Parks made it quite clear that the decision was up to the faculty and that he would carry their recommendations to the Iowa Board of Regents.

Of the change models described by Nordvall, 1982, the ISU calendar change seemed to fit most closely into a collegial model, rather than the political, bureaucratic or atomistic. There was a structure for making the decisions,

but it was made by the faculty with little obvious persuasion from administrators. Powerblocks did not develop to any extent, and individual units did not appear to vote on their own or attempt to go off in their own directions. Lindquist's collaborative model (1978) fits the ISU decision quite well. This change model is described as one where problems are worked out through rational discussions as well as discussions of emotional concern. The ISU calendar discussions could well be characterized as having both rational and emotional components.

The discussions of the proposed change were planned using traditional dialogues with a discussion leader and an open forum. Nordvall (1982) recommended an institutional research program to help an institution explore the need to change. While this office exists at ISU and is used for planning, it was not used to study the need to change the calendar. Faculty at Iowa State and elsewhere tend to be rather suspicious of data gathered and planning carried out by offices of institutional research.

Agreement was not unanimous. Indeed, a 59.2% majority was barely a comfortable margin to justify a change of such magnitude. This was the argument used by students in opposing the shift as they complained to the Regents that the vote was in their view hardly a mandate.

In the policy recommendations stage President Parks did, with some opposition, succeed in presenting the faculty decision effectively to the Regents so that, after voting against the change initially, the Regents did indeed support it. In the final policy-making stage, the AUCC monitored the process as the SSSC led by Vice President Christensen developed policies to implement the calendar change.

Receptivity to change is generally thought to be important to the acceptance of a change proposal by the faculty (Conrad, 1978; Nordvall, 1982 Bruenig, 1980). At Iowa State in 1977-78, when most of the faculty discussions took place, the groundwork for considering a shift in the calendar had been laid by the record of previous discussions over the years, the work done by the Learning Environment Improvement Committee (LEIC) and by the various committees. There was certainly some dissatisfaction with the status quo although this was balanced by some concern from alumni as well as from faculty and students about protecting Iowa State traditions including the quarter calendar itself and VEISHA, the annual spring festival.

Further Observations and Comments about the Iowa State Calendar Change

While the learning environment was the major factor considered by the faculty, calendar change discussions

included planning around holidays, the summer schedule and cost.

Role of the faculty

Throughout the calendar history at Iowa State, the faculty have been involved in any changes discussed or implemented. In fact, the wishes of the faculty have been followed each time a proposal to change has been brought to a vote.

Leadership in the recent change discussions and implementation process was important. Chairpersons of committees were administrators and faculty who were well respected and visible beyond their own area of responsibility. As a group they had strong task orientations and a positive identification with Iowa State University and its mission. There were no reports of the game playing described by Astin (1976). During the time period of these discussions, there were no other major university-wide issues under discussion and no major upheavals at the college or central administrative levels.

Vacations

Planning around holidays, particularly the traditional Christmas holiday, has been important over the years at ISU and elsewhere even though they bring about vacations at times which would not ordinarily be considered. The

Christmas break occurring so soon after the beginning of winter quarter, provided an incentive for many faculty at ISU to vote to change to the semester. Several noted this in their comment section at the end of the faculty questionnaire, and this issue came up in many of the college faculty discussions (P. E. Morgan, personal communication, April 1983).

The one to three days at Thanksgiving, a few days of spring vacation and a few other single days that have been planned in most academic calendars had less impact.

Summer schedule

Summer session schedules have varied, and this is still an issue at Iowa State University (E. C. Lewis, personal communication, May 1982), where the summer calendar continues to be negotiated to meet the needs of faculty and students. There is certainly less flexibility in a semester summer session which requires more contact hours than the quarter system. Students take fewer classes, and fewer faculty work more days to provide the courses. Thus fewer faculty are employed in the summer, and those who teach have less flexibility for a summer vacation and other activities than under the quarter system. Initially ISU planned to have a break of four weeks between the end of summer session and the beginning of fall classes (E. C. Lewis, personal

communication, 1983). This has been difficult to accomplish.

Cost

Administrative costs were expected to be less due to fewer registrations and recording of grades. The relative costs of each calendar were discussed, but cost did not become a major issue in the calendar discussions.

Studies on Academic Change and Its Impact on Faculty

Much has been written on academic change, but few studies of changes taking place and their impact on faculty and the academic program appear in the literature. Astin's study (1976) of institutional change at 19 colleges and universities was important in that it compared change efforts at a variety of institutions and described the process taking place. He and his colleagues were able to analyze the change process at each institution and to suggest intervention strategies that might have facilitated the occurrence of the change which was planned.

The data for the current study show that this process can be studied, and the 73 percent response each year from the faculty which came without much persuasion and no coercion indicate the willingness of faculty to be involved in this kind of effort. Faculty and administrators by and

large, however, do not study themselves. They plan, change programs, make procedural and structural changes, but rarely do they study them.

Institutional change traditionally has involved and incorporated political pressures within the institution. Thus, if there is regular systematic study of the change process, then those interest groups within the institution which rely upon being able to exert political pressure risk losing if changes are based on careful study, particularly if their goals differ from the goals of the institution. As mentioned previously, faculty are often suspicious of their own institutional research offices, not to speak of outside researchers who may come in. Even faculty who do research do not always trust the research process when it comes to institutional change.

At the time of the calendar change, there was also discussion of adding a plus and minus grading system for undergraduates at Iowa State. In order to study the impact of such change and not confound it with the change to the semester calendar, it was suggested that implementation of the plus-minus grading be delayed and its impact studied further. Those who had fought for approval insisted against many reasoned arguments that plus-minus grading begin fall semester 1981. It was implemented and to date no studies have been done to evaluate it. This change may have

confounded the results of the student study on the calendar change although the impact of plus-minus grading on faculty has been fairly minimal.

Recommendations

There are several recommendations that can be made based on the literature review, chronology of events surrounding the calendar change and the findings of this study.

It is recommended that Iowa State build into the change process studies on the effects of such change. This should be done routinely and should become part of the planning process.

The study of the process of the ISU calendar change could incorporate a longer longitudinal perspective; thus, an additional study of the same subject at a later time would make it possible to draw conclusions about the long-term stability of the measurements. There is no reason to believe that dramatic changes would occur, but it may be that the longer time faculty are away from the change, the less strongly they hold their opinions, and responses may then show more marked regression toward the mean.

It would be possible also to analyze the faculty comments at the end of the questionnaire each year for content as well as emotional level. Reasons for high and

low responses from particular subgroups could be analyzed. Studies could be done at institutions undergoing the same kind of change; e.g., the change to the semester calendar at the Des Moines Area Community College is being studied. It might be useful to compare faculty responses from Iowa State, a large, broad-based four-year research institution with the smaller, two-year community college.

Calendar change studies could include research on stress in students and faculty. A study of the impact of the calendar on the surrounding community would provide useful information also.

Conclusions

In conclusion, this study documented a fairly long change and implementation process along with a review of changes that have occurred at Iowa State University from a faculty perspective. It provided a picture of an effective, well-planned and well-accepted decision from a committee's recommendation that a study of the learning environment take place to a recommendation of further calendar review. It included a study of the process used to bring about a decision, a decision about who would make the decision, the vote, the confirmation of the vote, the process to effect the change and the various groups involved in the change to a study of the differences between faculty stated

perceptions about expected change and the change after it had taken place.

If, as Clark Kerr (1963) states, more is unknown than known about academic change, it is clear from this study that more is known than was known before about academic change and the role and reactions of faculty. Since it is generally agreed that faculty are the most important group in the academic change process, then it is certainly valuable to try to understand this group and its subgroups in order to make the change process more effective.

SUMMARY

This study represents the first phase of a projected five-year institutional research project at Iowa State University. It was designed to assess the change in stated faculty perceptions of the learning environment between spring 1981 just prior to a change from a quarter to semester calendar and spring 1982, one semester and a half after the change had taken place.

Faculty involvement in decisions on shifts in the calendar was emphasized in a summary of calendar changes that occurred since the late 1800s and in a chronology of events taking place just prior to the change and during the implementation of the new calendar. Research observations were compared to the literature on academic change.

The sample for the study, 903, included half the faculty from each rank in each college. Questionnaires were sent to these faculty in April 1981 and to those 751 who were still on staff in 1982. There was a 73% response rate each year.

A factor analysis on the items asking respondents to indicate their perceptions about the quarter system, the semester system, transition and general academic environment yielded 15 factors. These factors were labeled as follows:

1. Instructional Advantages
2. Variety

3. Achievement
4. Nonteaching Time
5. Teaching Time
6. Administrative Advantages
7. Improved Services
8. Easier Planning
9. Faculty Responsibility
10. Student Reaction
11. Challenge
12. Class Interactions
13. Attitude toward Instruction
14. Fragmentation
15. Instructor Sensitivity

Reliability was tested by Cronbach's alpha and found to be similar from year 1 to year 2, over .50 for all but one factor.

Data from questionnaires sent to the faculty in April 1981 and April 1982 were analyzed using t tests to assess differences between years on 15 factor variables. Significant differences between years in most cases showed a shift toward the mean or more neutral response rather than a change in direction.

For the most part, even where significant differences were found between years, the shift was minimal. Significant differences between the 1981 and 1982 mean

factor scores occurred on 10 of the 15 factors, but on 7 of these responses shifted closer to the neutral, neither agree nor disagree, response the second year.

The Fragmentation factor, however, yielded one of two changes from a positive to negative mean response from year 1 to year 2. Faculty reported agreement during the last year of the quarter calendar in spring 1981 that the learning environment was fragmented and disagreed with the same factor during spring 1982 several months after the change to the semester program. This factor was also the only one where the correlation between 1981 and 1982 mean responses was not highly significant.

One of the issues of interest to faculty in considering the quarter/semester calendar change was the impact on their use of time. Would the semester system provide more time for research and writing, for discussing ideas with other faculty and students and for pursuing their own careers in a satisfactory manner? These issues were included under the Nonteaching Time factor. Faculty agreed, as shown by their responses to the 1981 questionnaire, that they felt there would be more time for nonteaching activity under a semester calendar. In spring 1982, however, after several months on the new calendar, they disagreed that there was more nonteaching time under the semester system. It is not clear at this time whether the lack of more time for these

activities occurred as a result of the newness of this calendar and the adjustments that needed to be made the first year. While finding less time for nonteaching activities than expected in year 2, faculty did report agreement on the time necessary both years to bring about the calendar change and a viable program under the semester system. Thus it might be expected that by the end of year 5 the expectation of more nonteaching time will be fulfilled.

The Challenge factor under the general academic environment section encompassed the intellectual challenge found at Iowa State along with the extensive reading and outside preparation expected. Faculty agreed that the academic environment was challenging in both 1981 and 1982 with stronger agreement in 1982. This was the only shift from positive to more positive and one that did not follow the 1982 trend of shifting toward a more neutral response.

Faculty disagreed both years that the quarter system had such instructional advantages as easier class preparation and course organization for faculty; better opportunities for evaluation, spacing of exams and coverage of content; more time for students to know classmates and cover the subject matter; and textbooks that fit the course outline better.

Faculty also disagreed each year that the semester system provided opportunities for easier planning such as

students being better able to enroll in courses they need, finding less crowded laboratory and studio facilities, and including a minor or double major. They disagreed (also both years) that the transition was easy for students and the students were happy about the change. They also disagreed with statements under the Class Interactions factor that discussions were vigorous and intense, that students have strong communication skills, that classes are taught so students can learn at their own pace and that instructors get to know students well and encourage group projects. On each of these last three factors where disagreement occurred, there was less disagreement in 1982.

Faculty agreed both years ($p < .01$) with the Administrative Advantages (less cost and less complicated registration) but agreed less in 1982. They also agreed both years, but less in 1982, that students have a positive attitude toward instruction. This included students having a stronger desire to learn and finding excellent instructors at ISU with course goals clearly explained.

There were five factors where no significant differences occurred. These included:

1. Variety (quarter system)
2. Teaching Time (semester system)
3. Improved Services (semester system)
4. Faculty Responsibilities (transition)

5. Instructor Sensitivity (academic environment)

The Variety factor included more opportunities for faculty to teach and for students to take different courses and the ease of changing from one major to another under the quarter system. Faculty agreed both years on quarter variety. They also agreed both years with the positive aspects of teaching time under the semester system. These included a more leisurely learning pace with instructors having more time for class preparation and students more time to assimilate the material. It would appear that any excess time during year 2 went into teaching rather than nonteaching activities.

Faculty disagreed slightly each year that there would be improved services to students under the semester system. This factor included increased availability of advisors and improved quality of advising, greater use of library resources and stronger departmental clubs. Strongest agreement occurred on the transition factor, Faculty Responsibilities. This factor included the time and energy and cooperation between departments needed to effect the calendar change as well as the extensive course preparation that was necessary.

On the Instructor Sensitivity factor, faculty agreed that instructional staff are sensitive to student needs and go out of their way to help students.

On the ten factors where significant differences occurred, ANOVAs were computed between the mean difference score (1981 minus 1982) and independent variables which included: college, rank, type of appointment, sex, years at ISU, years at other institutions, voting incidence, direction of vote, faculty assignment and curriculum committee participation. Whether faculty voted for or against the change produced the largest number of significant differences. Faculty who voted against the change in 1978 responded more negatively to the change and the learning environment as they anticipated it would be under the semester system (1981 response before the change) and as they reported finding it in spring 1982.

Based on this study it is recommended that studies on the effects of academic change become part of the planning and implementation process as changes are considered at Iowa State University. Further study of the ISU calendar change could incorporate a longer longitudinal perspective and provide information on the stability of the measurements.

Studies of the change process and the impact of academic change on faculty and on their perceptions of the learning environment are important, particularly because of the key role faculty play in planning and implementing institutional changes. A better understanding of the change process and the involvement of faculty is expected to

facilitate the academic change process and make it more effective and efficient.

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APPENDIX A -- SEMESTER CALENDARS FOR 1981-82 AND 1982-83

ACADEMIC CALENDAR
1981-1982

FALL SEMESTER 1981

Registration		Monday, August 24
Class work begins	7 a.m.	Wednesday, August 26
University Holiday offices closed		Monday, September 7
Homecoming - no calsses dismissed		Saturday, October 17
Classes recessed	10 p.m.	Tuesday, November 27
University Holidays, offices closed		Thursday, Friday November 26 and 27
Class work resumes	7 a.m.	Monday, November 30
Graduation		Saturday, December 19
University Holidays,y offices closed		Thursday, Friday December 24 and 25
University Holiday, offices closed		Friday, January 1

SPRING SEMESTER 1982

Registration for new and reentering students		Monday, January 11
Class work begins		Wednesday, January 13
Spring recess begins	10 p.m.	Friday, March 12
Class work resumes	7 a.m.	Monday, March 22
University Holiday, offices closed		Monday, April 12
Veishea, classes dismissed		Thursday-Saturday April 29-May 1
Graduation		Saturday, May 15
University Holiday, offices closed		Monday, May 31

SUMMER SESSION 1982

Registration	Tuesday, June 1
Class work begins	Wednesday, June 2
University Holiday, offices closed	Monday, July 5
Graduation	Saturday, July 24

ACADEMIC CALENDAR
1982-1983

FALL SEMESTER 1982

Registration		Monday, August 23
Class work begins		Wednesday, August 25
University Holiday, offices closed		Monday, September 6
Homecoming - no classes dismissed		Saturday, October 30
Classes recessed	10 p.m.	Tuesday, November 23
University Holiday's offices closed		Thursday, Friday November 25 and 26
Class work resumes	7 a.m.	Monday, November 29
Graduation		Saturday, December 18
University Holiday, offices closed		Thursday, Friday December 23 and 24
University Holiday, offices closed		Friday, December 31

SPRING SEMESTER 1983

Registration for new and reentering students		Monday, January 10
Class work begins		Wednesday, January 12
Spring recess begins	10 p.m.	Friday, March 11
Class work resumes	7 a.m.	Monday, March 21
University Holiday, offices closed		Monday, April 4
Veishea, classes dismissed		Thursday - Saturday April 28-30
Graduation		Saturday, May 14
University Holiday, offices closed		Monday, May 30

SUMMER SESSION 1983

Registration	Tuesday, May 31
Class work begins	Wednesday, June 1
University Holiday, offices closed	Monday, July 4
Graduation	Saturday, July 23

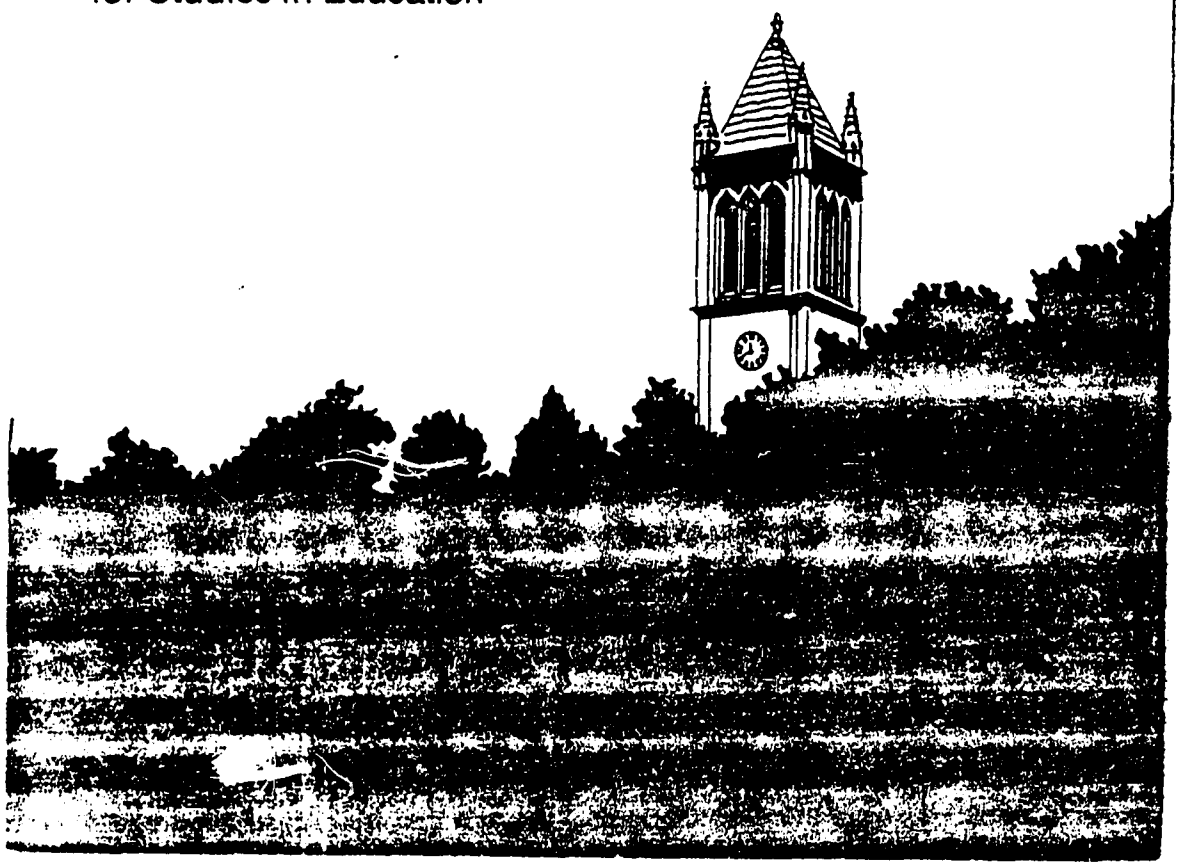
APPENDIX B -- MOORE-KELLEY STUDENT QUESTIONNAIRE, KARAS FACULTY QUESTIONNAIRE

STUDENT QUESTIONNAIRE

We are interested in what you think

QUARTER/SEMESTER

A university-wide study by
Iowa State University and Research Institute
for Studies in Education



Student Questionnaire (Continued)

Section 1

We would like your opinion about the academic environment of Iowa State University during the current academic year. There are no right or wrong answers. Use the following response categories.

Strongly Agree 5
Agree. 4
Neither Agree or Disagree. . . 3
Disagree 2
Strongly Disagree. 1

		Please circle your response				
1.	Overall, I am glad I.S.U. is switching to the semester system	5	4	3	2	1
2.	Students take too many courses during a quarter.	5	4	3	2	1
3.	My learning experience is too fragmented.	5	4	3	2	1
4.	The faculty encourage students to perform up to their capabilities.	5	4	3	2	1
5.	Class discussions are usually vigorous and intense.	5	4	3	2	1
6.	Courses at I.S.U. stress the abstract more than the concrete.	5	4	3	2	1
7.	I have developed strong communication skills.	5	4	3	2	1
8.	Students do a lot of last minute cramming.	5	4	3	2	1
9.	I have a strong desire to learn.	5	4	3	2	1
10.	The information provided by my academic advisor is accurate.	5	4	3	2	1
11.	I am behind in my assignments throughout most of the term.	5	4	3	2	1
12.	Group projects are encouraged in my classes.	5	4	3	2	1
13.	I have the opportunity to collaborate with faculty on research projects. . . .	5	4	3	2	1
14.	My classes are taught so that I can learn at my own pace.	5	4	3	2	1
15.	I generally study in my room.	5	4	3	2	1

Student Questionnaire (Continued)

Strongly Agree 5
Agree. 4
Neither Agree or Disagree. . . 3
Disagree 2
Strongly Disagree. 1

		[Please circle your response]				
16.	The preclassification system works well.	5	4	3	2	1
17.	I feel a high degree of academic pressure during a typical term.	5	4	3	2	1
18.	The quality of laboratory equipment is good.	5	4	3	2	1
19.	Most of my classes are boring.	5	4	3	2	1
20.	The I.S.U. curriculum has broadened my view of the world.	5	4	3	2	1
21.	Course goals are clearly explained. . . .	5	4	3	2	1
22.	I study very little over weekends. . . .	5	4	3	2	1
23.	There are a sufficient number of places on campus to study.	5	4	3	2	1
24.	The quality of instruction at I.S.U. is excellent.	5	4	3	2	1
25.	Tutoring is available to students at a reasonable cost.	5	4	3	2	1
26.	Too many tests are given in my courses. .	5	4	3	2	1
27.	I.S.U. courses provide an intellectual challenge	5	4	3	2	1
28.	Much reading is expected in my courses. .	5	4	3	2	1
29.	Most courses at I.S.U. require extensive out-of-class preparation.	5	4	3	2	1
30.	It is easy to pass most courses at I.S.U.	5	4	3	2	1
31.	The transition to the semester system has gone smoothly.	5	4	3	2	1

Student Questionnaire (Continued)

Section 2

For the following items, please record the number of times you have engaged in the following activities during the current school year.

1. Sat down and talked with my advisor _____ times
2. Talked with instructors after class _____ times
3. Not received a course I requested _____ times
4. Had a good conversation with students of a different ethnic background _____ times
5. Attended cultural events _____ times

Section 3

Now we would like your opinion about other aspects of the I.S.U. learning environment during the current academic year. There are no right or wrong answers. Use the following response categories.

Strongly Agree 5
Agree. 4
Neither Agree or Disagree. . . 3
Disagree 2
Strongly Disagree. 1

		Please circle your response				
1.	I like the current learning environment at I.S.U.	5	4	3	2	1
2.	Theatre, music, and the arts are important components at I.S.U.	5	4	3	2	1
3.	Instructors get to know students in their classes quite well.	5	4	3	2	1
4.	I feel free to discuss exam scores with my instructor.	5	4	3	2	1
5.	Faculty members are sensitive to students' needs.	5	4	3	2	1
6.	I socialize a lot with my friends. . . .	5	4	3	2	1
7.	In developing campus policies, student opinion counts.	5	4	3	2	1
8.	Students frequently engage in bull sessions.	5	4	3	2	1

Student Questionnaire (Continued)

Strongly Agree 5
Agree. 4
Neither Agree or Disagree. . . 3
Disagree 2
Strongly Disagree. 1

		Please circle your response				
9.	It is easy to get a group together for card games, attending a movie, and similar activities.	5	4	3	2	1
10.	Varsity athletic events generate a lot of student enthusiasm and support. . . .	5	4	3	2	1
11.	My departmental club is very active. . .	5	4	3	2	1
12.	There are many opportunities to get involved in clubs and organizations. . .	5	4	3	2	1
13.	I am glad that I came to Iowa State University.	5	4	3	2	1
14.	Students volunteer their time for community service projects.	5	4	3	2	1
15.	There are many opportunities to attend cultural events.	5	4	3	2	1
16.	If you ask, most instructors will go out of their way to help you.	5	4	3	2	1
17.	Students have the opportunity to develop intimate personal relationships.	5	4	3	2	1
18.	I have been treated unfairly at I.S.U. .	5	4	3	2	1
19.	Students know where to go when they have problems.	5	4	3	2	1
20.	There is an extensive program of intramural sports.	5	4	3	2	1
21.	Social activities usually involve the use of alcoholic beverages.	5	4	3	2	1
22.	Students seek advice from one another. .	5	4	3	2	1
23.	My advisor shows a personal interest in me.	5	4	3	2	1
24.	Students' problems are promptly resolved.	5	4	3	2	1
25.	Adequate recreational facilities on campus are available for student use. . .	5	4	3	2	1

Student Questionnaire (Continued)

Strongly Agree 5
Agree. 4
Neither Agree or Disagree. . . 3
Disagree 2
Strongly Disagree. 1

	Please circle your response				
26. Student elections are of great concern to students.	5	4	3	2	1
27. My contact with most administrators has been helpful.	5	4	3	2	1

Section 4

Iowa State University will be changing from the quarter system to the semester system in the fall of 1981. We would like to know how you think the two systems might compare at I.S.U. There are no right or wrong answers. Use the following response categories.

Strongly Agree 5
Agree. 4
Neither Agree or Disagree. . . 3
Disagree 2
Strongly Disagree. 1

Under the quarter system . . .

	Please circle your response				
1. Students tend to get better grades. . . .	5	4	3	2	1
2. Students graduate sooner.	5	4	3	2	1
3. Students have more time to get into the subject matter.	5	4	3	2	1
4. Students are more likely to drop courses.	5	4	3	2	1
5. Students get to know their classmates better.	5	4	3	2	1
6. It is easier to change from one major to another.	5	4	3	2	1
7. Final exams cover more content	5	4	3	2	1
8. There is a more leisurely learning pace .	5	4	3	2	1
9. There is a better use of textbooks. . . .	5	4	3	2	1
10. There are fewer deadlines.	5	4	3	2	1

Student Questionnaire (Continued)

Strongly Agree 5
Agree. 4
Neither Agree or Disagree. . . 3
Disagree 2
Strongly Disagree. 1

		Please circle your response				
11.	The spacing of exams is better	5	4	3	2	1
12.	There is more course variety.	5	4	3	2	1
13.	Too much information is crammed into each course.	5	4	3	2	1

Under the semester system . . .

14.	Instructors will have more time to prepare for their classes.	5	4	3	2	1
15.	Laboratory facilities will be less crowded.	5	4	3	2	1
16.	There will be more time to assimilate classroom material.	5	4	3	2	1
17.	Departmental clubs will be stronger. . .	5	4	3	2	1
18.	Registration will be less hassle.	5	4	3	2	1
19.	Class sizes will increase.	5	4	3	2	1
20.	The quality of advising will be improved.	5	4	3	2	1
21.	There will be a more leisurely learning pace.	5	4	3	2	1
22.	Students will be better able to get into the classes they need.	5	4	3	2	1
23.	It will be easier to pick up a minor or double major.	5	4	3	2	1
24.	The total cost of a year's books and supplies will go down.	5	4	3	2	1
25.	The homework load will increase.	5	4	3	2	1
26.	My G.P.A. will go down.	5	4	3	2	1
27.	My academic advisor will be more available for consultation.	5	4	3	2	1

Student Questionnaire (Continued)

Section 5

Please answer the following questions about yourself by filling in the information or by circling the letter of the appropriate category.

1. What is your age?

   _____ Years

2. What is your sex?

   a) Male
   b) Female

3. What is your classification?

   a) Freshman
   b) Sophomore
   c) Junior
   d) Senior
   e) Graduate
   f) Other

4. What is your current marital status?

   a) Single
   b) Married

5. What is your college designation?

   a) Agriculture
   b) Design
   c) Education
   d) Engineering
   e) Home Economics
   f) Sciences and Humanities
   g) Veterinary Medicine
   h) Graduate

6. What is your major(s)? _____

7. Where are you living this quarter?

   a) University residence hall
   b) University student apartments
   c) Fraternity or Sorority house
   d) Housing within walking distance of the university
   e) Housing away from the campus
   f) Other, please specify _____

   _____

8. What is your cumulative G.P.A.?

   a) Below 2.00
   b) 2.00 - 2.49
   c) 2.50 - 2.99
   d) 3.00 - 3.49
   e) 3.50 - 4.00

Student Questionnaire (Continued)

9. How would you classify yourself?

   a) Undergraduate full-time (12 or more credits/quarter)
   b) Undergraduate part-time (Less than 12 credits/quarter)
   c) Graduate full-time (9 or more credits/quarter)
   d) Graduate part-time (Less than 9 credits/quarter)
   e) Other

10. Do you work during the quarter?

    a) No
    b) Yes
       If yes, how many hours per week do you work? _____ hours

11. How many student organizations have you participated in during this current academic year?

    _____

12. Have you ever attended a college or university which was on the semester system?

    a) Yes
    b) No

13. If you are an undergraduate, are you a transfer student?

    a) Yes
    b) No

14. In a typical week, how many hours do you

    a) study . . . _____ hours
    b) party . . . _____ hours

Student Questionnaire (Continued)

9.

Are there any comments you would like to make about the learning environment at I.S.U. or about the transition to the semester system?

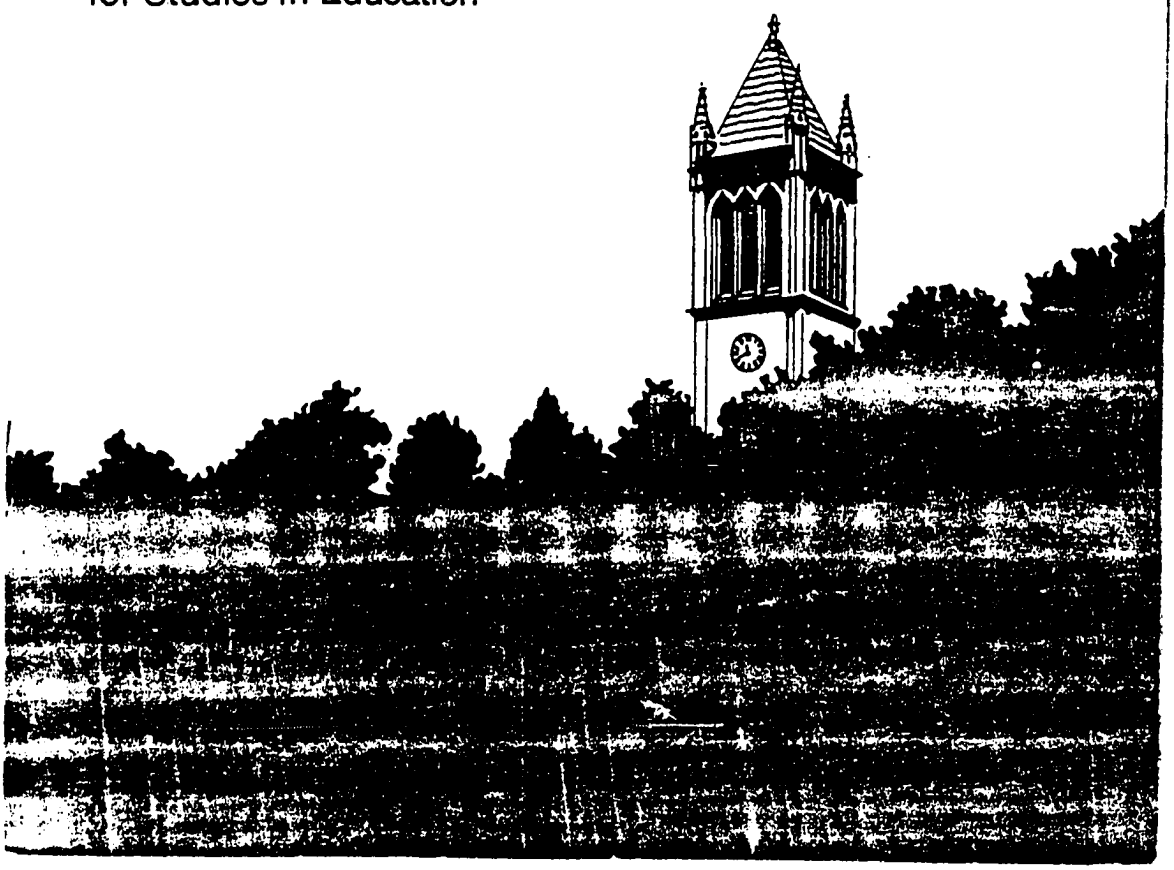
Postage for the questionnaire is prepaid, so all you need do is tape or staple it together and drop it in a mailbox.

FACULTY QUESTIONNAIRE

We are interested in what you think

QUARTER/SEMESTER

A university-wide study by
Iowa State University and Research Institute
for Studies in Education



Faculty Questionnaire (Continued)

1

Section 1

We are interested in your current perceptions of the quarter system and the semester system. The following statements about each system have been made by faculty and students at Iowa State and elsewhere. Please use the following response categories.

Strongly Agree 5
Agree 4
Neither Agree nor Disagree . . . 3
Disagree 2
Strongly Disagree 1

		Please circle your response				
Under the quarter system						
1.	There are more opportunities for teaching different courses.	5	4	3	2	1
2.	Class preparation is easier for faculty.	5	4	3	2	1
3.	Greater opportunities are available for faculty to interact with more students.	5	4	3	2	1
4.	Faculty are better able to organize their courses.	5	4	3	2	1
5.	There are better opportunities for evaluation.	5	4	3	2	1
6.	Students tend to get better grades. .	5	4	3	2	1
7.	Students graduate sooner.	5	4	3	2	1
8.	Students have more time to get into the subject matter	5	4	3	2	1
9.	Students get to know their classmates better	5	4	3	2	1
10.	It is easier for students to change from one major to another.	5	4	3	2	1
11.	Final exams cover more content. . .	5	4	3	2	1
12.	There is a more leisurely learning pace.	5	4	3	2	1
13.	Textbooks tend to fit the course outline better.	5	4	3	2	1
14.	There are fewer deadlines	5	4	3	2	1
15.	The spacing of exams is better . .	5	4	3	2	1

Faculty Questionnaire (Continued)

2

Strongly Agree 5
Agree 4
Neither Agree nor Disagree . . . 3
Disagree 2
Strongly Disagree 1

		Please circle your response				
16.	There is more course variety for students	5	4	3	2	1
17.	Too much information is crammed into each course	5	4	3	2	1
18.	Less interesting courses are over faster	5	4	3	2	1
19.	Vacations and breaks occur at more convenient times.	5	4	3	2	1

Under the semester system

20.	Instructors will have more time to prepare for their classes.	5	4	3	2	1
21.	Laboratory and studio facilities will be less crowded.	5	4	3	2	1
22.	There will be more time for students to assimilate classroom material. .	5	4	3	2	1
23.	Departmental clubs will be stronger.	5	4	3	2	1
24.	Registration will be less complicated.	5	4	3	2	1
25.	Class sizes will increase.	5	4	3	2	1
26.	The quality of advising will improve.	5	4	3	2	1
27.	There will be a more leisurely learning pace.	5	4	3	2	1
28.	Students will be better able to enroll in classes they need.	5	4	3	2	1
29.	It will be easier for students to include a minor or double major in their programs.	5	4	3	2	1
30.	The total cost of a year's books and supplies will decrease.	5	4	3	2	1
31.	The homework load will increase . . .	5	4	3	2	1

Faculty Questionnaire (Continued)

Strongly Agree 5
Agree 4
Neither Agree nor Disagree . . . 3
Disagree 2
Strongly Disagree 1

		Please circle your response				
32.	Academic advisors will be more available to students.	5	4	3	2	1
33.	Library resources (personnel, materials, and space) will be used more fully. . .	5	4	3	2	1
34.	Faculty will expend less energy in introducing and ending courses.	5	4	3	2	1
35.	Time for research and writing will increase.	5	4	3	2	1
36.	Faculty will have more time to pursue their careers in a manner satisfactory to them.	5	4	3	2	1
37.	There will be more time for faculty to explore and discuss ideas with other faculty and with students.	5	4	3	2	1
38.	There will be less administrative cost.	5	4	3	2	1

During the transition

39.	A great deal of time and energy has been expended by faculty to effect this change.	5	4	3	2	1
40.	Extensive cooperation among faculty within and between departments has been necessary.	5	4	3	2	1
41.	Extensive time for course preparation has been required. . . .	5	4	3	2	1
42.	Departmental course requirements have been re-evaluated by faculty. . . .	5	4	3	2	1
43.	Explanatory materials provided by the university, colleges and departments have facilitated the change.	5	4	3	2	1

Faculty Questionnaire (Continued)

4

Strongly Agree 5
Agree 4
Neither Agree nor Disagree . . . 3
Disagree 2
Strongly Disagree 1

		Please circle your response				
44.	Students have had a lot of concern about the change.	5	4	3	2	1
45.	Overall students are glad ISU is switching to the semester system. . .	5	4	3	2	1
46.	The transition to the semester system has gone smoothly for students.	5	4	3	2	1

Section 2

We would like your opinion about the academic environment <u>for students</u> at Iowa State University during the <u>current</u> academic year. Please use the following response categories.

Strongly Agree 5
Agree 4
Neither Agree nor Disagree . . . 3
Disagree 2
Strongly Disagree 1

		Please circle your response				
1.	Students take too many courses during a term.	5	4	3	2	1
2.	The learning experience is too fragmented.	5	4	3	2	1
3.	The faculty encourage students to perform up to their capabilities.	5	4	3	2	1
4.	Class discussions are usually vigorous and intense.	5	4	3	2	1
5.	Courses at ISU stress the abstract more than the concrete.	5	4	3	2	1
6.	Students at ISU have developed strong communication skills.	5	4	3	2	1
7.	Students do a lot of last minute cramming.	5	4	3	2	1
8.	Students have a strong desire to learn.	5	4	3	2	1

Faculty Questionnaire (Continued)

5

Strongly Agree 5
Agree 4
Neither Agree nor Disagree . . . 3
Disagree 2
Strongly Disagree 1

		Please circle your response				
9.	Students generally feel that information provided by academic advisors is accurate.	5	4	3	2	1
10.	Students are behind in assignments most of the time.	5	4	3	2	1
11.	Group projects are encouraged in classes.	5	4	3	2	1
12.	Students have the opportunity to collaborate with faculty on research projects.	5	4	3	2	1
13.	Classes are taught so that students can learn at their won pace.	5	4	3	2	1
14.	The preclassification system for the next term's classes works well. . . .	5	4	3	2	1
15.	Students feel a high degree of academic pressure.	5	4	3	2	1
16.	The quality of laboratory equipment used for teaching is good.	5	4	3	2	1
17.	Students find most of their classes boring.	5	4	3	2	1
18.	The ISU curriculum broadens students' views of the world.	5	4	3	2	1
19.	Students generally feel that course goals are clearly explained.	5	4	3	2	1
20.	Students study very little over weekends.	5	4	3	2	1
21.	Students have a sufficient number of places on campus to study.	5	4	3	2	1
22.	Students find that the quality of instruction at ISU is excellent. . .	5	4	3	2	1
23.	Tutoring is available to students at a reasonable cost.	5	4	3	2	1
24.	Students are given too many tests. .	5	4	3	2	1

Faculty Questionnaire (Continued)

Strongly Agree 5
Agree 4
Neither Agree nor Disagree . . . 3
Disagree 2
Strongly Disagree 1

		Please circle your response				
25.	ISU courses provide an intellectual challenge.	5	4	3	2	1
26.	Much reading is expected in most courses.	5	4	3	2	1
27.	Most courses at ISU require extensive out-of-class preparation for students.	5	4	3	2	1
28.	It is easy to pass most courses at ISU.	5	4	3	2	1
29.	Students like the current learning environment at ISU.	5	4	3	2	1
30.	Instructors get to know students in their classes quite well.	5	4	3	2	1
31.	Faculty members are sensitive to student needs.	5	4	3	2	1
32.	Most instructors will go out of their way to help students	5	4	3	2	1

Section 3

Please answer the following questions about yourself by circling the letter of the appropriate category.

1. With which college are you associated? For joint appointments circle the college in which you vote for Faculty Council.)

   a) Agriculture
   b) Design
   c) Education
   d) Engineering
   e) Home Economics
   f) Science & Humanities
   g) Veterinary Medicine

2. What is your rank?

   a) instructor
   b) assistant professor
   c) associate professor
   d) professor

3. What type appointment do you have?

   a) temporary
   b) adjunct
   c) tenure track
   d) tenured
   e) collaborator

Faculty Questionnaire (Continued)

4. What is the term of your appointment?

   a) A base
   b) B base

5. What is the status of your appointment?

   a) full time
   b) part time

6. Are you either a member or associate member of the Graduate Faculty?

   a) yes
   b) no

7. What is your sex?

   a) female
   b) male

8. How many years have you been a member of the ISU faculty?

   a) 1-5 b) 6-10 c) 11-15 d) 16-20 e) 21-25 f) over 25

9. How many years have you been a faculty member at another institution?

   a) 1-5 b) 6-10 c) 11-15 d) 16-20 e) 21-25 f) over 25

10. Have you taught at another college or university on the semester system?

    a) yes
    b) no

11. Did you vote on the quarter to semester change at ISU?

    a) yes
    b) no

12. If yes, how did you vote?

    a) in favor of the change to the semester system
    b) in favor of retaining the quarter system
    c) do not remember

Faculty Questionnaire (Continued)

8

Which of the following responsibilities best describe your position. (Circle the most appropriate response.)

13. Teaching responsibilities:

a) primarily teaching undergraduates
b) primarily teaching graduate students
c) about equal teaching of undergraduates and graduates
d) no teaching responsibilities

14. Teaching load:
a) more than half-time teaching
b) some teaching but less than half-time
c) no teaching responsibilities.

15. Research activity:

a) more than half-time research
b) less than half-time research
c) no research involvement

16. Advising responsibilities:

a) undergraduate students
b) graduate students
c) both graduate and undergraduate students
d) no advising

17. Extension or service responsibilities:

a) more than half time extension or service
b) some but less than half-time extension or service
c) no extension or service responsibilities

18. Administrative responsibilities:

a) more than half-time
b) some but less than half-time
c) no administrative responsibilities

19. Have you served on a departmental, college or university curriculum committee during the past two years?

a) yes
b) no

Faculty Questionnaire (Continued)

9

Are there any comments you would like to make about the learning environment at ISU or about the transition to the semester system?

All you need to do to return this is to tape or staple it together and drop it in the campus mail.

APPENDIX C -- LETTERS ENCOURAGING PARTICIPATION IN THE STUDY

Iowa State University of Science and Technology Ames, Iowa 50011

Vice President
For Academic Affairs

April 29, 1981

TO: Iowa State University Faculty

The Iowa State University Research Institute for Studies in Education (RISE) is interested in faculty views regarding the transition to the new academic calendar. Next year the Institute will ask for faculty views regarding the learning environment under the semester system. This information will enable researchers to study perceptions of the two systems and to identify areas of improvement in future planning. In addition, perceptions regarding the academic environment during the current academic year are of interest to RISE personnel (Section II).

You were selected in a random sample of ISU faculty. Enclosed is the questionnaire which we would like you to complete and return to RISE. For results to be representative of ISU faculty, it is important that each questionnaire be completed and returned. Your voluntary cooperation will be appreciated.

You may be assured of complete confidentiality. The questionnaire has an identification number to be used only for record-keeping purposes. Your name will be checked off the mailing list when your questionnaire is returned. It will not be placed on the questionnaire.

If you have any questions, please call 294-7009.

We thank you in advance for your cooperation.

Sincerely,

George C. Christensen
Vice President for Academic Affairs

Iowa State University of Science and Technology Ames, Iowa 50011

Research Institute for Studies in Education
College of Education
The Quadrangle
Telephone 515-294-7009

April 16, 1982

Dear Faculty Member:

We know that this is a very busy time of year for you, but we do need your help!

You recently received a questionnaire from us asking you to respond to questions about the quarter and semester systems and the current learning environment at Iowa State. To date, we have not received your completed questionnaire. If you have mailed it recently, we want you to know that your participation is appreciated.

If you have not mailed your questionnaire, we would ask you to complete the enclosed questionnaire (or the first one) and drop in the campus mail.

We have had a very good return rate thus far and would like very much to have your responses to include in the tabulations.

Thank you for your voluntary participation in this study. We appreciate the time and effort involved and believe that your responses will be useful in future planning.

Sincerely,

Richard D. Warren

Richard D. Warren, Director
Research Institute for Studies in Education
294-7009

Enclosure

RDW/pm

APPENDIX D -- INDIVIDUAL ITEM PAIRED T TESTS

TABLE 30. Paired T-Test of Individual Items Related to the Quarter System

Items	Year	N	Mean	S.D.	Mean Differences	S.D.	T-Value
1.	'81	465	4.2022	0.962	0.0774	1.052	1.59
	'82		4.1247	1.007			
2.	'81	464	2.5086	0.906	-0.0668	1.000	-1.44
	'82		2.5754	0.967			
3.	'81	462	3.1991	1.135	0.0476	1.174	0.87
	'82		3.1515	1.163			
4.	'81	463	2.5529	0.979	0.0950	1.028	-1.99*
	'82		2.6479	1.040			
5.	'82	457	2.4004	0.927	0.0416	1.049	-0.85
	'82		2.4420	0.956			
6.	'81	453	4.1126	0.942	1.2053	1.140	22.49**
	'82		2.9073	0.787			
7.	'81	457	2.8884	0.834	-0.1816	0.950	-4.09**
	'82		3.0700	0.819			
8.	'81	464	1.9116	0.893	0.0819	1.028	-1.72
	'82		1.9935	0.848			
9.	'81	461	2.2733	0.852	-0.0564	0.940	-1.29
	'82		2.3297	0.810			
10.	'81	459	3.4190	0.916	0.0283	1.076	0.56
	'82		3.4336	0.870			
11.	'81	465	2.2487	0.913	0.0688	1.137	-1.31
	'82		2.3075	0.953			
12.	'81	461	1.8959	0.804	-0.0672	0.903	-1.60
	'82		1.9631	0.775			

*Significant at $p < .05$.
**Significant at $p < .01$.

Table 30 (Continued)

Items	Year	N	Mean	S.D.	Mean Differences	S.D.	T-Value
13.	'81	460	2.3065	0.860	-0.1609	0.945	-3.65**
	'82		2.4674	0.881			
14.	'81	462	2.2100	0.921	-0.0173	1.102	-0.34
	'82		2.2273	0.912			
15.	'81	465	2.3333	0.916	-0.2430	1.066	-4.91**
	'82		2.5763	1.025			
16.	'81	453	4.1104	0.944	0.0944	1.096	1.84
	'82		4.0155	1.005			
17.	'81	452	3.3850	1.071	0.1571	1.136	2.94**
	'82		3.2279	1.067			
18.	'81	446	3.8027	0.808	-0.0740	0.956	-1.63
	'82		3.8767	0.788			
19.	'81	448	2.8616	1.090	-0.0223	1.170	-0.40

TABLE 31. Paired T-Test of Individual Items Related to the Semester System

Items	Year	N	Mean	S.D.	Mean Differencess	S.D.	T-Value
1.	'81	454	3.1762	1.063	-0.0925	1.112	-1.77
	'82		3.2687	1.060			
2.	'81	449	2.4543	0.875	-0.1893	0.865	-4.64**
	'82		2.6437	0.760			
3.	'81	453	3.8565	0.924	0.0375	0.910	0.88
	'82		3.8190	0.889			
4.	'81	442	2.9367	0.664	0.0136	0.653	0.44
	'82		2.9231	0.498			
5.	'81	452	3.5000	0.975	0.1018	0.957	2.26*
	'82		3.3982	0.952			
6.	'81	449	3.4521	0.905	0.1826	1.006	3.85**
	'82		3.2695	0.924			
7.	'81	451	3.0155	0.796	0.0976	0.822	2.52*
	'82		2.9180	0.680			
8.	'81	454	3.6079	0.921	0.1256	0.953	2.81**
	'82		3.4824	0.980			
9.	'81	451	2.3082	0.828	0.0177	0.874	0.43
	'82		2.2905	0.818			
10.	'81	449	2.3630	0.837	-0.1292	0.879	-3.11**
	'82		2.4922	0.788			
11.	'81	451	3.3681	0.870	0.0887	0.967	1.95
	'82		3.2794	0.787			
12.	'81	452	2.7389	0.694	-0.0664	0.858	-1.64
	'82		2.8053	0.684			

*Significant at $p < .05$.
**Significant at $p < .01$.

Table 31 (Continued)

Items	Year	N	Mean	S.D.	Mean Differencess	S.D.	T-Value
13.	'81	451	2.9601	0.753	-0.0288	0.759	-0.81
	'82		2.9889	0.631			
14.	'81	450	2.9756	0.829	-0.0044	0.812	-0.12
	'82		2.9800	0.572			
15.	'81	449	3.6771	0.993	0.1047	1.009	2.20*
	'82		3.5724	0.942			
16.	'81	456	2.9474	1.026	0.0942	1.047	1.92
	'82		2.8531	1.028			
17.	'81	455	2.9385	1.000	0.0286	0.996	0.61
	'82		2.8531	1.028			
18.	'81	455	3.1626	1.013	0.1582	0.998	3.38**
	'82		3.0044	1.017			
19.	'81	451	3.7761	0.870	0.1707	0.851	4.26**
	'82		3.6053	0.843			

TABLE 32. Paired T-Test of Individual Items Related to the Transition

Items	Year	N	Mean	S.D.	Mean Differencess	S.D.	T-Value
1.	'81	455	4.2945	0.803	0.0022	0.836	0.06
	'82		4.2923	0.805			
2.	'81	452	4.0022	0.746	0.0133	0.826	0.34
	'82		3.9889	0.781			
3.	'81	456	3.7807	0.887	-0.0285	0.936	-0.65
	'82		3.8092	0.922			
4.	'81	455	4.1297	0.698	0.0967	0.847	2.44*
	'82		4.0330	0.816			
5.	'81	453	3.6932	0.815	0.0309	0.889	0.73
	'82		3.6623	0.838			
6.	'81	460	4.0326	0.851	0.0304	0.921	0.71
	'82		4.0022	0.841			
7.	'81	456	2.3640	0.946	-0.1952	0.906	-4.60**
	'82		2.5592	0.907			
8.	'81	454	2.8656	0.857	-0.1167	0.975	-2.55*
	'82		2.9824	0.970			

*Significant at $p < .05$.
**Significant at $p < .01$.

TABLE 33. Paired t-test of Individual Items Related to the Academic Environment

Items	Year	N	Mean	S.D.	Mean Differencess	S.D.	T-Value
1.	'81	458	3.1223	0.949	0.0852	1.103	1.65
	'82		3.0371	0.792			
2.	'81	458	3.2751	1.066	0.5262	1.336	8.37**
	'82		2.7489	0.808			
3.	'81	455	3.5363	0.836	0.0176	0.982	0.38
	'82		3.5187	0.776			
4.	'81	455	2.7560	0.824	-0.0989	0.884	-2.39*
	'82		2.8549	0.824			
5.	'81	455	2.5714	0.793	-0.0549	0.842	-1.39
	'82		2.6264	0.808			
6.	'81	459	2.3551	0.832	0.0218	0.866	0.54
	'82		2.333	0.828			
7.	'81	458	4.1900	0.682	0.1004	0.906	2.37*
	'82		4.0895	0.798			
8.	'81	459	3.2222	0.851	-0.0479	0.824	-1.25
	'82		3.2702	0.831			
9.	'81	453	3.5320	0.693	-0.0221	0.781	-0.60
	'82		3.5541	0.658			
10.	'81	457	3.3326	0.842	-0.0197	0.967	-0.44
	'82		3.3523	0.809			
11.	'81	452	2.9757	0.740	-0.0819	0.829	-2.10*
	'82		3.0575	0.730			
12.	'81	456	3.0373	0.957	-0.0877	0.973	-1.93
	'82		3.1250	0.889			

*Significant at $p < .05$.
**Significant at $p < .01$.

Table 33 (Continued)

Items	Year	N	Mean	S.D.	Mean Differencess	S.D.	T-Value
13.	'81	453	2.2208	0.726	-0.0905	0.877	-2.20*
	'82		2.3113	0.690			
14.	'81	452	3.4381	0.910	-0.0133	0.979	-0.29
	'82		3.4513	0.893			
15.	'81	458	3.7795	0.732	0.0764	0.883	1.85
	'82		3.7031	0.709			
16.	'81	455	2.5429	1.033	-0.1121	0.842	-2.77**
	'82		2.6549	1.003			
17.	'81	455	2.6659	0.744	-0.0615	0.850	-1.54
	'82		2.7275	0.724			
18.	'81	454	3.2753	0.926	-0.0132	0.970	-0.29
	'82		3.2885	0.908			
19.	'81	454	3.2753	0.034	0.0220	0.830	0.57
	'82		3.2533	0.033			
20.	'81	455	2.9429	0.869	-0.0484	0.921	-1.12
	'82		2.9912	0.888			
21.	'81	457	3.1466	0.924	0.0438	0.895	1.05
	'82		3.1028	0.913			
22.	'81	454	3.2819	0.694	0.0220	0.700	0.67
	'82		3.2599	0.696			
23.	'81	449	3.3363	0.634	0.0290	0.631	0.97
	'82		3.3073	0.612			
24.	'81	447	2.6622	0.809	0.1074	0.929	2.44*
	'82		2.5548	0.734			
25.	'81	444	3.6824	0.705	0.0180	0.723	0.52
	'82		3.6644	0.738			
26.	'81	442	3.2466	0.865	-0.1041	0.815	-2.68**
	'82		3.3507	0.826			

Table 33 (Continued)

Items	Year	N	Mean	S.D.	Mean Differencess	S.D.	T-Value
27.	'81	442	3.2670	0.825	-0.1018	0.817	-2.62**
	'82		3.3688	0.784			
28.	'81	442	3.0588	0.936	0.0611	0.966	1.33
	'82		2.9977	0.972			
29.	'81	443	3.4018	0.639	0.0971	0.836	2.44*
	'82		3.3047	0.648			
30.	'81	442	2.6380	0.876	-0.3100	0.979	-6.66**
	'82		2.9480	0.923			
31.	'81	446	3.4058	0.809	-0.0135	0.856	-0.33
	'82		3.4193	0.797			
32.	'81	446	3.6996	0.758	-0.0381	0.805	-1.00
	'82		3.7377	0.732			