AN ABSTRACT OF THE THESIS OF

Karen Swanson Piepmeier for the degree of Master of Arts in Interdisciplinary Studies in the co-departments of Education, Journalism, and Speech Communications presented on April 29, 1983

Title: AN EVALUATION OF USING THE SPIRAL MODEL TO TEACH MEDIA AT OREGON STATE UNIVERSITY

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Abstract approved: Les Streit

A decade after the School of Education at Oregon State University adopted a spiral model of curriculum for teacher education, a study was conducted to determine if Instructional Media, one thread of that model, was spiralled in the curriculum.

A survey was conducted of graduating seniors, using a questionnaire to determine if media is taught in a spiral model. Topics were chosen for the questionnaire from the topics in the ED 309 and ED 406 Media Competency course syllabus. The topics chosen for the quesionnaire were microcomputer, 16mm film projector, slide projector and 35mm SLR camera overhead projector and transparencies, audic tape recorder and video tape recorder and lettering and design.

A computer program was used to help evaluate the data collected. Graphs were constructed from the student answers. Topic one, the microcomputer was only recently introduced into the curriculum and from students' responses showed little evidence of spiralling. In topic two, use of the 16mm film projector and films, spiralling occurred in thirty percent of the sample. In topic three, slide

projectors and programs very few of the students spiralled, fourteen percent. Topic four, the use of overhead projectors and transparencies, spiralling was present in thirty-eight percent of the sample. In the fifth topic, reel to reel audio tape recorders and video tape recorders, twenty-four percent of the students were seen to spiral. The last topic surveyed, lettering and design, fourteen percent of the student answers indicated that topic was spiralled.

From the results of this study, and comments of the students, recommendations for improving the curriculum have been made.

An Evaluation of Using the Spiral Model to Teach Media at Oregon State University

by

Karen Swanson Piepmeier

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Professor of Speech Communications in charge of co-field

Redacted for Privacy

Chairman of Department of Instructional Media and Technology

Redacted for Privacy

Dean of Graduate School

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I. INTRODUCTION

The School of Education at Oregon State University adopted the spiral model of curriculum for teacher education in 1973. A decade later this study was initiated to determine if the spiralling of curriculum was present. In this study one thread of the spiral in the curriculum, media, was chosen to determine if the students have repeated experiences that teach, reinforce, expand, and clarify that subject matter. Since this adoption of a spiral model of curriculum many changes have been made in staff and the sequences of teaching media. The courses that the author has taught in the last two years and her discussions with professors in other courses suggested the following hypothesis. This hypothesis, that was adopted for this study, is that media is taught by a spiral method beginning in the sophomore year in the Theory and Practicum II, in ED 309 M/L (ED 309M is a media course without microcomputer skills whereas ED 309 L includes microcomputer literacy), and is continued in the junior and senior years in additional media courses and in Theory and Practicum III and IV seminars and experiences.

This study surveys whether the theory and practicum program of teacher education at Oregon State University spirals from knowledge of a topic to comprehension, then to application, analysis, synthesis and evaluation. Additionally, in the survey students are asked to evaluate the education that they received

in each topic surveyed. It is hoped that this study will be used as a model for testing the spiralling of other topics in a curriculum.

Review of the Literature

Jerome Bruner in writing a chairman's report on a Woods Hole Conference, held in September, 1959, first describes a spiral curriculum. He states, "Let the topics be developed and redeveloped in later grades." (Bruner, 1961) Further defining a spiral model of curriculum is the scope note for the descriptor, spiral curriculum, in the Thesauraus of ERIC (Educational Resources Information Center) Descriptors which states "curriculum in which students repeat the study of a subject at different grade levels, each time at a higher level of difficulty and in greater depth." (Thesaurus--1982)

In Principles of Instructional Design, Robert M. Gagné, and Leslie J. Briggs describe two purposes for having a spiral model.

> First, the previously learned knowledge of the topic is given a review, which tends to improve its retention. And second, the topic may be progressively elaborated when it is reintroduced, leading to broadened understanding and transfer of learning. (Gagné, Briggs, 1974)

The spiral model for curriculum has been used at the grammar school (Hennis, 1968; Pandolf, 1974; Peiris, 1974; McAnarney, 1969; Taba, 1967), middle school (Carter, 1976), junior high school (Larson, 1970; Andersen, 1981), high school (Williamson, 1981; Holsberry, 1979; Banks, 1971), and adult level (Touger,

1981; Murphy, 1974; Waters, 1971) to teach a variety of topics. In only two instances has use of the spiral model of curriculum been reported in use in a teacher preparation program. These two instances are in the School of Education curriculum at Oregon State University and in the Immaculate Heart College (Los Angeles, California) curriculum in teacher education. The two programs are, however, very different.

Immaculate Heart College developed a self-initiated and self-directed spiral curriculum in their teacher preparation program in 1970. Their teacher preparation program is described in a report by the California State Board of Education accreditation team after their visit February, 1971.

> . . . Immaculate Heart College has developed a self-initiated and directed Teacher Preparation Program based on a spiral planning model. Such a model begins, continues, and concludes with the student's reflection on himself and his experiences from which he develops those goals and plans, those activities which will help him to achieve his full human potential. (Immaculate Heart College--1971)

The spiral curriculum then at Immaculate Heart College is a natural repetition and elaboration of a variety of different topics determined not by the faculty but by the individual student and counselor. This self determining, organic spiral model relies upon the student's natural desire for more information on a variety of topics to cause a natural spirally of curriculum.

In contrast, the spiral model for teacher education in the School of Education at Oregon State University identifies topics or threads that were determined by the faculty as a whole as necessary for a self actualizing teacher to receive in his or

her teacher education. This spiral model of curriculum provides for the continuing renewal, addition and expansion of the topics that have been identified as needed in teacher preparation, and opportunity for their application in student teaching and practicums. It is this unique, planned spiral model of curriculum found in teacher preparation at Oregon State University that was examined, in part, and discussed below.

History of the Spiral Model of Curriculum in the School of Education at Oregon State University

The spiral model of curriculum was adopted by the faculty of the School of Education in the Fall of 1973. In January of 1972, Keith Goldhammer, the Dean of the School of Education at Oregon State University at that time, appointed a faculty committee with Dr. Frank Cross as the Director to study the missions of the School of Education. This was at a time when costs were rising and enrollment was beginning to drop. In order for the School of Education to meet these challenges and also the challenge of a changing society, Dean Goldhammar appointed this advisory body. This group of faculty members was to set priorities and propose programs to accomplish the objectives that were decided upon. These proposals and priorities were to be voted on by the faculty as a whole. After working in small groups for four months, the Commission on Missions of the School of Education had a week long retreat to finalize their report. Dr. Frank Cross, the Director of the Commission on Missions was also the advisor of the School of education's Student Council. Working with

Doug Jenkins, the President of the Student Council, they planned a meeting of the Commission on Missions and student representatives. This student-faculty conference was held on April 13, 1972 to discuss the student concerns for the future of teacher education at Oregon State University. Out of this meeting came a faculty paper and a student position paper published in a booklet, titled DIRECTION; The Position of the Faculty and Students of the School of Education, Oregon State University, Regarding: Function, Mission, Principles, Preparation of Education Personnel. (Oregon State University, School of Education--1972) The students called for "Revitalization of teacher preparation. . . ." (Oregon State University, 1972) and included a concern that the programs in the School of Education be ". . . continuously and systematically assessed." (Oregon State University, 1972) The Commission on Missions submitted revised papers to the faculty on May 30, 1972 and by a vote of seventy-two to two the faculty agreed to accept the rewritten papers of the Commission on Missions. (Cross, 1983) Dr. Frank Cross was then made chairman of a committee to implement the officially accepted rewritten papers:

> . . . to establish a direction that would be basic to writing criteria, both current and future, . . . define what the School wishes to accomplish, and make it much easier for constituents to understand programs and aims. . . ." (Oregon State University, 1972)

A pilot study was conducted by Dr. Frank Cross, Dr. Ed Anderson and Dr. Carvell Wood during the 1972-1973 school year. Sixty randomly selected sophomore students from the School of Education took part in a successful program that was then begun in the

Fall of 1973. This program, incorporating a spiral model of education in the curriculum, was adopted by the School of Education and refined. (See Figure 1.) In 1974 and 1975 faculty representing each topic worked on "sophisticating the spiral." (Cross, 1983) The outcome of this was the inclusion of instructional media in the spiral model with the other identified educational programs. Media then was one thread in a spiral model of curriculum in the School of Education at Oregon State University. The other threads included Educational Psychology, Individual Psychology, Instruction and Learning, Curriculum, Cultural Diversity, Group Processes, Classroom Behavior, and Career and Career Education. (See Figure 2.)

Current Teacher Preparation Program in the School of Education at Oregon State University

In the 1980 Self Study Report, prepared by the Teacher Education Faculty at Oregon State University, the teacher preparation program was described in part as follows:

> Students encounter learning experiences at each level so as to become increasingly more sophisticated in human understanding and instructional competence. The program is supported by a spiral curriculum which includes affective and cognitive development of children, i.e., educational and individual psychology, group processes, curriculum, cultural diversity, instruction and learning, classroom behavior, media and careerd education. (Oregon State University, 1980)

Thus the spiralling of curriculum is documented as the current theoretical basis for teacher education at Oregon State University. In order to sample if this spiral model is working in the School

THEORY AND PRACTICUM CONCEPT

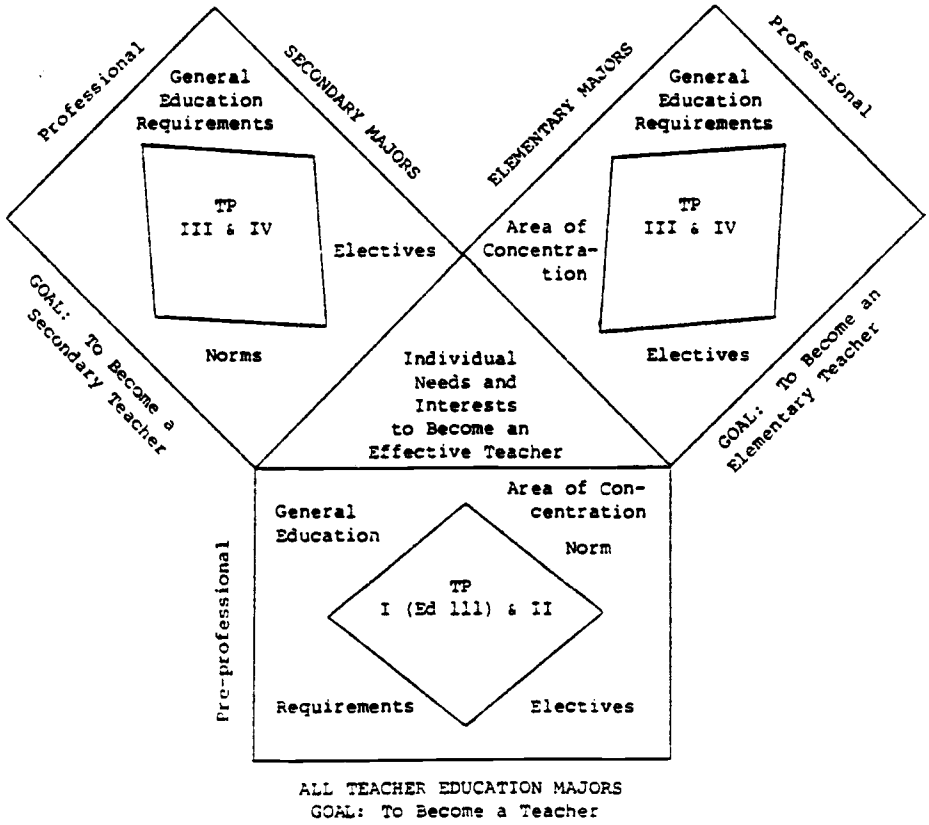

Figure 1. Theory and practicum concept.

TEACHING AND LEARNING THEORY WITH LABORATORY
AND CLINICAL EXPERIENCES

Theory and Practicum Program

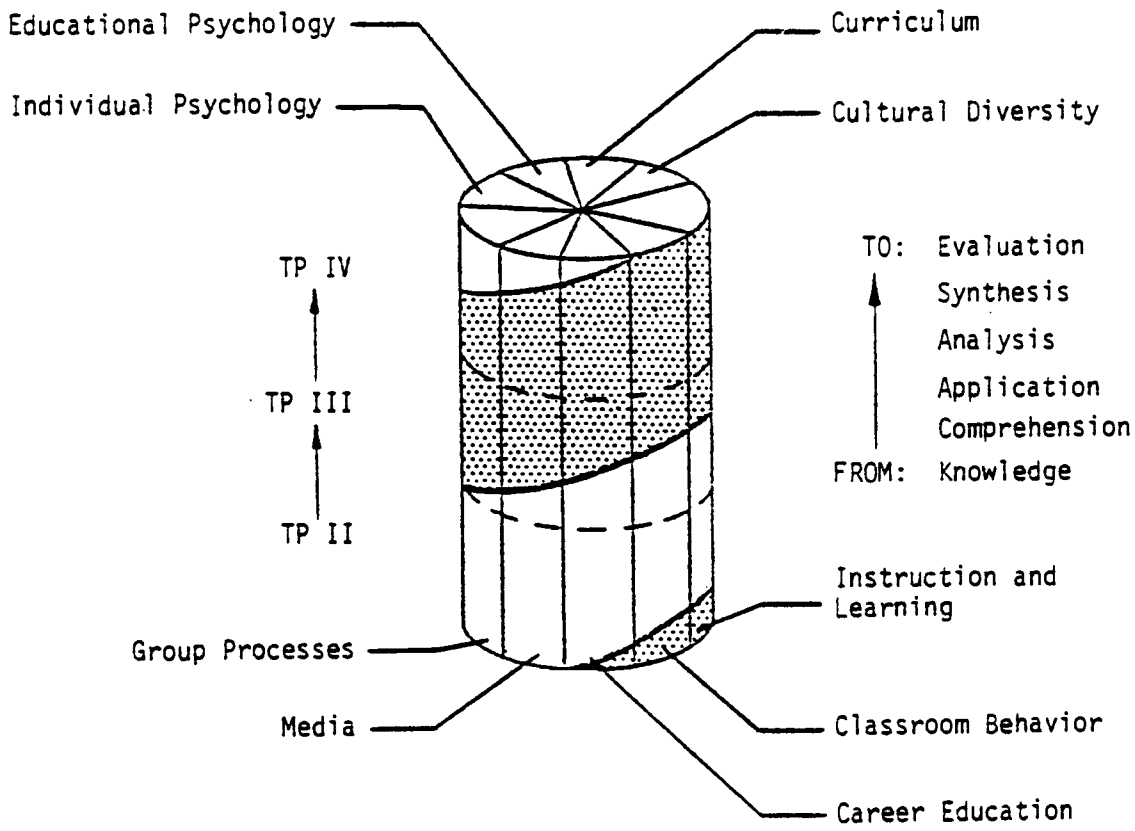

Figure 2. Teaching and learning theory with laboratory and clinical experiences (Oregon State University, 1980).

of Education, this study will center on one thread of that spiral, media.

The first media course required in the School of Education in the teacher preparation program is part of Theory and Practicum II, Media Competencies, ED 309 M. An optional extra credit is offered in ED 309 L, Media Competencies with the Microcomputer. These courses, ED 309 M/L are offered at the Sophomore level and include the Instructional Media requirements for certification in the State of Oregon plus a sampling of other instructional media. Media is taught by self instructional modules developed by Dr. Ruth Stiehl for the Oregon State University Instructional Media Laboratory, with lectures given by the instructors at the beginning and middle of the course. In addition, each student completes a media survey, identifying the media used in the schools where they have their practicum, sophomore block. The other courses offered in Instructional Media include ED 406 M, to enable students not in the sophomore block to complete their media competencies for certification. Media Competencies, ED 406 M is a series of self instructional modules, self taught lessons, taught in the Instructional Media Laboratory, but without the ED 309 Media Survey which is completed in the schools. Lectures are included, however, and extra modules are also added. Like ED 309 M, ED 406 has an L section which adds microcomputer modules and offers an extra credit. The microcomputer skills were not required for certification in the State of Oregon at the time of this study.

Instructional Media courses offered that are not required

include: Instructional Media, ED 435, an advanced instructional media course, Instructional Materials Preparation ED 436, Multi-Media Production, ED 437, Computers in Education, ED 438x, Self Instructional Systems, ED 535, and numerous workshops offered usually in the summer. In addition, all education students are allowed to use the Instructional Media Laboratory during specified hours to produce materials for classes and/or to borrow equipment for class projects. Further, it is expected that instructional media will be spiralled by teaching and experience in seminars and non-media courses in the Junior and Senior years.

Major Objectives

The purpose of this study was to determine when the theory and practice of instructional media was taught to students in the School of Education at Oregon State University. This information was then used to determine if a spiral model of curriculum is present in education using the topic, media, as an indicator of the presence of spiralling in the curriculum. This study could be used as a model for testing the spiralling of other topics. One major objective of this study then is to answer the question: "Did the student experience spiralling in instructional media?"

Rationale for the Study

The results of this study will be useful to the faculty in determining if spiralling does occur in the curriculum as

planned in at least one thread of that curriculum, instructional media. A decade ago periodic assessment of the program was one of the objectives of the School of Education. It is in this spirit that the study is made.

The identification of spiralling in the curriculum would indicate that the stated program of the School of Education was being followed. This study could be used as a model for identifying spiralling in the other threads of the curriculum also.

II. METHODS AND PROCEDURES

In order to assess the spiral model of curriculum in the School of Education at Oregon State University, a questionnaire was developed to survey the experience students had in media, one thread of that spiral model. The questionnaire and cover letter were handed out to graduating seniors in their student teaching seminars. Each term, Fall, Winter, Spring and Summer, there are an average of thirty graduating seniors in senior seminars. The questionnaires were handed out to graduating seniors in the Spring Term, 1983, in the School of Education at Oregon State University.

The Questionnaire

The questionnaire was composed, in part, using the "Total Design Method,", TDM as described in Mail and Telephone Surveys, The Total Design Method, by Don A. Dillman. This method was followed with the exception that questionnaires were handed to the students in seminars rather than incurring the cost of mailing them.

The questionnaire was composed to enable graduating seniors to indicate what they learned about instructional media in six areas and if they applied those skills in their teaching experiences. Questions for the questionnaire were composed from concrete, easily identifiable skills, knowledge, and applications from those skills taught initially in Media Competencies, ED 309 M or L. These topics were chosen from competencies in the ED 309 and

ED 406 syllabus that has been developed over the past ten years, 1973-1983. Since the author has used the self-instructional modules both as a student and an instructor in the Instructional Media Laboratory, areas were chosen that were identified as representative of media skills. The six skills identified were use of a microcomputer, 16mm film projector, slide projector, overhead projector, reel to reel audio tape and video tape recorders, and lettering and design. Each skill was divided into four areas of competency: knowledge, advanced knowledge, theory, and application in a classroom.

Since only one media course is required, the questionnaire was designed to indicate if students experienced spiralling in media by taking advanced media courses or learning more about the skill in non-media courses and then applying their skills in a classroom. Without planned inclusion of media faculty in student seminars, information about the extent of media being taught in seminars was not available. It was therefore believed that the student best knew what he/she had learned and what was valuable to him/her, not just what was in a syllabus of a course or indicated as a topic covered in a course. (Computer skills were a recent addition to the curriculum in the ED 309 L/ 406 L option and its spiralling may not yet be expected.)

The hypothesis is that if media is spiralled in the curriculum the student will repeat the learning of a skill in more than one year and apply that skill in the classroom or their experiences. For example, if the curriculum was spiralled we would expect

that the first year the student would have been exposed to basic knowledge in that skill. The second year the student would have increased that knowledge. Next theories might have been presented of when and where to use that knowledge, and in the final year of the program the student would have applied that knowledge in the classroom. In contrast, in a repetitious curriculum, or course-centered curriculum, we would expect to find that the student would cover a topic in one year and not return to it for additions or reinforcement in other years.

Computer Program

The computer program written to help evaluate the item analysis of the questionnaire was written in BASIC, for computer model number PDP-11 from the Digital Equipment Corporation, and had three parts. The first part entered the answers to the question into the computer. The second part sorted the data and totaled the results. The third part plotted the results on graphs using the printer.

The first part of the computer program printed questions on the screen. The first question asked for the number of students that data would be entered into the computer for analysis. The next questions asked which student and which question the author wanted to start with in entering the data. After that information had been entered, the computer would print on the monitor screen the word "ANSWER" and the letter "Q" and a digit followed by a question mark. For example "ANSWER Q 4?" would indicate that question four was the question whose answer was to be entered. The computer then waits for a number to be entered that would

correspond to the student answer to that question. Since the questions had five possible answers, you would enter the answer circled, a digit for one, two, three, four, or five. For example, if the student had circled answer two, then a "2" would be typed on the keyboard and the "RETURN" key pressed. Digits typed in are then stored in computer memory as one decimal number in a two dimensional array in the column corresponding to the student number and the row corresponding to the question number. See Figure 3. The column and row numbers of the array are used by the computer to calculate the address of the mailbox or location in the computer memory where that number is stored.

Using each circled number of the responses to a question in the questionnaire as a digit of one number rather than using six separate numbers, one for each of the six possible answers, requires six times fewer memory locations to store the results. This means that for one hundred students, the thirty-seven questions need only 3,700 storage locations instead of 22,200. For a new person who may use this program this may cause some confusion initially in entering the data; however, the savings in storage and the faster rate of typing in the data justify the extra explanation needed.

The computer program automatically asked for the answer to the next question until all thirty-seven questions had answers entered. Changes can be made at any time in the program by typing the digit "9". Since there wasn't an answer "9" to any of the questions, the computer program used the digit "9" as a signal to return to an earlier part of the program that asked

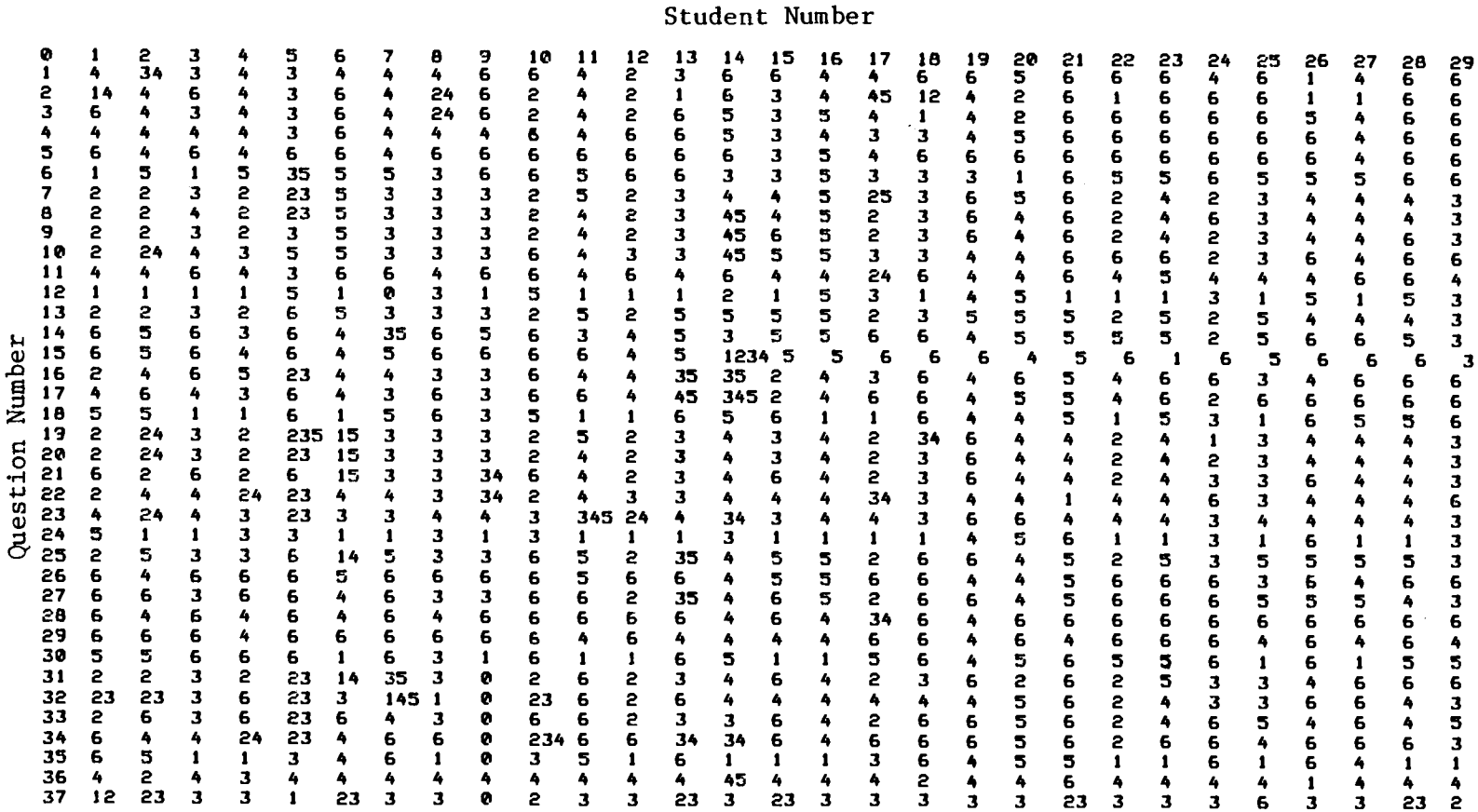

Figure 3. Summary of student responses to all questions. Each digit represents answer that was circled by the student.

for the student and question number. Then by entering the appropriate student and question numbers, the answer for the question could be re-entered or entered correctly.

At any time the array of numbers that had been entered into the computer memory could be stored on the computer disk by typing the digit "8" instead of a digit "1, 2, 3, 4, 5, or 6" that was used for answers to questions in the student questionnaire. The disk then retains the stored numbers that would be lost from the computer memory when the power is turned off.

The array of numbers entered into the program was also able to be listed on the printer. The result of this printout is shown in Figure 3 where the student number is seen as the top row and the question numbers are printed in the left hand column.

After all the answers to all questions were entered and stored on the disk, the computer program moved to the second part. This second part of the computer program sorted and totaled the numbers entered for each item. One student at a time, the results were looked at by the computer program for the five questions asked in each part of the questionnaire. First, the program looked at the number that had been entered for a question. This number was separated into individual digits or separate numbers. Each of these separate numbers were then used to select the corresponding row in a six column by six row array. Each column corresponded to one of the six questions in the topic being responded to, and each row corresponded to one of the six possible answers that the student could have circled. All numbers in this array that corresponded to a circled answer

were set equal to one; the rest of the numbers in the array were set equal to zero. The number in the six by six array for each student is then added to the corresponding number in another six by six array which keeps the totals for all students.

The plotting part of the program took the six by six array for each student and printed an "x' that corresponded to each circled answer and printed a dot for uncircled answers. (See Figure 4.) Only a plot of the first five questions and the first five answers was needed to help evaluate the extent of spiralling. The six by six array that recorded the totals was also plotted. In that case the number totals were plotted instead of an "X". (See Figure 5.)

For each question a bar graph was also printed showing the number of students that had circled each possible answer to the question. (See Figure 6, Bar graph, Q. 29.)

In accordance with the method used in preparing the questionnaire a pretest was given by having five graduating seniors complete the questionnaire Winter term. After analysis, two changes were made. An example was included in the instructions and "None of the Above" was added as an answer to all questions.

Analysis of the Data

To help visualize the results of the survey graphs were constructed using the answers given by the students. For each media topic in the survey there were four or five questions that indicated a different level of achievement. These levels were basic knowledge, two levels of advanced knowledge, theory

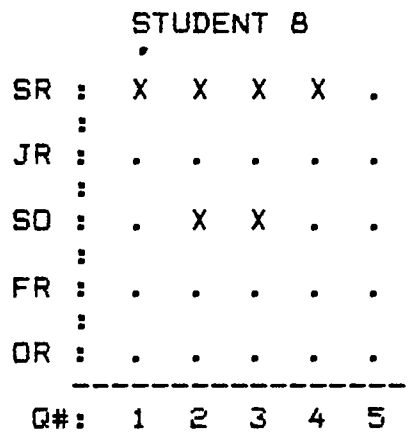

Figure 4. Individual student responses plotted on a graph.

ALL STUDENTS

SR	11	9	8	11	5
JR	4	2	3	4	1
SO	1	5	4	0	0
FR	1	6	1	0	0
OR	1	1	3	2	1
Q#	1	2	3	4	5

ALL STUDENTS

SR	6	9	6	7	16
JR	9	8	9	9	1
SO	9	8	8	3	1
FR	0	0	0	0	0
OR	5	3	3	5	1
Q#	7	8	9	10	11

ALL STUDENTS

SR	3	3	4	9	9
JR	6	5	3	7	4
SO	8	1	1	3	2
FR	0	0	2	0	0
OR	11	12	7	4	4
Q#	13	14	15	16	17

ALL STUDENTS

SR	10	10	9	18	18
JR	10	10	8	8	11
SO	8	9	5	4	3
FR	2	1	1	1	0
OR	3	1	1	0	1
Q#	19	20	21	22	23

ALL STUDENTS

SR	3	5	4	8	11
JR	7	1	5	1	0
SO	4	0	2	0	0
FR	1	0	0	0	0
OR	12	5	6	0	0
Q#	25	26	27	28	29

ALL STUDENTS

SR	4	9	5	9	3
JR	8	9	5	5	3
SO	9	6	5	4	0
FR	1	2	0	0	12
OR	2	2	3	1	4
Q#	31	32	33	34	35

Figure 5. Combined student responses plotted with numbers that equal the number of responses for each question.

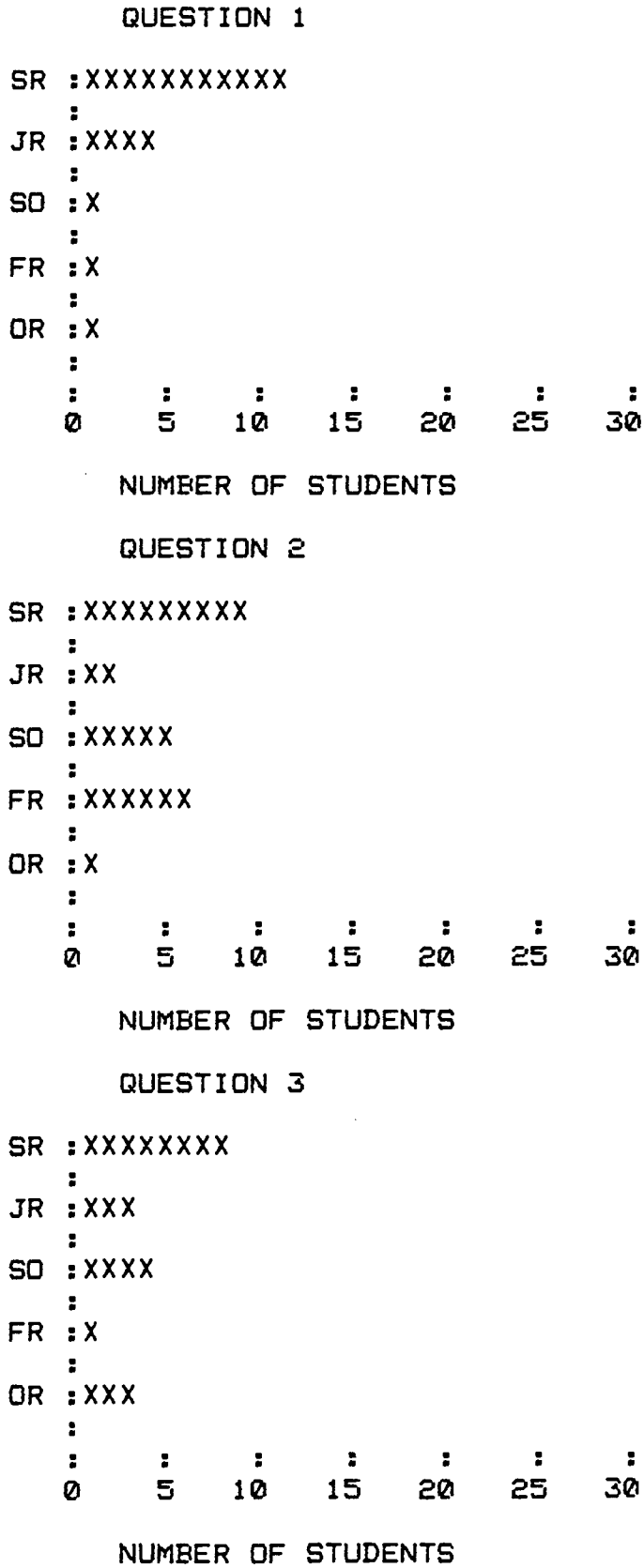

Figure 6. Bar graphs to illustrate student response to questions. Each "X" equals a student response. Years are shown on the vertical axis. "OR" means other was circled.

and application. For each of these questions the student could circle an answer that indicated in which school year he/she had experienced that level of achievement. These five levels of achievement were indicated as the numbers along the horizontal axis of a graph. (For example, Figure 4.) Since the questionnaire had been purposely designed so that the question numbers were sequenced from lower to higher levels of achievement, the numbers along the horizontal axis were actually the question numbers. Along the vertical axis were placed, from bottom to top, the labels "OR", "FR", "SO", "JR", and "SR" to indicate the school years. ("OR" was used to show that the student had circled "other", "FR", freshman, "SO", sophomore, "JR", junior, and "SR", to indicate senior year.) The "OR" label was placed below "FR" because it was expected that "other" would be experiences that had occurred before college. If the student had circled the answer to question four that indicated he/she had experienced that level of achievement in his/her junior year, then an "X" was plotted in the row labelled "JR" and the column labeled "4". The answers for each student were plotted in this manner, as well as the answers for all students. A computer program was written to assist in this item analysis of the questionnaire.

III. ANALYSIS OF THE RESULTS

Questionnaires were given to thirty-five graduating seniors in seminars in the School of Education, Spring quarter, 1983. A total of twenty-nine out of a possible thirty-five returns were analyzed which represented a usable questionnaire return of eighty-three percent.

The questionnaires were divided into six sections to be discussed in detail below. In the first five sections the student was asked six questions, in the last section only five questions were asked. The student was directed to circle the appropriate answer or answers and fill in the blank behind the answer if they remembered the course name or number. They were further instructed that if they had relearned, reinforced or expanded their knowledge of the subject, they should circle more than one year and write down more than one course. Finally, they were instructed to circle "None of the above" for the answer if they had not encountered the skill or knowledge. A sample question with answer was included. All of the questionnaires returned evidenced the fact that the students knew how to indicate their answers.

Microcomputer Literacy

The first section of the questionnaire dealt with the microcomputer. The number of students who circled each answer is shown in the graphs in Figures 6 and 7. In the first question the students were asked when they learned how to run a

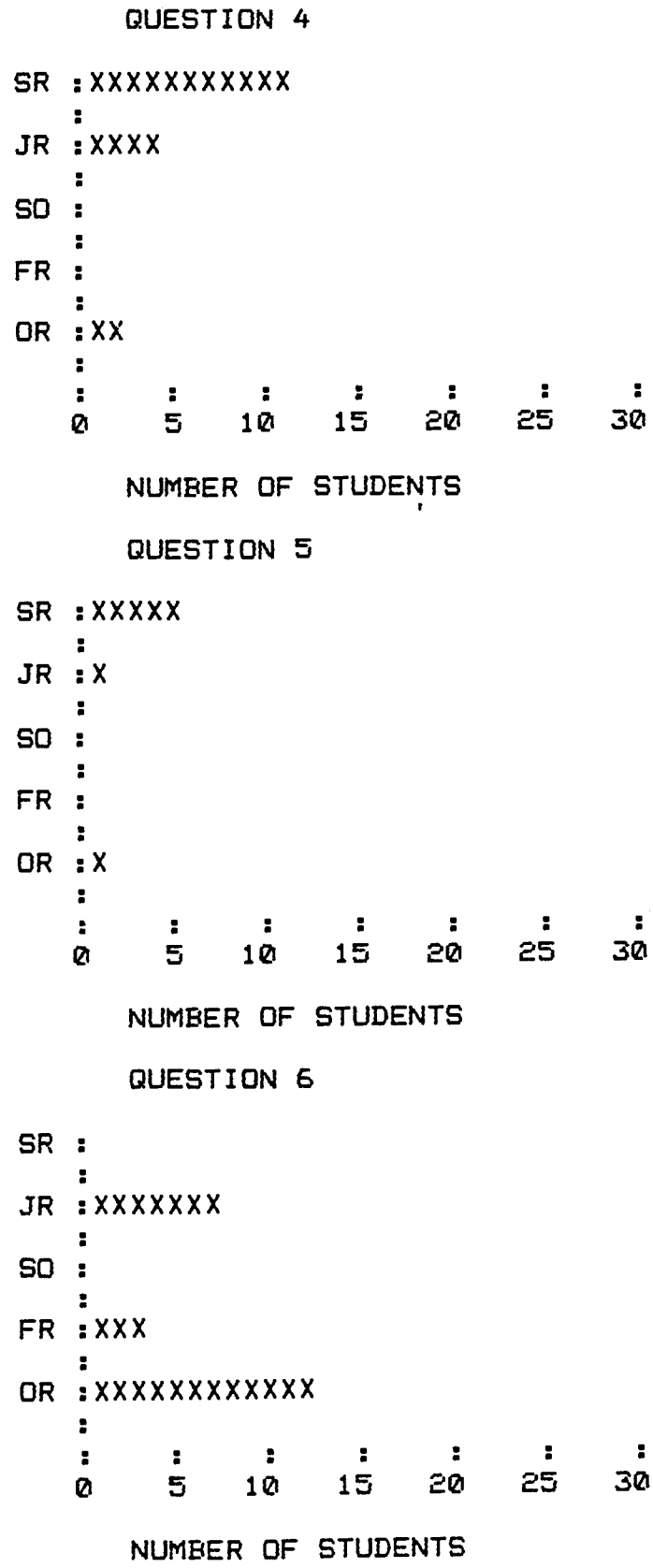

Figure 7. Bar graphs of student responses to microcomputer topic questions.

microcomputer program. The results indicated that most of the students who learned how to run a microcomputer program learned in their senior year, thirty-seven percent. (These students would have no opportunity for this skill to spiral by increasing, repetition or application.) A smaller number learned how to run a microcomputer program in their junior year, fourteen percent. The smallest number learned how to run a microcomputer program in their freshman or sophomore year, six percent. That left forty-three percent of the students who did not learn how to run a microcomputer program in their teacher preparation.

One student learned how to run the microcomputer in the Computer Technology for Teachers Course, ED 438X, two other students learned in ED 309L and ED 406L the Media Competency courese with microcomputer modules. The remainder of the students who learned how to run a microcomputer program did so in either the Science Education Department or the Computer Science Department. None of the students had learned how to run a program on the microcomputer in their home or high school.

The second question asked was when students learned how to write a program for a microcomputer. Again, most of the students learned how to write a program for the microcomputer in their senior year, thirty-one percent. Six percent learned this skill in their junior year, seventeen percent in their sophomore year, and twenty percent in their freshman year. Three percent learned how to write programs for the microcomputer in high school while twenty-six percent of the students did

not learn how to write programs for a microcomputer in any of their courses or outside activities.

Examining these questionnaires it was noted that thirty-one percent of the students learned how to write a microcomputer program before they learned how to run a program. Seventeen percent of the students indicated that they had learned how to write microcomputer programs but had not run a program. (In some computer courses students are taught to program on paper before using a computer.)

The third question asked was about the definitions of computer terms that students had learned, for example "byte" and "RAM". Sixty-five percent of the students indicated that they had not learned definitions of computer terms. Twenty-seven percent learned computer terms and their definitions in their senior year, ten percent in their junior year, thirteen percent in their sophomore year and three percent in their freshman year. The fourth question on microcomputers dealt with the theory of the use of a microcomputer in the classroom. Forty-one percent of the students did not learn the theory of when and where and how they could use a computer in teaching. Thirty-seven percent of the students learned that theory in their senior year. Thirteen percent learned the theory of teaching using a microcomputer in their junior year. In addition three percent of the students learned the theory of how to use a microcomputer in teaching in their other education courses, and three percent picked up their theory outside the classroom.

The fifth queston asked if the student had used the knowledge and theory to include the microcomputer in lesson plans or in a project. Only seven students, twenty-four percent, applied the knowledge and theory that they had for using a microcomputer in the classroom to a lesson plan or project.

Finally the last question asked students to indicate their feeling about how computer learning was spread throughout their undergraduate years. Ten students or thirty-four percent said that it was inadequate. Thirty-one percent said that they didn't have any computer training or knowledge, and three percent said that their exposure to microcomputers was adequate or worthwhile.

An examination of where the students obtained the knowledge of microcomputers showed that fourteen percent took courses in the Instructional Media Department of the School of Education, seventeen percent took courses in the Science Education Department, six percent took Computer Science Department courses, and seventeen percent received knowledge about the microcomputer in other courses than their content area.

16mm Film Projectors

In the second section of the questionnaire the knowledge and application of a 16mm film projector and films is surveyed. The 16mm film projector is the most commonly used film projector in the schools. The majority of education students had learned how to run the 16mm film projector in the Media Competency courses ED 309 or ED 406. (Figure 8.) Thirty-one percent of the students indicated that they had learned the basic skills

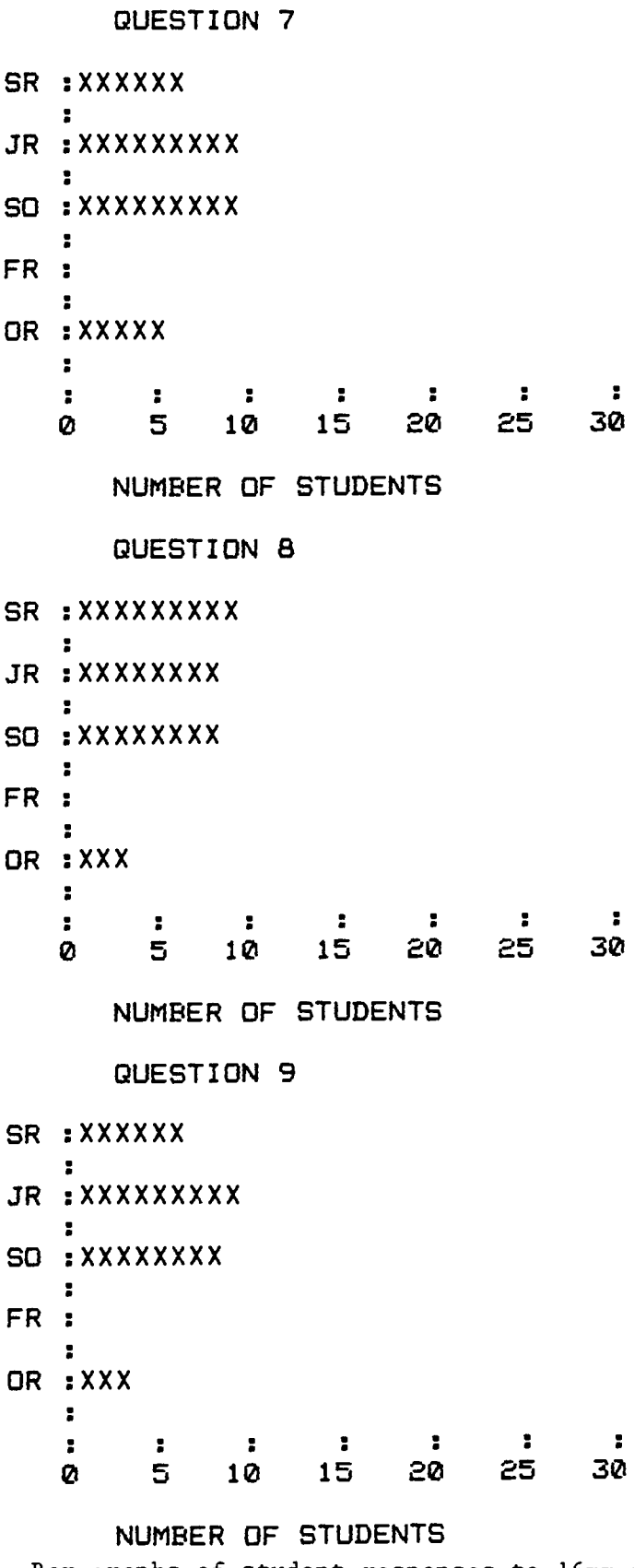

Figure 8. Bar graphs of student responses to 16mm film projector topic questions.

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      QUESTION 10

SR :XXXXXXX
   :
JR :XXXXXXXXX
   :
SO :XXX
   :
FR :
   :
OR :XXXXX
   :
   :    :    :    :    :    :    :
   0    5   10   15   20   25   30

      NUMBER OF STUDENTS

      QUESTION 11

SR :XXXXXXXXXXXXXXX
   :
JR :X
   :
SO :X
   :
FR :
   :
OR :X
   :
   :    :    :    :    :    :    :
   0    5   10   15   20   25   30

      NUMBER OF STUDENTS

      QUESTION 12

SR :X
   :
JR :XXXX
   :
SO :X
   :
FR :XXXXXXXXXXXXXXX
   :
OR :XXXXXX
   :
   :    :    :    :    :    :    :
   0    5   10   15   20   25   30

      NUMBER OF STUDENTS
```

Figure 8. (Continued).

in the beginning media course in their sophomore year, another thirty-one percent in the beginning media course in their junior year, and thirteen percent in that same course in their senior year. Six percent learned how to run a 16mm film projector in an advanced media course, while seventeen precent learned how to run the 16mm projector in high school before entering the School of Education. (Forty-four percent of the students took ED 309 or ED 406 in their junior or senior year, allowing little time to spiral in the media area.)

Again in the second question, the majority, seventy-six percent of the students, responded that they learned to trouble shoot (i.e., change bulbs and fix minor problems) in the Media Competency courses ED 309 or ED 406. Seven percent took an advanced media course to learn how to trouble shoot the 16mm film projector. (Eighty-three percent of the students who indicated they had learned how to run a 16mm film projector in high school, learned how to trouble shoot in ED 309 or ED 406.)

In question nine the students were asked if they knew the names and functions of the main parts of the 16mm film projector. The results essentially duplicated question eight. If the students knew how to trouble shoot they indicated they also knew the parts of the projector.

In question ten the student was asked when he/she learned the theory of when, where, and how to use 16mm films in the classroom. Seven percent said they had learned more theory in their senior year after indicating that they had also learned

theory in earlier years. Seventy-six percent said that they had learned theory in this area in the beginning Media Competency courses ED 309 or ED 406. Twenty-eight percent said they had never learned the theory of when, where, and how to use 16mm films in the classroom to teach their subject matter.

In the next question, eleven students were asked when they included a 16mm film in their lesson plans or a project. Fifty-five percent of the students included a 16mm film in teaching in their senior year. Another three percent used films in their junior year. Three percent more used a film in their sophomore year. However, thirty-four percent did not have the experience of using a 16mm film in a project or lesson plans.

The last question of this section asked the student to evaluate their exposure to the knowledge, theory and practice of using a 16mm film projector. Sixty-nine percent thought that their experience was adequate or worthwile. Twenty-one percent thought it was inadequate.

Slide Projector and 35mm SLR Camera

The third part of the questionnaire surveyed the knowledge, skills, theory and use of the slide projector, 35mm SLR (Single Lens Reflex) camera, and slide programs. (Figure 9.) Most of the students learned to use a slide projector in their sophomore year in ED 309 or ED 406 Media Competency course. Twenty-eight percent of the students surveyed learned to use a slide projector in their sophomore year. Twenty-one percent learned the same skill as juniors in the Media Competency course ED 309 or ED 406.

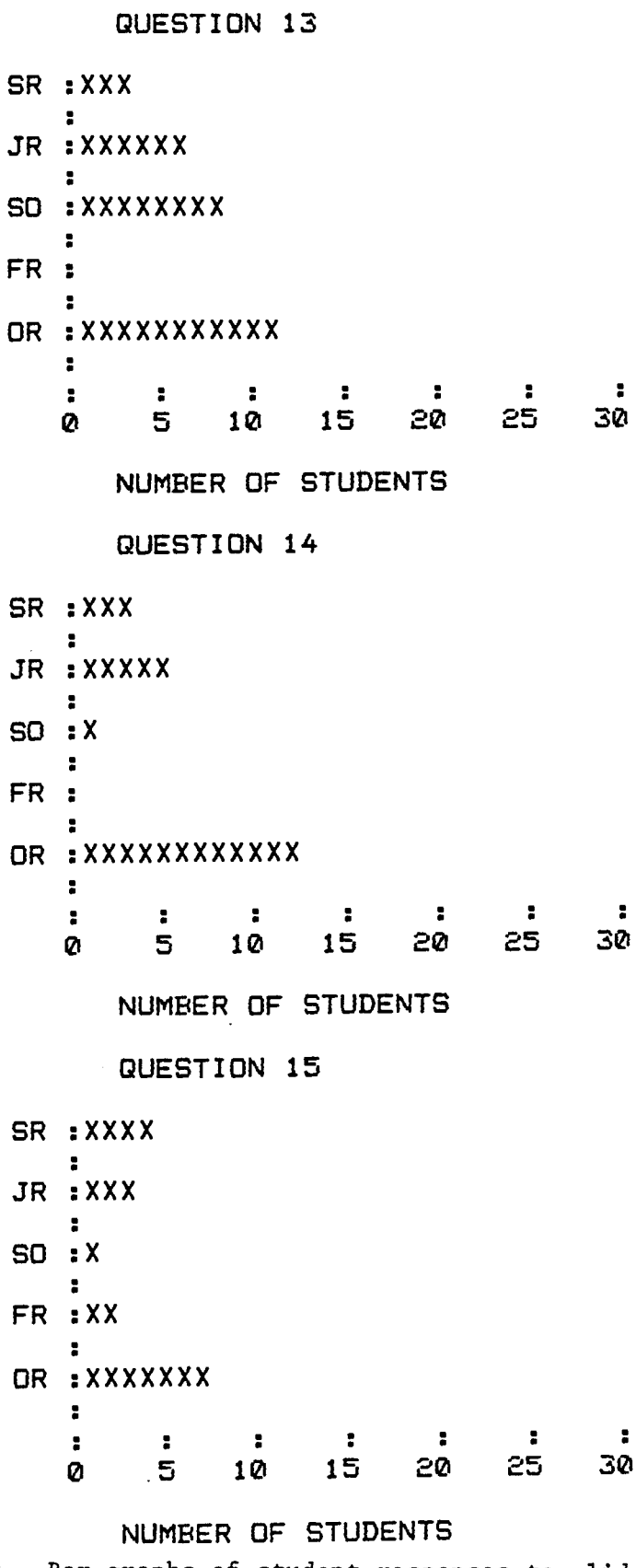


Figure 9. Bar graphs of student responses to slide projector and 35mm SLR camera topic questions.

```
      QUESTION 16

SR :XXXXXXXXX
   :
JR :XXXXXXX
   :
SO :XXX
   :
FR :
   :
OR :XXXX
   :
   :    :    :    :    :    :    :
   0    5   10   15   20   25   30

      NUMBER OF STUDENTS

      QUESTION 17

SR :XXXXXXXXX
   :
JR :XXXX
   :
SO :XX
   :
FR :
   :
OR :XXXX
   :
   :    :    :    :    :    :    :
   0    5   10   15   20   25   30

      NUMBER OF STUDENTS

      QUESTION 18

SR :XX
   :
JR :XX
   :
SO :
   :
FR :XXXXXXXXX
   :
OR :XXXXXXXXX
   :
   :    :    :    :    :    :    :
   0    5   10   15   20   25   30

      NUMBER OF STUDENTS
```

Figure 9. (Continued).

Thirty-four percent of the students learned how to use a slide projector before they entered college and three percent failed to learn how to use the slide projector in their teacher preparation.

Question fourteen asked when students learned how to use a 35mm SLR camera to make their own slides. Forty-one percent of the students learned outside of their college courses, either in high school or on their own. Seventeen percent of the students learned how to make slides in their junior year, and ten percent in their senior year. Thirty-one percent did not learn how to use a 35mm SLR camera to make slides for a slide program or other classroom use. Six percent of the students learned this skill in courses in the Instructional Media department.

Asking for a higher degree of knowledge, the survey asked when students learned the parts of a 35mm SLR camera in the fifteenth question. Not surprisingly, forty-eight percent of the students never learned the parts of a 35mm SLR camera. Twenty-eight percent of the students learned the parts of this type of camera in high school or earlier. Seventeen percent of the students learned the parts of the camera in their junior or senior year in an advanced, elective course.

The theory of when, where and how to use a slide program in teaching, question sixteen, was learned most often in the students' senior year. Thirty-one percent of the students learned theories of using slide programs in teaching in their senior year, twenty-four percent learned in the junior year and ten

percent learned in their sophomore year and fourteen percent learned outside of college courses.

Question seventeen asked when the students used a slide program or slides in a lesson plan or project. Thirty-four percent of the students did not have the experience of using a slide program or slides in a lesson plan or project in a classroom. Thirty-one percent of the students applied their knowledge and skill in their senior year. Fourteen percent of the students used a slide program or slides in a classroom in their junior year. Therefore, approximately twenty-five percent of the students did not apply their knowledge of slide projectors, slides, or slide programs while seventy-five percent did have that experience.

Finally, students were asked how they felt about how the use of a slide projector and camera was taught throughout their undergraduate years. Thirty-eight percent of the students said that their education in this area was adequate or worthwhile. Twenty-seven percent of the students didn't feel that their exposure was adequate and ten percent felt that this skill or knowledge wasn't needed.

Overhead Projector and Transparencies

The fourth topic surveyed was the use of the overhead projector and the ability to choose and make transparencies, as well as the theory for use of this teaching tool. (Figure 10.) In the first question the student was asked when he/she learned how to use an overhead projector. Seventy-nine percent of the students who responded had learned how to use an overhead projector

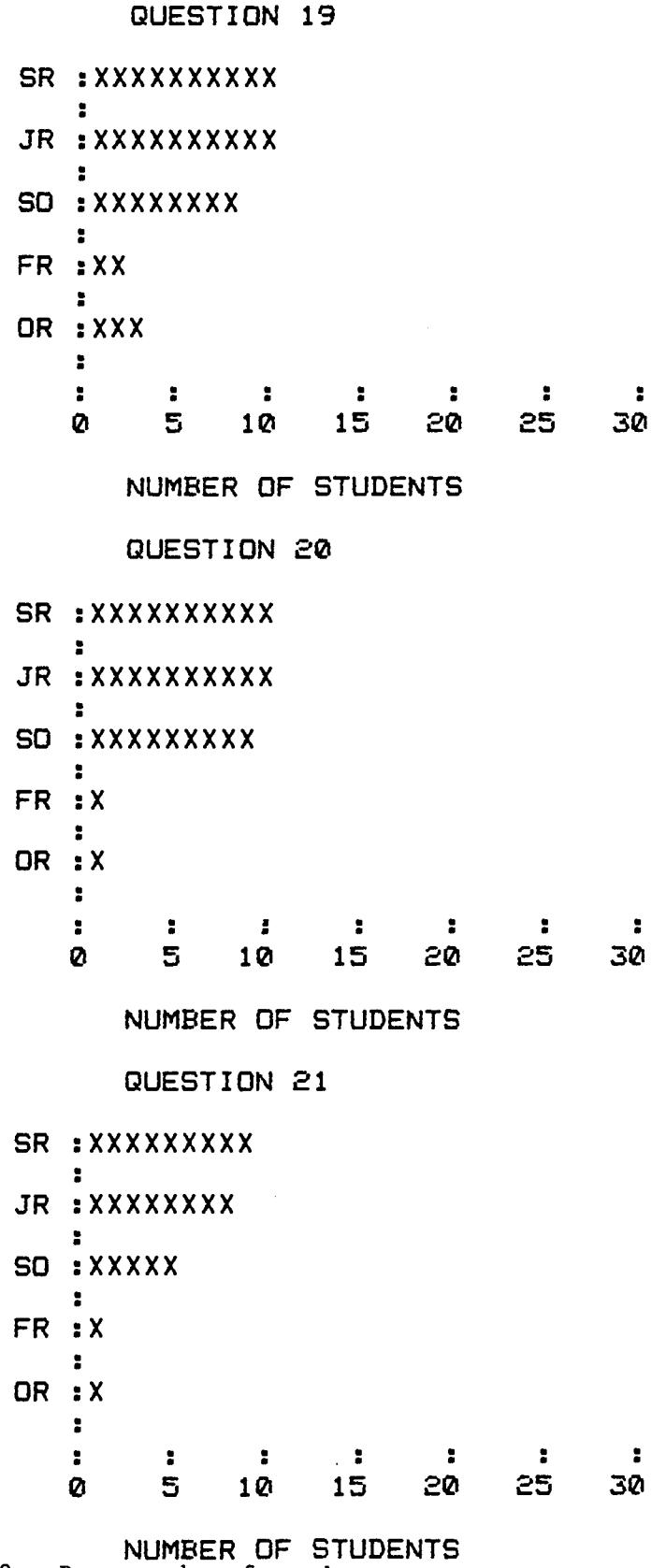
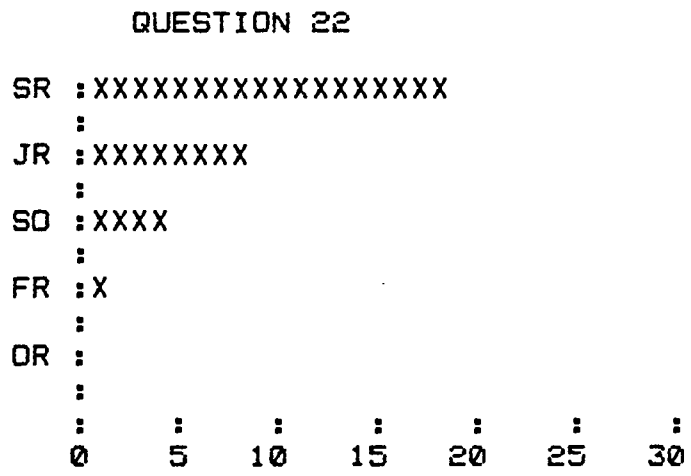
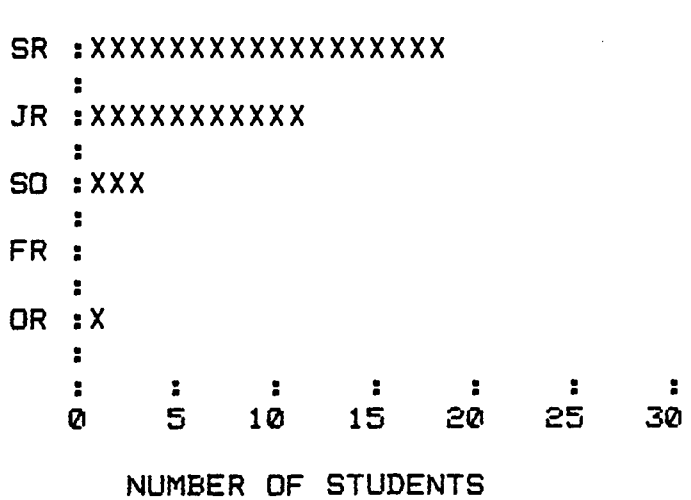


Figure 10. Bar graphs of student responses to overhead projector and transparencies topic questions.





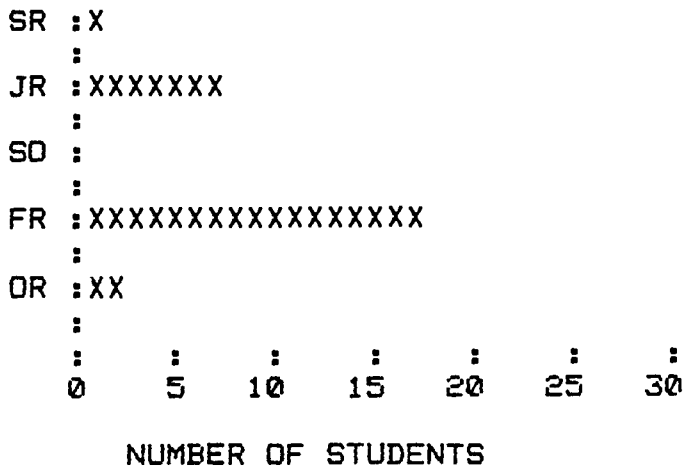


Figure 10. (Continued).

before their senior year. Thirty-four percent learned how to use the overhead projector in their junior year in the ED 309 or ED 406 Media Competency course. Twenty-eight percent learned how to use the overhead projector in their sophomore year in those same media courses. Six percent learned in their freshman year in other courses. All of the students in the survey had learned how to use the overhead projector in their teacher preparation. Ten percent of the students indicated by circling more than one number for this question that they had learned how to use the overhead in more than one year.

Question twenty asked when the students had learned how to make different kinds of transparencies for use on an overhead projector. Three percent learned how to make transparencies in their freshman year, thirty-one percent in their sophomore year, thirty-four percent in their junior year, and thirty-four percent in their senior year.

In the next question, twenty-one, students are asked when they learned how to trouble shoot an overhead projector. This would include changing the bulbs, and perhaps adjusting the fan. Twenty-seven percent of the students could not trouble shoot an overhead projector. Seventeen percent learned how to trouble shoot the overhead projector in their sophomore year, twenty-eight percent in their junior year and thirty-one percent in their senior year.

When is it best to use an overhead projector in teaching? The students were asked when they learned the answer to this question in question twenty-two of the questionnaire. Some

of the students learned about the theory of when, where, and how to use an overhead in more than one course, or year. Fourteen percent circled more than one answer. Sixty-two percent of the students learned about this theory in their senior year, twenty-eight percent in their junior year, and fourteen percent in their sophomore year. All of the students indicated that they had learned some theory about how, when, where or why to use the overhead as a teaching tool.

Question twenty-three asked when the student applied his/her knowledge of the use of the overhead and transparencies in a class or project. All of the students applied their knowledge and skills and used the overhead projector to help them teach. Ten percent of the students used an overhead and transparencies in their sophomore year in a teaching situation, twenty-eight percent in their junior year, and sixty-two percent in their senior year.

Finally, nearly all the students felt that their exposure to learning about transparencies for use on an overhead projector and about the overhead projector as a teaching tool was worthwhile or adequate, eighty-three percent. Only seventeen percent felt the subject was not covered adequately. None of the students had missed this experience of working with an overhead and transparencies.

Audio and Video Tape Recorders

In the fifth section, questions were asked about the knowledge skill and application of the audio and video tape recorders. (See

Figure 11.) Question twenty-five asked if the student learned how to use a reel to reel audio tape recorder. Many of the students, forty-five percent, learned how to use the audio tape recorder before they entered college. Three percent of the students learned how to use a reel to reel audio tape recorder in their freshman year, fourteen percent learned in their sophomore year, twenty-four percent learned in their sophomore year, twenty-four percent learned in their junior year, and ten percent learned in their senior year. Twenty-eight percent of these students learned how to run a tape recorder in the Media Competency course, ED 309 or ED 406. Seven percent of the students circled more than one number indicating that they had learned about a reel to reel audio tape recorder in more than one year. About twenty-five percent of the students did not learn how to use a reel to reel audio tape recorder in their teacher preparation.

Question twenty-six asked if the students had learned how to use a video tape recorder (VTR). Twenty-one percent of the students learned how to use a VTR in a course in the Instructional Media Department. Fourteen percent had learned how to use a VTR outside of their college courses. Sixty-two percent of the students surveyed had not learned how to use a video tape recorder in their teacher preparation or elsewhere.

Question twenty-seven asked if the students learned the names and functions of either the parts of a reel to reel audio recorder or a video tape recorder. Seven percent indicated that they had this advanced knowledge of one of these teaching tools that was learned in an ED 309 course in their sophomore year. Seventeen percent indicated that they had acquired advanced knowledge in their junior year

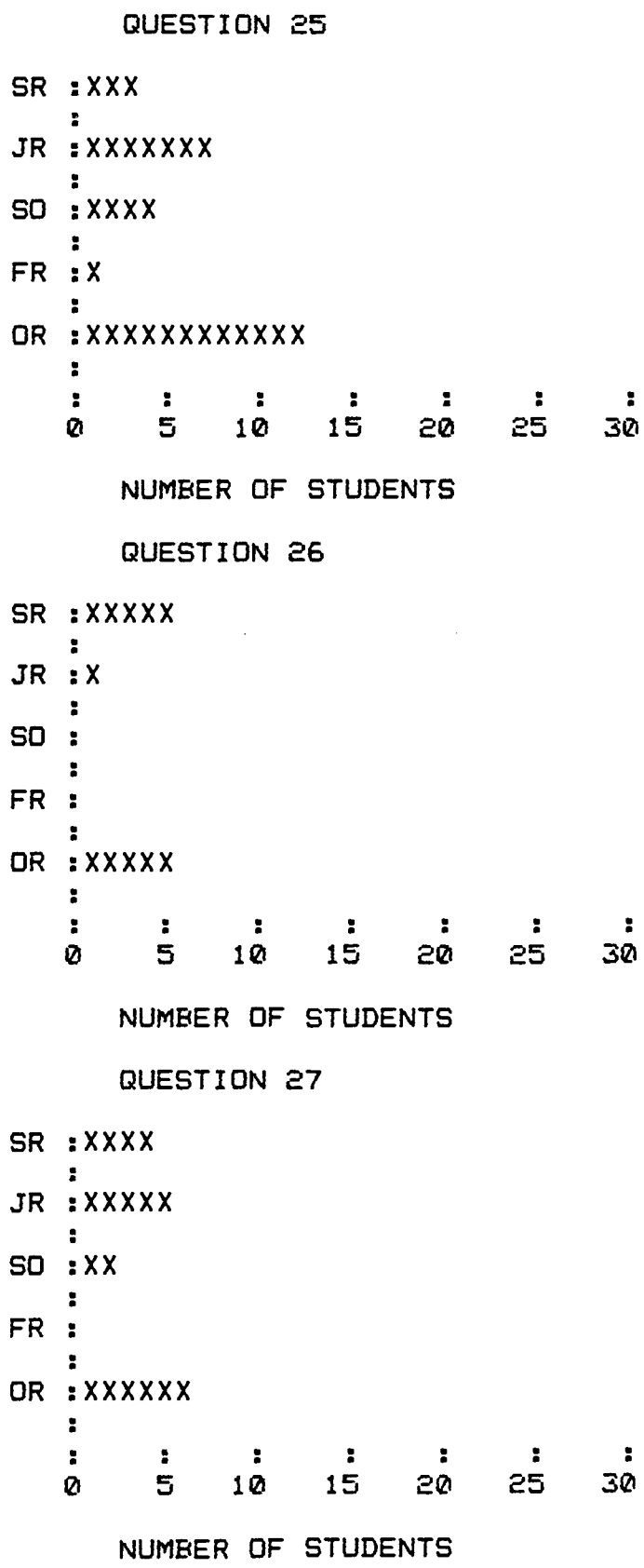


Figure 11. Bar graphs of student responses to audio and video tape recorder topic questions.

QUESTION 28

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SR :XXXXXXXX
   :
JR :X
   :
SO :
   :
FR :
   :
OR :
   :
   :    :    :    :    :    :    :
   0    5   10   15   20   25   30
```

NUMBER OF STUDENTS

QUESTION 29

```
SR :XXXXXXXXXXX
   :
JR :
   :
SO :
   :
FR :
   :
OR :
   :
   :    :    :    :    :    :    :
   0    5   10   15   20   25   30
```

NUMBER OF STUDENTS

QUESTION 30

```
SR :X
   :
JR :X
   :
SO :
   :
FR :XXXXXXXX
   :
OR :XXXXXXXXX
   :
   :    :    :    :    :    :    :
   0    5   10   15   20   25   30
```

NUMBER OF STUDENTS

Figure 11. (Continued).

in ED 309 or ED 406 classes. Fourteen percent acquired this knowledge in an advanced media class in their senior year.

Question twenty-eight asked when the students learned the theory of when, where, and how a video tape recorder (VTR) could be used in teaching. Twenty-eight percent said they had learned this theory in their senior year. Three percent learned about the theory in their junior year. Only one student learned about the theory of when, where and how to use a video tape recorder in an advanced instructional media class, ED 436, the rest of the students acquired their understanding in their student teaching.

Asked when students applied their knowledge of video tape recording or use of a VTR in lesson plans or as a project in the classroom, question twenty-nine, thirty-eight percent circled their senior year. All of the students who knew how to use a VTR used it in their senior year.

The last question of this section, thirty, asked the student to evaluate his/her experiences of using the reel to reel audio and/or the video tape recorder. Thirty-four percent felt that experience was adequate. Thirty-one percent felt it was inadequate.

Lettering and Design

The last topic covered was lettering and design. In question thirty-one students were asked when they had learned how to use lettering devices to make professional looking letters. (Figure 12) Three percent learned in their freshman year, thirty-one percent learned in their sophomore year, twenty-eight percent learned in their junior year, and fourteen percent learned in their senior year. Seventeen

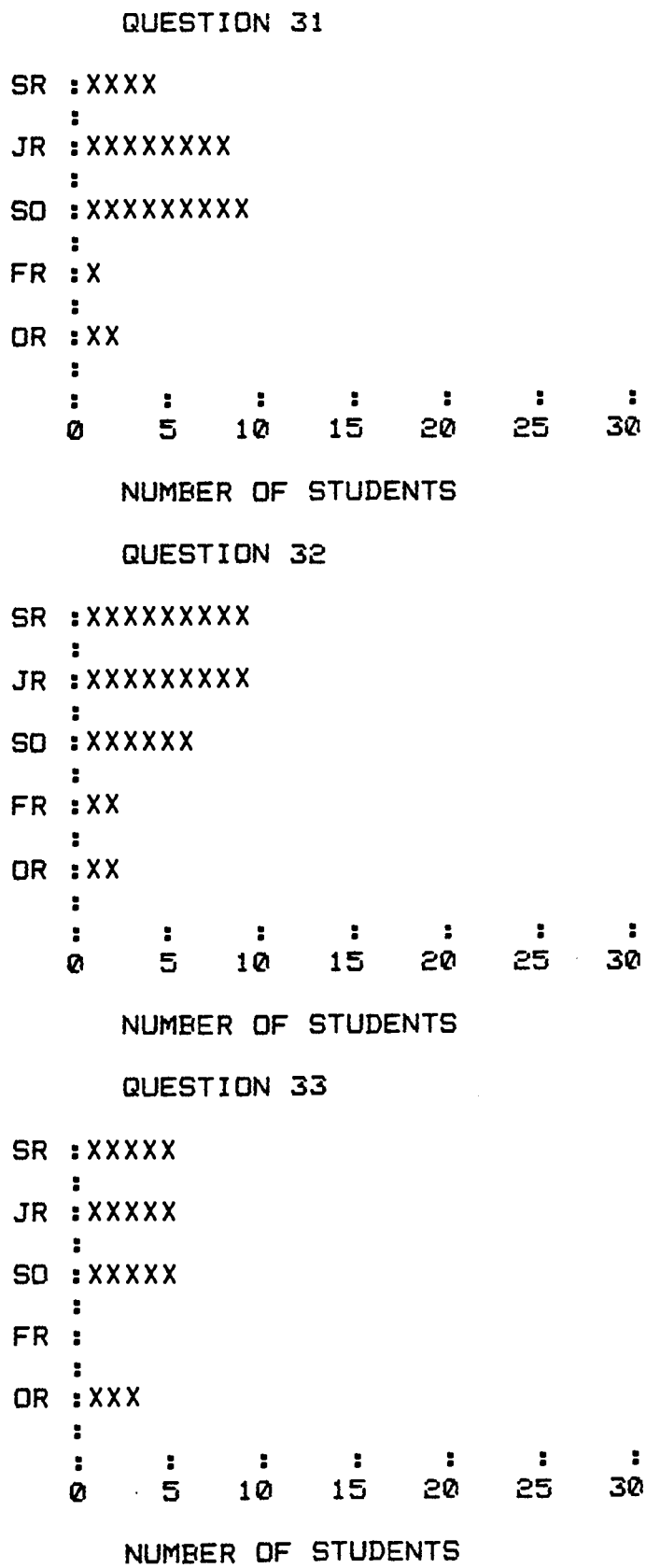

Figure 12. Bar graphs of student responses to lettering and design topic questions.

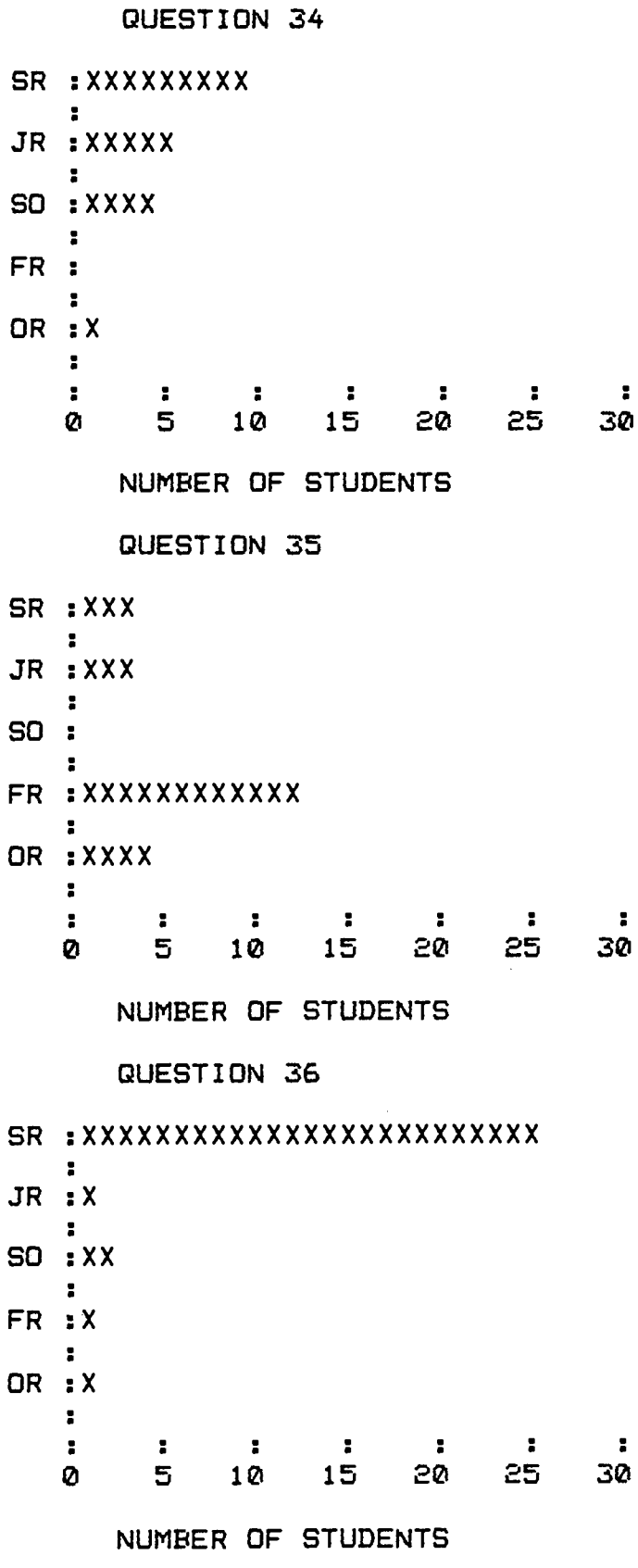

Figure 12. (Continued).

percent never learned to use lettering tools or devices to make professional looking letters for use on handouts or on bulletin boards. (Three of the students had indicated that they had learned how to use lettering devices in more than one year.)

Question thirty-two asked when students learned how to use the principles of design to make hand-outs, signs, or bulletin board displays. Seven percent of the students learned in an art class in their freshman year. Twenty-one percent learned in ED 309 in their sophomore year, thirty-one percent learned in ED 309 in their junior year and thirty-one percent learned in other education courses in their senior year. Three percent had learned how to use the principles of design in high school. Twenty-four percent of the students indicated that they had not learned this skill. (Five of the students learned the principles of design in more than one year.)

In question thirty-three students were asked when they had learned the theories of lettering, letter size is given as an example. Seventeen percent of the students said that they had learned some theory in ED 309 in their sophomore year, seventeen percent in the same course in their junior year, and seventeen percent had learned in an advanced class in their senior year. Thirty-eight percent of the students said that they did not learn theories of how to use lettering. Three percent said that they learned in more than one year. Question thirty-four asked when students applied their skills in lettering. Fifty-two percent of the students said that they had never used a lettering device to make a sign or an aid for use in a classroom

or project. Fourteen percent applied this skill in their sophomore year, seventeen percent applied the skill in their junior year, and thirty-one percent applied the skill in their senior year. Five of the students applied their lettering skill in more than one year.

The last question on this topic asked for the student evaluation of how lettering and design had been taught throughout their undergraduate years. Fifty-two percent felt it was adequate, seventeen percent felt it was inadequate and one student felt that that skill in this area was unnecessary.

In the questionnaire the author suggests including an "inadequate" category. "Inadequate" was written in by the students in the answer "other" for number five of the questions asking for evaluation of learning in each topic.

IV. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The purpose of this study was to determine if the students in the School of Education spiralled in the curriculum in one thread of that spiral, media. By surveying the students with a questionnaire data were gathered and plotted on a graph so that individual student responses as well as total responses for a topic could be examined to see if that spiral was present in their education. If the student learned some knowledge about a topic one year and more the next, a progression up the spiral should be seen. When the student indicated in answers to the questions that he/she went from knowledge of a skill, to knowledge of the theory, to application, a complete spiral should be seen. Finally, looking at the student's evaluation of the coverage of a topic, the last question of each section, it could be determined how they felt about the adequacy of their education in each area.

Interpreting the Data

The graphs for individual students, as well as the graph with the results of all students, for a topic were examined for three separate patterns or trends. Each of the patterns is described below.

First a course centered curriculum would be evidenced by all the "X" marks being in one year. (Each "X" indicated an

answer that was given by a student as explained earlier.) The student would have circled any number of the answers in the same year and none in another year. (See Figure 13a.)

Secondly, a repetitious curriculum would be indicated by several "X" marks in one or more vertical columns. For example four vertical "X"'s for question three would indicate that a student had had theory in all four years. (See Figure 13b.)

Finally, a spiral curriculum would be indicated by the "X" marks moving upward, across the graph in a diagonal pattern from lower left to upper right. (See Figure 13c.) Of course some repetition could be expected in spiralling.

The initial objective of this study was to find out if the spiral model was present for the media curriculum in the School of Education at Oregon State University. These graphs indicate that the spiral is present in media in the following topics for some students.

Data collected in section one, on the topic of microcomputers, indicated that very few of the students spiralled even in two years, the junior and senior years. (See Figure 14.) Most of the students covered the microcomputer in one year and did not return to that topic in another year. Three students did take microcomputer courses in both the junior and senior years, and spiralled in that time. All the other students appear to have had a course centered curriculum in the topic, microcomputers. This may have been due to the recent introduction of the topic, microcomputers, into the curriculum and more students in the

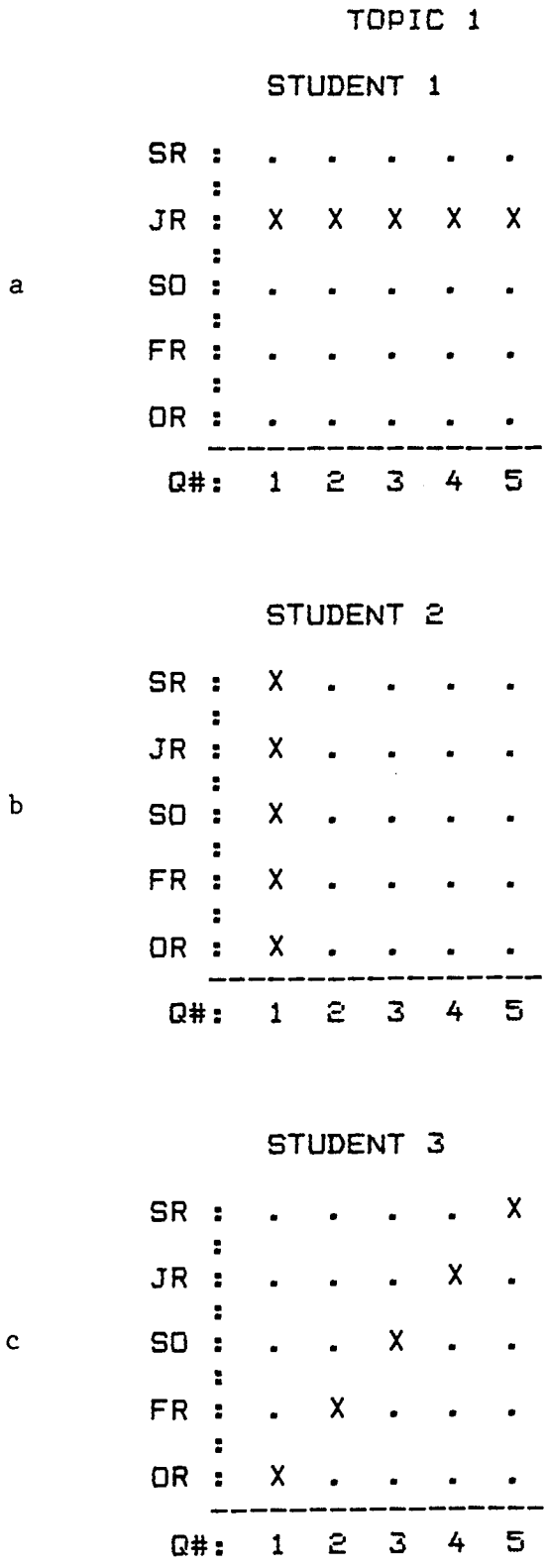

Figure 13. Patterns of student responses that show a) a course centered curriculum, b) a repetitious curriculum, and c) a spiralled curriculum.

TOPIC 1

STUDENT 1

	Q#: 1	2	3	4	5
SR	.	X	.	X	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	X	.	.	.
OR	.	.	.	.	.

STUDENT 2

	Q#: 1	2	3	4	5
SR	X	X	X	X	X
JR	X	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 3

	Q#: 1	2	3	4	5
SR	.	.	.	X	.
JR	X	.	X	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 4

	Q#: 1	2	3	4	5
SR	X	X	X	X	X
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 5

	Q#: 1	2	3	4	5
SR	.	.	.	.	.
JR	X	X	X	X	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 6

	Q#: 1	2	3	4	5
SR	X	.	.	.	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

Figure 14. Individual student responses to the microcomputer topic questions.

STUDENT 7

SR	X	X	X	X	X
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.
Q#:	1	2	3	4	5

STUDENT 8

SR	X	X	X	X	.
JR	.	.	.	.	.
SO	.	X	X	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.
Q#:	1	2	3	4	5

STUDENT 9

SR	.	.	.	X	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.
Q#:	1	2	3	4	5

STUDENT 10

SR	.	.	.	.	.
JR	.	.	.	.	.
SO	.	X	X	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.
Q#:	1	2	3	4	5

STUDENT 11

SR	X	X	X	X	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.
Q#:	1	2	3	4	5

STUDENT 12

SR	.	.	.	.	.
JR	.	.	.	.	.
SO	X	X	X	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.
Q#:	1	2	3	4	5

Figure 14. (Continued).

STUDENT 13

	Q#: 1	2	3	4	5
SR	.	.	.	.	.
JR	X	.	.	.	.
SO	.	.	.	.	.
FR	.	X	.	.	.
OR	.	.	.	.	.

STUDENT 14

	Q#: 1	2	3	4	5
SR	.	.	.	.	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	X	X	.

STUDENT 15

	Q#: 1	2	3	4	5
SR	.	.	.	.	.
JR	.	X	X	X	X
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 16

	Q#: 1	2	3	4	5
SR	X	X	.	X	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	X	.	X

STUDENT 17

	Q#: 1	2	3	4	5
SR	X	X	X	.	X
JR	.	.	.	X	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	X	.	.	.

STUDENT 18

	Q#: 1	2	3	4	5
SR	.	.	.	.	.
JR	.	.	.	X	.
SO	.	X	.	.	.
FR	.	X	X	.	.
OR	.	.	.	.	.

Figure 14. (Continued).

STUDENT 19

	1	2	3	4	5
SR	.	X	X	X	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.
Q#:	1	2	3	4	5

STUDENT 20

	1	2	3	4	5
SR	.	.	.	.	.
JR	.	.	.	.	.
SO	.	X	X	.	.
FR	.	.	.	.	.
OR	X	.	.	X	.
Q#:	1	2	3	4	5

STUDENT 21

	1	2	3	4	5
SR	.	.	.	.	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.
Q#:	1	2	3	4	5

STUDENT 22

	1	2	3	4	5
SR	.	.	.	.	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	X	.	.	.
OR	.	.	.	.	.
Q#:	1	2	3	4	5

STUDENT 23

	1	2	3	4	5
SR	.	.	.	.	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.
Q#:	1	2	3	4	5

STUDENT 24

	1	2	3	4	5
SR	X	.	.	.	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.
Q#:	1	2	3	4	5

Figure 14. (Continued).

STUDENT 25

	Q#: 1	2	3	4	5
SR	.	.	.	.	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 26

	Q#: 1	2	3	4	5
SR	.	.	.	.	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	X	X	.	.	.
OR	.	.	X	.	.

STUDENT 27

	Q#: 1	2	3	4	5
SR	X	.	X	X	X
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	X	.	.	.
OR	.	.	.	.	.

STUDENT 28

	Q#: 1	2	3	4	5
SR	.	.	.	.	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 29

	Q#: 1	2	3	4	5
SR	.	.	.	.	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

Figure 14. (Continued).

future will have the opportunity through added courses and work within courses to increase their exposure to this area, topic.

Data collected in section two, the 16mm film projector and films, a common classroom film projector, indicate that there was more spiralling in this topic. The spiralling indicated began in the sophomore year and continued up through the student's senior year. Ten of the students spiralled. (Graphs of students for topic two, student numbers 1, 2, 3, 4, 8, 17, 12, 24, 25, and 29.) Nine of the students indicated a course centered curriculum in this topic. (Graphs of students for topic two, student numbers 7, 9, 10, 18, 19, 26, 27, and 28.) (See Figure 15.)

In section three (Figure 16), the data collected on the topic of slide projectors and slide programs, can be seen to indicate that four students have spiralled in this topic, learning more about it in successive years leading to application. Ten of the students have indicated that their work on this topic was course centered in one year, and two students have indicated that their work was repetitious, not spiralling. (The work of students shown in graphs 5 and 14 for topic two indicated that they repeated the same knowledge in more than one year.) One student showed spiralling and also repetition. (This was indicated in student graph 14 for topic two.)

The fourth section about the use of overhead projectors and transparencies had data that indicated eleven students spiralled in this topic. (Figure 17) Eight students had a course centered experience in this area. This area then had

TOPIC 2

STUDENT 1

	7	8	9	10	11
SR	.	.	.	.	X
JR	.	.	.	.	.
SO	X	X	X	X	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 2

	7	8	9	10	11
SR	.	.	.	X	X
JR	.	.	.	.	.
SO	X	X	X	X	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 3

	7	8	9	10	11
SR	.	X	.	X	.
JR	X	.	X	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 4

	7	8	9	10	11
SR	.	.	.	.	X
JR	.	.	.	X	.
SO	X	X	X	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 5

	7	8	9	10	11
SR	.	.	.	.	.
JR	X	X	X	.	X
SO	X	X	.	.	.
FR	.	.	.	.	.
OR	.	.	.	X	.

STUDENT 6

	7	8	9	10	11
SR	.	.	.	.	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	X	X	X	X	.

Figure 15. Individual student responses to the 16mm film projector topic questions.

STUDENT 7

	7	8	9	10	11
SR	.	.	.	.	.
JR	X	X	X	X	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 8

	7	8	9	10	11
SR	.	.	.	.	X
JR	X	X	X	X	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 9

	7	8	9	10	11
SR	.	.	.	.	.
JR	X	X	X	X	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 10

	7	8	9	10	11
SR	.	.	.	.	.
JR	.	.	.	.	.
SO	X	X	X	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 11

	7	8	9	10	11
SR	.	X	X	X	X
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	X	.	.	.	.

STUDENT 12

	7	8	9	10	11
SR	.	.	.	.	.
JR	.	.	.	X	.
SO	X	X	X	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

Figure 15. (Continued).

STUDENT 13

	Q#: 7	8	9	10	11
SR	.	.	.	.	X
JR	X	X	X	X	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 14

	Q#: 7	8	9	10	11
SR	X	X	X	X	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	X	X	X	.

STUDENT 15

	Q#: 7	8	9	10	11
SR	X	X	.	.	X
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	X	.

STUDENT 16

	Q#: 7	8	9	10	11
SR	.	.	.	.	X
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	X	X	X	X	.

STUDENT 17

	Q#: 7	8	9	10	11
SR	.	.	.	.	X
JR	.	.	.	X	.
SO	X	X	X	.	X
FR	.	.	.	.	.
OR	X	.	.	.	.

STUDENT 18

	Q#: 7	8	9	10	11
SR	.	.	.	.	.
JR	X	X	X	X	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

Figure 15. (Continued).

STUDENT 19

	7	8	9	10	11
SR	.	.	.	X	X
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.
Q#:	7	8	9	10	11

STUDENT 20

	7	8	9	10	11
SR	.	X	X	X	X
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	X	.	.	.	.
Q#:	7	8	9	10	11

STUDENT 21

	7	8	9	10	11
SR	.	.	.	.	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.
Q#:	7	8	9	10	11

STUDENT 22

	7	8	9	10	11
SR	.	.	.	.	X
JR	.	.	.	.	.
SO	X	X	X	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.
Q#:	7	8	9	10	11

STUDENT 23

	7	8	9	10	11
SR	X	X	X	.	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	X
Q#:	7	8	9	10	11

STUDENT 24

	7	8	9	10	11
SR	.	.	.	.	X
JR	.	.	.	.	.
SO	X	.	X	X	.
FR	.	.	.	.	.
OR	.	.	.	.	.
Q#:	7	8	9	10	11

Figure 15. (Continued).

STUDENT 25

	7	8	9	10	11
SR	.	.	.	.	X
JR	X	X	X	X	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 26

	7	8	9	10	11
SR	X	X	X	.	X
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 27

	7	8	9	10	11
SR	X	X	X	X	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 28

	7	8	9	10	11
SR	X	X	.	.	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 29

	7	8	9	10	11
SR	.	.	.	.	X
JR	X	X	X	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

Figure 15. (Continued).

TOPIC 3

STUDENT 1

	13	14	15	16	17
SR	.	.	.	.	X
JR	.	.	.	.	.
SO	X	.	.	X	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 2

	13	14	15	16	17
SR	.	.	.	X	.
JR	.	.	.	.	.
SO	X	.	.	.	.
FR	.	.	.	.	.
OR	.	X	X	.	.

STUDENT 3

	13	14	15	16	17
SR	.	.	.	.	X
JR	X	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 4

	13	14	15	16	17
SR	.	.	X	.	.
JR	.	X	.	.	X
SO	X	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	X	.

STUDENT 5

	13	14	15	16	17
SR	.	.	.	.	.
JR	.	.	.	X	.
SO	.	.	.	X	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 6

	13	14	15	16	17
SR	.	X	X	X	X
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	X	.	.	.	.

Figure 16. Individual student responses to the slide projector and slide program topic questions.

STUDENT 7

	13	14	15	16	17
SR	.	.	.	X	.
JR	X	X	.	.	X
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	X	X	.	.

STUDENT 8

	13	14	15	16	17
SR	.	.	.	.	.
JR	X	.	.	X	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 9

	13	14	15	16	17
SR	.	.	.	.	.
JR	X	.	.	X	X
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	X	.	.	.

STUDENT 10

	13	14	15	16	17
SR	.	.	.	.	.
JR	.	.	.	.	.
SO	X	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 11

	13	14	15	16	17
SR	.	.	.	X	.
JR	.	X	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	X	.	.	.	.

STUDENT 12

	13	14	15	16	17
SR	.	X	X	X	X
JR	.	.	.	.	.
SO	X	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

Figure 16. (Continued).

STUDENT 13

	13	14	15	16	17
SR	.	.	.	.	X
JR	.	.	.	X	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	X	X	X	X	X

STUDENT 14

	13	14	15	16	17
SR	.	.	.	.	X
JR	.	X	X	X	X
SO	.	.	X	.	.
FR	.	.	X	.	.
OR	X	.	.	X	X

STUDENT 15

	13	14	15	16	17
SR	.	.	.	.	.
JR	.	.	.	.	.
SO	.	.	.	X	X
FR	.	.	.	.	.
OR	X	X	X	.	.

STUDENT 16

	13	14	15	16	17
SR	.	.	.	X	X
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	X	X	X	.	.

STUDENT 17

	13	14	15	16	17
SR	.	.	.	.	.
JR	.	.	.	X	.
SO	X	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 18

	13	14	15	16	17
SR	.	.	.	.	.
JR	X	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

Figure 16. (Continued).

STUDENT 19

	13	14	15	16	17
SR	.	X	.	X	X
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	X	.	.	.	.

STUDENT 20

	13	14	15	16	17
SR	.	.	X	.	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	X	X	.	.	X

STUDENT 21

	13	14	15	16	17
SR	.	.	.	.	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	X	X	X	X	X

STUDENT 22

	13	14	15	16	17
SR	.	.	.	X	X
JR	.	.	.	.	.
SO	X	.	.	.	.
FR	.	.	.	.	.
OR	.	X	.	.	.

STUDENT 23

	13	14	15	16	17
SR	.	.	.	.	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	X	.	.
OR	X	X	.	.	.

STUDENT 24

	13	14	15	16	17
SR	.	.	.	.	.
JR	.	.	.	.	.
SO	X	X	.	.	X
FR	.	.	.	.	.
OR	.	.	.	.	.

Figure 16. (Continued).

STUDENT 25

	13	14	15	16	17
SR	.	.	.	.	.
JR	.	.	.	X	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	X	X	X	.	.

STUDENT 26

	13	14	15	16	17
SR	X	.	.	X	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 27

	13	14	15	16	17
SR	X	.	.	.	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 28

	13	14	15	16	17
SR	X	.	.	.	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	X	.	.	.

STUDENT 29

	13	14	15	16	17
SR	.	.	.	.	.
JR	X	X	X	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

Figure 16. (Continued).

TOPIC 4

STUDENT 1

	Q#: 19	20	21	22	23
SR	.	.	.	.	X
JR	.	.	.	.	.
SO	X	X	.	X	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 2

	Q#: 19	20	21	22	23
SR	X	X	.	X	X
JR	.	.	.	.	.
SO	X	X	X	.	X
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 3

	Q#: 19	20	21	22	23
SR	.	.	.	X	X
JR	X	X	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 4

	Q#: 19	20	21	22	23
SR	.	.	.	X	.
JR	.	.	.	.	X
SO	X	X	X	X	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 5

	Q#: 19	20	21	22	23
SR	.	.	.	.	.
JR	X	X	.	X	X
SO	X	X	.	X	X
FR	.	.	.	.	.
OR	X	.	.	.	.

STUDENT 6

	Q#: 19	20	21	22	23
SR	.	.	.	X	.
JR	.	.	.	.	X
SO	.	.	.	.	.
FR	X	X	X	.	.
OR	X	X	X	.	.

Figure 17. Individual student responses to the overhead projector and transparencies topic questions.

STUDENT 7

	19	20	21	22	23
SR	.	.	.	X	.
JR	X	X	X	.	X
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 8

	19	20	21	22	23
SR	.	.	.	.	X
JR	X	X	X	X	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 9

	19	20	21	22	23
SR	.	.	X	X	X
JR	X	X	X	X	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 10

	19	20	21	22	23
SR	.	.	.	.	.
JR	.	.	.	.	X
SO	X	X	.	X	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 11

	19	20	21	22	23
SR	.	X	X	X	X
JR	.	.	.	.	X
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	X	.	.	.	X

STUDENT 12

	19	20	21	22	23
SR	.	.	.	.	X
JR	.	.	.	X	.
SO	X	X	X	.	X
FR	.	.	.	.	.
OR	.	.	.	.	.

Figure 17. (Continued).

STUDENT 13

SR	.	.	.	.	X
JR	X	X	X	X	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.
Q#:	19	20	21	22	23

STUDENT 14

SR	X	X	X	X	X
JR	.	.	.	.	X
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.
Q#:	19	20	21	22	23

STUDENT 15

SR	.	.	.	X	.
JR	X	X	.	.	X
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.
Q#:	19	20	21	22	23

STUDENT 16

SR	X	X	X	X	X
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.
Q#:	19	20	21	22	23

STUDENT 17

SR	.	.	.	X	X
JR	.	.	.	X	.
SO	X	X	X	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.
Q#:	19	20	21	22	23

STUDENT 18

SR	X	.	.	.	.
JR	X	X	X	X	X
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.
Q#:	19	20	21	22	23

Figure 17. (Continued).

STUDENT 19

	19	20	21	22	23
SR	.	.	.	X	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 20

	19	20	21	22	23
SR	X	X	X	X	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 21

	19	20	21	22	23
SR	X	X	X	.	X
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	X	.
OR	.	.	.	.	.

STUDENT 22

	19	20	21	22	23
SR	.	.	.	X	X
JR	.	.	.	.	.
SO	X	X	X	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 23

	19	20	21	22	23
SR	X	X	X	X	X
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 24

	19	20	21	22	23
SR	.	.	.	.	.
JR	.	.	X	.	X
SO	.	X	.	.	.
FR	X	.	.	.	.
OR	.	.	.	.	.

Figure 17. (Continued).

STUDENT 25

	19	20	21	22	23
SR	.	.	.	.	X
JR	X	X	X	X	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 26

	19	20	21	22	23
SR	X	X	.	X	X
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 27

	19	20	21	22	23
SR	X	X	X	X	X
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 28

	19	20	21	22	23
SR	X	X	X	X	X
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 29

	19	20	21	22	23
SR	.	.	.	.	.
JR	X	X	X	.	X
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

Figure 17. (Continued).

a high degree of spiralling in the topic students learned more about the overhead, its use and theory of use as they progressed through their teacher preparation program and applied that knowledge in their senior year.

The fifth section looked at the data about two related topics, audio recorders and video recorders. (See Figure 18.) Seven students spiralled in their exposure to these areas. Six students indicated that their exposure was course centered in one year. More than half of the students indicated that they had not learned about audio tape recorders or video tape recorders.

The sixth section, data were gathered on lettering and design as a topic that students would have received in their student preparation. (See Figure 19.) Four students indicated that they spiralled in their exposure to this topic, most students indicated that their experience was course centered.

Conclusions

As a result of the findings of this study of one thread of the spiral model of curriculum, media, in the School of Education at Oregon State University, the following conclusions were made:

(1.) Spiralling in media was present for a minority of the students in most of the topics surveyed.

(2.) Many of the students indicated that they had a course centered curriculum in the topics surveyed.

(3.) A significant number of students had reached their senior

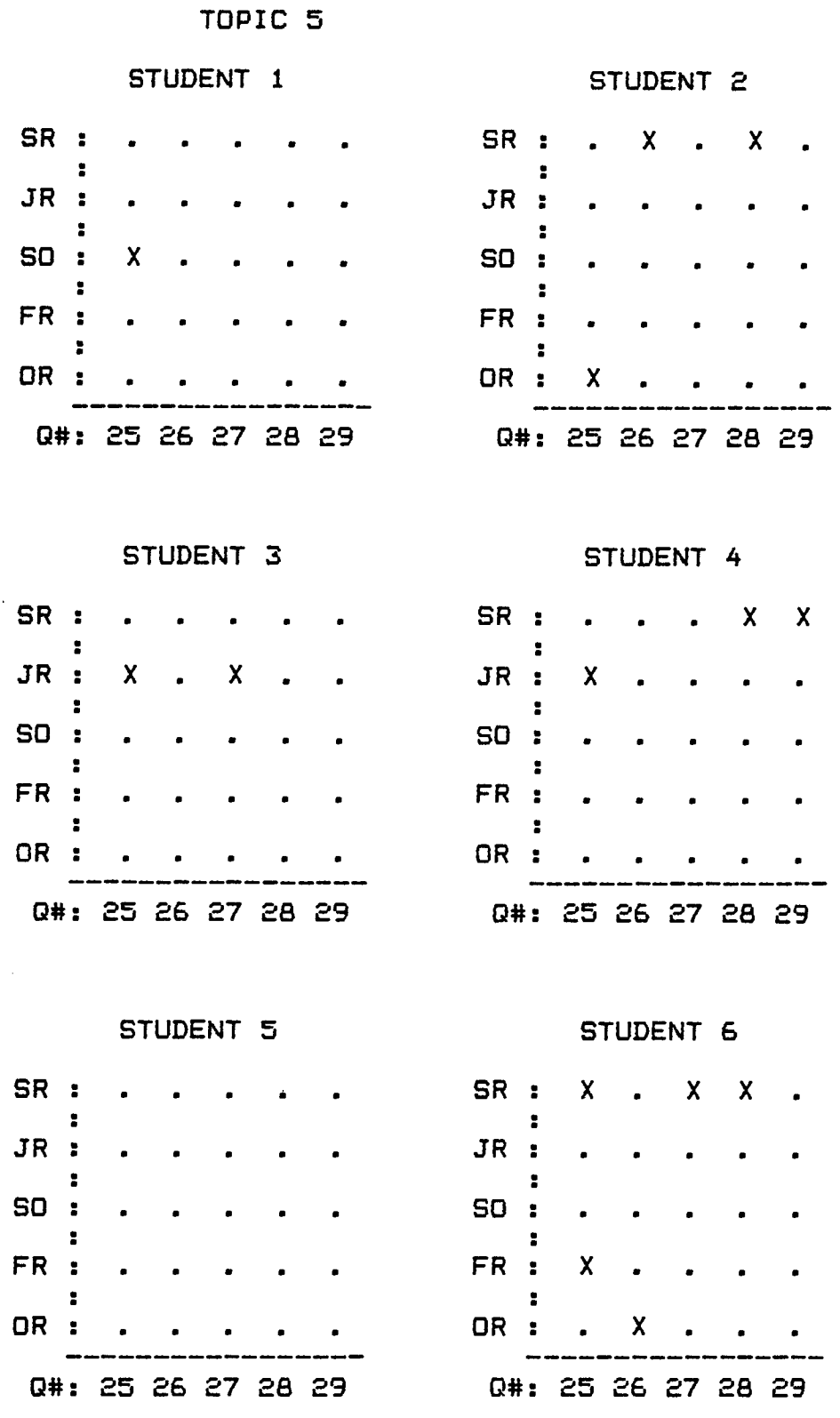

Figure 18. Individual student responses to the tape recorder topic questions.

STUDENT 7

	Q#: 25	26	27	28	29
SR	.	.	.	.	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	X	.	.	.	.

STUDENT 8

	Q#: 25	26	27	28	29
SR	.	.	.	X	.
JR	X	.	X	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 9

	Q#: 25	26	27	28	29
SR	.	.	.	.	.
JR	X	.	X	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 10

	Q#: 25	26	27	28	29
SR	.	.	.	.	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 11

	Q#: 25	26	27	28	29
SR	.	.	.	.	X
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	X	X	.	.	.

STUDENT 12

	Q#: 25	26	27	28	29
SR	.	.	.	.	.
JR	.	.	.	.	.
SO	X	.	X	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

Figure 18. (Continued).

STUDENT 13

	Q#: 25	26	27	28	29
SR	.	.	.	.	X
JR	X	.	X	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	X	.	X	.	.

STUDENT 14

	Q#: 25	26	27	28	29
SR	X	X	X	X	X
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 15

	Q#: 25	26	27	28	29
SR	.	.	.	.	X
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	X	X	.	.	.

STUDENT 16

	Q#: 25	26	27	28	29
SR	.	.	.	X	X
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	X	X	X	.	.

STUDENT 17

	Q#: 25	26	27	28	29
SR	.	.	.	X	.
JR	.	.	.	X	.
SO	X	.	X	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 18

	Q#: 25	26	27	28	29
SR	.	.	.	.	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

Figure 18. (Continued).

STUDENT 19

SR	.	X	.	X	X
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.
Q#:	25	26	27	28	29

STUDENT 20

SR	X	X	X	.	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.
Q#:	25	26	27	28	29

STUDENT 21

SR	.	.	.	.	X
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	X	X	X	.	.
Q#:	25	26	27	28	29

STUDENT 22

SR	.	.	.	.	.
JR	.	.	.	.	.
SO	X	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.
Q#:	25	26	27	28	29

STUDENT 23

SR	.	.	.	.	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	X	.	.	.	.
Q#:	25	26	27	28	29

STUDENT 24

SR	.	.	.	.	.
JR	X	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.
Q#:	25	26	27	28	29

Figure 18. (Continued).

STUDENT 25

SR	.	.	.	.	X
JR	.	X	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	X	.	X	.	.
Q#:	25	26	27	28	29

STUDENT 26

SR	.	.	.	.	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	X	.	X	.	.
Q#:	25	26	27	28	29

STUDENT 27

SR	.	X	.	.	X
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	X	.	X	.	.
Q#:	25	26	27	28	29

STUDENT 28

SR	.	.	X	.	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	X	.	.	.	.
Q#:	25	26	27	28	29

STUDENT 29

SR	.	.	.	.	X
JR	X	.	X	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.
Q#:	25	26	27	28	29

Figure 18. (Continued).

TOPIC 6

STUDENT 1

	31	32	33	34	35
SR	.	.	.	.	.
JR	.	X	.	.	.
SO	X	X	X	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.
Q#	31	32	33	34	35

STUDENT 2

	31	32	33	34	35
SR	.	.	.	X	.
JR	.	X	.	.	.
SO	X	X	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	X
Q#	31	32	33	34	35

STUDENT 3

	31	32	33	34	35
SR	.	.	.	X	.
JR	X	X	X	.	.
SO	.	.	.	.	.
FR	.	.	.	.	X
OR	.	.	.	.	.
Q#	31	32	33	34	35

STUDENT 4

	31	32	33	34	35
SR	.	.	.	X	.
JR	.	.	.	.	.
SO	X	.	.	X	.
FR	.	.	.	.	X
OR	.	.	.	.	.
Q#	31	32	33	34	35

STUDENT 5

	31	32	33	34	35
SR	.	.	.	.	.
JR	X	X	X	X	X
SO	X	X	X	X	.
FR	.	.	.	.	.
OR	.	.	.	.	.
Q#	31	32	33	34	35

STUDENT 6

	31	32	33	34	35
SR	X	.	.	X	X
JR	.	X	.	.	.
SO	.	.	.	.	.
FR	X	.	.	.	.
OR	.	.	.	.	.
Q#	31	32	33	34	35

Figure 19. Individual student responses to the lettering and design topic questions.

STUDENT 7

	31	32	33	34	35
SR	.	X	X	.	.
JR	X	.	.	.	.
SO	.	.	.	.	.
FR	.	X	.	.	.
OR	X	X	.	.	.

STUDENT 8

	31	32	33	34	35
SR	.	.	.	.	.
JR	X	.	X	.	.
SO	.	.	.	.	.
FR	.	X	.	.	X
OR	.	.	.	.	.

STUDENT 9

	31	32	33	34	35
SR	.	.	.	.	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 10

	31	32	33	34	35
SR	.	.	.	X	.
JR	.	X	.	X	X
SO	X	X	.	X	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 11

	31	32	33	34	35
SR	.	.	.	.	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	X

STUDENT 12

	31	32	33	34	35
SR	.	.	.	.	.
JR	.	.	.	.	.
SO	X	X	X	.	.
FR	.	.	.	.	X
OR	.	.	.	.	.

Figure 19. (Continued).

STUDENT 13

	31	32	33	34	35
SR	.	.	.	X	.
JR	X	.	X	X	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 14

	31	32	33	34	35
SR	X	X	.	X	.
JR	.	.	X	X	.
SO	.	.	.	.	.
FR	.	.	.	.	X
OR	.	.	.	.	.

STUDENT 15

	31	32	33	34	35
SR	.	X	.	.	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	X
OR	.	.	.	.	.

STUDENT 16

	31	32	33	34	35
SR	X	X	X	X	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	X
OR	.	.	.	.	.

STUDENT 17

	31	32	33	34	35
SR	.	X	.	.	.
JR	.	.	.	.	X
SO	X	.	X	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 18

	31	32	33	34	35
SR	.	X	.	.	.
JR	X	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

Figure 19. (Continued).

STUDENT 19

	31	32	33	34	35
SR	.	X	.	.	X
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 20

	31	32	33	34	35
SR	.	.	.	.	.
JR	.	.	.	.	.
SO	X	.	.	.	.
FR	.	.	.	.	.
OR	.	X	X	X	X

STUDENT 21

	31	32	33	34	35
SR	.	.	.	.	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	X

STUDENT 22

	31	32	33	34	35
SR	.	.	.	.	.
JR	.	.	.	.	.
SO	X	X	X	X	.
FR	.	.	.	.	X
OR	.	.	.	.	.

STUDENT 23

	31	32	33	34	35
SR	.	X	X	.	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	X
OR	X	.	.	.	.

STUDENT 24

	31	32	33	34	35
SR	.	.	.	.	.
JR	X	X	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

Figure 19. (Continued).

STUDENT 25

	31	32	33	34	35
SR	.	.	.	X	.
JR	X	X	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	X
OR	.	.	X	.	.

STUDENT 26

	31	32	33	34	35
SR	X	.	X	.	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 27

	31	32	33	34	35
SR	.	.	.	.	X
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	.
OR	.	.	.	.	.

STUDENT 28

	31	32	33	34	35
SR	.	X	X	.	.
JR	.	.	.	.	.
SO	.	.	.	.	.
FR	.	.	.	.	X
OR	.	.	.	.	.

STUDENT 29

	31	32	33	34	35
SR	.	.	.	.	.
JR	.	X	.	X	.
SO	.	.	.	.	.
FR	.	.	.	.	X
OR	.	.	X	.	.

Figure 19. (Continued).

year without basic media competencies.

(4.) Student evaluations indicated their need and desire for more preparation in the topics; microcomputers, audio and video tape recorders, slide projector and 35mm SLR camera.

(5.) Spiralling occurred most in the topic of overhead projector and transparencies in media.

Recommendations

The following recommendations are made on the basis of the findings and conclusions of this study.

(1.) A cooperative effort by the faculty of the School of Education to advise students to continue their studies in media would help to ensure that students spiralled in this thread of the curriculum.

(2.) Several options could be provided for continuing instruction in a topic or topics throughout a student's education. Students would be encouraged to follow guidelines that included spiralling in media.

(3.) Ensure that media is not course centered in the one required Media Competency Course, ED 309 (or its equivalent Ed 406) by requiring advanced courses.

(4.) Students should have repeated opportunities to use the knowledge learned early in their education. Opportunities to use their knowledge should be provided in class projects and they should be encouraged to make use of the Instructional Media laboratory to enrich their lesson plans and work.

(5.) Microcomputers and video tape recorders could be included as required competencies for all students in the School of Education. Additional work on the 35mm camera would be helpful for most students. As new technology is developed, competencies should be changed.

(6.) Increase the requirements in the ED 309 and ED 406 courses if they are taken after the sophomore year. Ten or twelve modules are now included. Since there would be less time for the student to spiral in other media courses, more material should be covered and more credit would be given. Beginning media courses in the junior year, for instance, would cover twelve or fourteen modules, instead of the ten or twelve modules in ED 309 and ED 406. In the senior year, beginning media would include fourteen or sixteen modules, instead of ten or twelve, because less time would be available to acquire those skills in other courses or experiences. This would help students to have the knowledge and experiences in media that they need in their teacher preparation.

(7.) Since overhead projection was used the most and spiralled the most in the media thread of the spiral curriculum, investigate the cause of the spiralling and develop methods to increase the spiralling in other topics. If the faculty is modelling using the overhead in their teaching, other instructional media should be encouraged and made readily available.

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APPENDICES

APPENDIX I

Members of the Commission on Missions

Keith Goldhammer
Shelby Price
Frank Cross
Les Beals
Larry Dale
Jody Cooke
Glenn Clark
Anna Meeks
Ed Anderson
Jim Armitage
Rod Fielder
Ed Strowbridge
Stan Williamson
Gene Craven
Robert Bergstrom
James Sherburne
Henry TenPas
Isabella McQuesten
Mel Miller
Forrest Gathercoal
Leonard Kunzman
Dave Nicodemus
Stuart Taylor
Nancy Parcel
Charles Erekson
Arnie Heuchert
Cormack

APPENDIX II

Comments of the students on the questionnaire.

Part I. Micro computers

"I didn't receive enough computer learning. I felt I was just catching the beginning."

"Should have been used more - Teachers are not prepared to go into the classroom full of computer whizzes. We need more!"

"Inadequate"

"Need More" "I would love to see many more classes that don't move as fast as SED 421X."

Part V. Reel of reel audio and video tape recorders

"Expand the video"

"Replace the time spent working with the reel to reel tape machine with time learning how to run the VTR."

General:

"I would like to see the course be more than just passing the ten units. I went through the material so fast I don't remember much about it." (ED 309)

"309 was good and complete."

"Without 309M I would be lost."

"436 was a great class and I feel it would be a good requirement for all students."

"The numbers of credits should be increased and students should be required to teach a number of lessons using the articles mentioned in the survey."

"I think it needs to be spread out more throughout the whole educational experience, too much in one course." (309M)

"Make it more extensive on almost all the material."

APPENDIX III

School of Education Oregon State University Corvallis, Oregon 97331

March 29, 1983

Dear Graduating Senior;

We are evaluating an important part of the instructional program in the School of Education. We would sincerely appreciate your completing the enclosed questionaire by April 8th or sooner to help us in this evaluation.

In the Student Position Paper developed by students following the Student-Faculty Conference held April 13, 1972, the students wrote, "In order for programs to be viable, they must be continuously and systematically assessed." A decade later we are evaluating an important part of the instructional program in the School of Education.

The Class of 1983 is being given the opportunity to give their opinion and supply data for assessing part of this instructional program. You may be assured of complete confidentiality. The questionaire is not marked in anyway. The data will be entered into a computer program and the results of the research will be published as a whole. Any comments that you wish to make will be noted for future studies. (If you wish to comment on any item, please use the margins or the back of the questionaire.)

The results of this research will be made available to the faculty and administration as well as to interested educators, students, and public. We would be most happy to answer any questions that you might have about the study or questionaire.

Your assistance is greatly appreciated.

Sincerely,

Redacted for Privacy

Karen Piepmeier
Graduate Teaching Assistant

APPENDIX IV

INSTRUCTIONAL PROGRAM EVALUATION

1983

School of Education
Oregon State University
Corvallis, Oregon 97331
(503) 754-2501
Karen Piepmeier

Thank you for your help.

OREGON STATE UNIVERSITY SCHOOL OF EDUCATION

Instructional Program Evaluation

DIRECTIONS: Circle the appropriate answer or answers and fill in the blank with a course name or number if you remember them. If you relearned, reinforced or expanded your knowledge of the subject, circle more than one year, and write in more than one course. If you did not learn the competency then circle "NONE OF THE ABOVE."

Sample Question: Q 0. When did you do your student teaching?

IN A COURSE OR PRACTICUM IN YOUR (Course number or name)

1. FRESHMAN YEAR
2. (circled) SOPHOMORE YEAR 309 L
3. JUNIOR YEAR
4. (circled) SENIOR YEAR TP IV
5. OTHER (PLEASE SPECIFY)
6. NONE OF THE ABOVE

****

Q1. When did you learn how to run a computer program on a microcomputer (such as the Apple or TRS-80)?

IN A COURSE OR PRACTICUM IN YOUR (Course number or name)

1. FRESHMAN YEAR _____
2. SOPHOMORE YEAR _____
3. JUNIOR YEAR _____
4. SENIOR YEAR _____
5. OTHER (PLEASE SPECIFY) _____
6. NONE OF THE ABOVE

Q2. When did you learn how to write a computer program?

IN A COURSE OR PRACTICUM IN YOUR

1. FRESHMAN YEAR _____
2. SOPHOMORE YEAR _____
3. JUNIOR YEAR _____
4. SENIOR YEAR _____
5. OTHER (PLEASE SPECIFY) _____
6. NONE OF THE ABOVE

Q3. When did you learn definitions of computer terms (such as "byte"and"RAM")?

IN A COURSE OR PRACTICUM IN YOUR

1. FRESHMAN YEAR _____
2. SOPHOMORE YEAR _____
3. JUNIOR YEAR _____
4. SENIOR YEAR _____
5. OTHER (PLEASE SPECIFY)_____
6. NONE OF THE ABOVE

Q4. When did you learn the theory of when, where, and how a computer could be used in teaching your subject matter?

IN A COURSE OR PRACTICUM IN YOUR

1. FRESHMAN YEAR _____
2. SOPHOMORE YEAR _____
3. JUNIOR YEAR _____
4. SENIOR YEAR _____
5. OTHER (PLEASE SPECIFY)_____
6. NONE OF THE ABOVE

Q5. In what year did you include the microcomputer in lesson plans or a project as a teaching tool?

IN A COURSE OR PRACTICUM IN YOUR

1. FRESHMAN YEAR _____
2. SOPHOMORE YEAR _____
3. JUNIOR YEAR _____
4. SENIOR YEAR _____
5. OTHER (PLEASE SPECIFY)_____
6. NONE OF THE ABOVE

Q6. What is your feeling about how computer learning was spread throughout your undergraduate years?

IT WAS

1. ADEQUATE
2. MUCH TOO REPETITIOUS
3. WORTHWHILE
4. UNNECESSARY
5. OTHER (PLEASE SPECIFY)
6. NONE OF THE ABOVE

Q7. When did you learn how to run a 16mm film projector, either automatic or manual (the projector commonly used in the schools to show movies)?

IN A COURSE OR PRACTICUM IN YOUR

1. FRESHMAN YEAR _____
2. SOPHOMORE YEAR _____
3. JUNIOR YEAR _____
4. SENIOR YEAR _____
5. OTHER (PLEASE SPECIFY)_____
6. NONE OF THE ABOVE

Q8. When did you learn how to "trouble shoot"a 16mm film projector(i.e. change bulbs check film,etc.)?

IN A COURSE OR PRACTICUM IN YOUR

1. FRESHMAN YEAR _____
2. SOPHOMORE YEAR _____
3. JUNIOR YEAR _____
4. SENIOR YEAR _____
5. OTHER (PLEASE SPECIFY)_____
6. NONE OF THE ABOVE

Q9. When did you learn the names of the main parts of a 16mm film projector and what they do?

IN A COURSE OR PRACTICUM IN YOUR

1. FRESHMAN YEAR _____
2. SOPHOMORE YEAR _____
3. JUNIOR YEAR _____
4. SENIOR YEAR _____
5. OTHER (PLEASE SPECIFY)_____
6. NONE OF THE ABOVE

Q10. When did you learn the theory of when, where and how a 16mm film can be used in teaching your subject matter?

IN A COURSE OR PRACTICUM IN YOUR

1. FRESHMAN YEAR _____
2. SOPHOMORE YEAR _____
3. JUNIOR YEAR _____
4. SENIOR YEAR _____
5. OTHER (PLEASE SPECIFY)_____
6. NONE OF THE ABOVE

Q11. In what years did you include a 16mm film in lesson plans or a project as a teaching tool?

IN A COURSE OR PRACTICUM IN YOUR

1. FRESHMAN YEAR _____
2. SOPHOMORE YEAR _____
3. JUNIOR YEAR _____
4. SENIOR YEAR _____
5. OTHER (PLEASE SPECIFY)_____
6. NONE OF THE ABOVE

Q12. What is your feeling about how learning about 16mm projectors and films was spread throughout your undergraduate years?

IT WAS

1. ADEQUATE
2. MUCH TOO REPETITIOUS
3. WORTHWHILE
4. UNNECESSARY
5. OTHER (PLEASE SPECIFY)

Q13. When did you learn how to use a slide projector?

IN A COURSE OR PRACTICUM IN YOUR

1. FRESHMAN YEAR _____
2. SOPHOMORE YEAR _____
3. JUNIOR YEAR _____
4. SENIOR YEAR _____
5. OTHER (PLEASE SPECIFY)_____
6. NONE OF THE ABOVE

Q14. When did you learn how to use a 35mm SLR camera (i.e. Cannon, Nikon, Pentax etc.) to make your own slides?

IN A COURSE OR PRACTICUM IN YOUR

1. FRESHMAN YEAR _____
2. SOPHOMORE YEAR _____
3. JUNIOR YEAR _____
4. SENIOR YEAR _____
5. OTHER (PLEASE SPECIFY)_____
6. NONE OF THE ABOVE

Q15. When did you learn the parts of a 35mm SLR (Single Lens Reflex) camera?

IN A COURSE OR PRACTICUM IN YOUR

1. FRESHMAN YEAR _____
2. SOPHOMORE YEAR _____
3. JUNIOR YEAR _____
4. SENIOR YEAR _____
5. OTHER (PLEASE SPECIFY) _____
6. NONE OF THE ABOVE

Q16. When did you learn the theory of when, where, and how a slide program could be used in teaching your subject?

IN A COURSE OR PRACTICUM IN YOUR

1. FRESHMAN YEAR _____
2. SOPHOMORE YEAR _____
3. JUNIOR YEAR _____
4. SENIOR YEAR _____
5. OTHER (PLEASE SPECIFY) _____
6. NONE OF THE ABOVE

Q17. In what years did you include a slide program or slides that you made into lesson plans or a project?

IN A COURSE OR PRACTICUM IN YOUR

1. FRESHMAN YEAR _____
2. SOPHOMORE YEAR _____
3. JUNIOR YEAR _____
4. SENIOR YEAR _____
5. OTHER (PLEASE SPECIFY) _____
6. NONE OF THE ABOVE

Q18. How do you feel about the way that learning the use of a slide projector and camera was spread throughout your undergraduate years?

IT WAS

1. ADEQUATE
2. MUCH TOO REPETITIOUS
3. WORTHWHILE
4. UNNECESSARY
5. OTHER (PLEASE SPECIFY)
6. NONE OF THE ABOVE

Q19. When did you learn how to use an overhead projector?

IN A COURSE OR PRACTICUM IN YOUR

1. FRESHMAN YEAR _____
2. SOPHOMORE YEAR _____
3. JUNIOR YEAR _____
4. SENIOR YEAR _____
5. OTHER (PLEASE SPECIFY)_____
6. NONE OF THE ABOVE

Q20. When did you learn how to make different types of transparencies for use on an overhead projector?

IN A COURSE OR PRACTICUM IN YOUR

1. FRESHMAN YEAR _____
2. SOPHOMORE YEAR _____
3. JUNIOR YEAR _____
4. SENIOR YEAR _____
5. OTHER (PLEASE SPECIFY)_____
6. NONE OF THE ABOVE

Q21. When did you learn how to "trouble shoot" (i.e. replace bulbs, etc.) the overhead projector?

IN A COURSE OR PRACTICUM IN YOUR

1. FRESHMAN YEAR _____
2. SOPHOMORE YEAR _____
3. JUNIOR YEAR _____
4. SENIOR YEAR _____
5. OTHER (PLEASE SPECIFY)_____
6. NONE OF THE ABOVE

Q22. When did you learn the theory of when, where and how an overhead best could be used in teaching your subject matter?

IN A COURSE OR PRACTICUM IN YOUR

1. FRESHMAN YEAR _____
2. SOPHOMORE YEAR _____
3. JUNIOR YEAR _____
4. SENIOR YEAR _____
5. OTHER (PLEASE SPECIFY)_____
6. NONE OF THE ABOVE

Q23. In what years did you make transparencies for an overhead projector teaching tool for use in a class or as a project for a class?

1. FRESHMAN YEAR _____
2. SOPHOMORE YEAR _____
3. JUNIOR YEAR _____
4. SENIOR YEAR _____
5. OTHER (PLEASE SPECIFY)_____
6. NONE OF THE ABOVE

Q24. What is your feeling about the way that learning the use of an overhead projector was spread throughout your undergraduate years?

IT WAS

1. ADEQUATE
2. MUCH TOO REPETITIOUS
3. WORTHWHILE
4. UNNECESSARY
5. OTHER (PLEASE SPECIFY)
6. NONE OF THE ABOVE

Q25. When did you learn how to use a reel to reel audio tape recorder to record or play recorded scund?

IN A COURSE OR PRACTICUM IN YOUR

1. FRESHMAN YEAR _____
2. SOPHOMORE YEAR _____
3. JUNIOR YEAR _____
4. SENIOR YEAR _____
5. OTHER (PLEASE SPECIFY)_____
6. NONE OF THE ABOVE

Q26. When did you learn how to use a video tape recorder (VTR) to record a television broadcast or to video tape a live situation?

IN A COURSE OR PRACTICUM IN YOUR

1. FRESHMAN YEAR _____
2. SOPHOMORE YEAR _____
3. JUNIOR YEAR _____
4. SENIOR YEAR _____
5. OTHER (PLEASE SPECIFY)_____
6. NONE OF THE ABOVE

Q27. When did you learn the names and functions of the parts of a reel to reel tape recorder(audio or video)?

IN A COURSE OR PRACTICUM IN YOUR

1. FRESHMAN YEAR _____
2. SOPHOMORE YEAR _____
3. JUNIOR YEAR _____
4. SENIOR YEAR _____
5. OTHER (PLEASE SPECIFY) _____
6. NONE OF THE ABOVE

Q28. When did you learn the theory of when, where and how a video tape recorder could be used in teaching your subject?

IN A COURSE OR PRACTICUM IN YOUR

1. FRESHMAN YEAR _____
2. SOPHOMORE YEAR _____
3. JUNIOR YEAR _____
4. SENIOR YEAR _____
5. OTHER (PLEASE SPECIFY) _____
6. NONE OF THE ABOVE

Q29. In what years did you include the video tape recorder (VTR) in lesson plans or a project as a teaching tool?

1. FRESHMAN YEAR _____
2. SOPHOMORE YEAR _____
3. JUNIOR YEAR _____
4. SENIOR YEAR _____
5. OTHER (PLEASE SPECIFY) _____
6. NONE OF THE ABOVE

Q30. How do you feel about the way that video and audio tape recording were taught throughout your undergraduate years?

IT WAS

1. ADEQUATE
2. MUCH TOO REPETITOUS
3. WORTHWHILE
4. UNNECESSARY
5. OTHER (PLEASE SPECIFY)
6. NONE OF THE ABOVE

Q31. When did you learn how to use lettering devices(such as the Alpha Master, WRICO, or LEROY lettering guides)to make professional looking letters?

IN A COURSE OR PRACTICUM IN YOUR

1. FRESHMAN YEAR _____
2. SOPHOMORE YEAR _____
3. JUNIOR YEAR _____
4. SENIOR YEAR _____
5. OTHER (PLEASE SPECIFY)_____
6. NONE OF THE ABOVE

Q32. When did you learn the principles of design for making hand-outs, signs, or bulletin board displays?

IN A COURSE OR PRACTICUM IN YOUR

1. FRESHMAN YEAR _____
2. SOPHOMORE YEAR _____
3. JUNIOR YEAR _____
4. SENIOR YEAR _____
5. OTHER (PLEASE SPECIFY)_____
6. NONE OF THE ABOVE

Q33. When did you learn the theory for uses of lettering devices and what letter sizes are needed when?

IN A COURSE OR PRACTICUM IN YOUR

1. FRESHMAN YEAR _____
2. SOPHOMORE YEAR _____
3. JUNIOR YEAR _____
4. SENIOR YEAR _____
5. OTHER (PLEASE SPECIFY)_____
6. NONE OF THE ABOVE

Q34. In what years of college did you use a lettering device (such as the Alpha Master, WRICO, or LEROY) to make a sign or aid for use in a classroom or project?

1. FRESHMAN YEAR _____
2. SOPHOMORE YEAR _____
3. JUNIOR YEAR _____
4. SENIOR YEAR _____
5. OTHER (PLEASE SPECIFY)_____
6. NONE OF THE ABOVE

Q35. What is your feeling about how lettering and design for handouts, bulletin boards, and posters was taught throughout your undergraduate years?

IT WAS

1. ADEQUATE
2. MUCH TOO REPETITIOUS
3. WORTHWHILE
4. UNNECESSARY
5. OTHER (PLEASE SPECIFY)
6. NONE OF THE ABOVE

PERSONAL DATA ON GRADUATING SENIORS

Q36. How long have you been enrolled in the School of Education at Oregon State University?

1. ONE YEAR
2. TWO YEARS
3. THREE YEARS
4. FOUR YEARS
5. TRANSFERRED IN _____.
(YEAR)

Q37 At what level do you plan to teach?

1. PRIMARY GRADES (1-3)
2. INTERMEDIATE GRADES (4-8)
3. HIGH SCHOOL (9-12)
4. OTHER (PLEASE SPECIFY)
5. NONE

Q38. Do you have any suggestions or comments on the Media Curriculum of the school of Education at Oregon State University?

Q39. Other comments.

APPENDIX V

Summary of the Program

Lines 1-46	Set up some constants and save room (dimension) for the arrays.
Lines 50-85	Instructions
Lines 100-156	Menu to selech which part of the program to use
Lines 180-335	Routine to input answers
Lines 599-660	Subroutine to make separate numbers out of each digit of a number in the input array, and set up the small array used by the plotting routines.
Lines 1999-2110	Main routine to prepare small array that indicates the answers each student gave to a set of questions and plot the results. This main routine uses the routines on lines 599-660 and 2400-2994.
Lines 2400-2994	Plot the answers that each student gave for a set of 6 questions for each topic.
Lines 3000-3340	Plot totals for a set of 6 questions
Lines 3400-3562	Plot bar graphs for each question
Lines 4000-4535	Subroutines used by the plotting routines.
Lines 6550-8000	List numbers in the input array.

APPENDIX VI

```
1REM PROGRAM TO INPUT AND PLOT QUESTIONAIRE RESULTS
10LETQ7=39:LET N6=6:LET N7=6:LET T1=10:LET T2=.1:LETE8=.8:
LETE7=.7:LETP=1
11LETW=.0000001
15PRINT"TRIAL NUMBER=";:INPUT T8
20PRINT"TOTAL NUMBER OF STUDENTS=";:INPUT N
30LET N2=2:REM NUMBER OF PLOTS ACROSS PAGE
35LETQ=N6*N2:LETN2=N2-1
40DIM A(N,Q7),A1(6,Q),T(6),B1(6,Q7),S3(N)
45DATA 1,7,13,19,25,31
46FORI=1TO6:READT(I):NEXTI
50PRINT"TYPING ONLY A RETURN WILL CYCLE TO NEXT QUESTION."
55PRINT"TO MAKE AN ANSWER ZERO, TYPE -1."
60PRINT"INPUT WILL AUTOMATICALLY CYCLE TO NEXT QUESTION AF
TER A VALID INPUT."
65PRINT"TO EXIT THE CYCLE, ENTER A 9 OR ANY NUMBER ENDING
IN 9;"
70PRINT"NEW STUDENT AND QUESTION NUMBERS WILL BE REQUESTED
."
73PRINT"FOR EACH ANSWER TYPE A NUMBER CONTAINING THE DIGIT
S OF EACH RESPONSE:"
77PRINT"FOR EXAMPLE, IF STUDENT CIRCLED NUMBERS 1,3 AND 5
FOR QUESTION 4,"
80PRINT"THEN TYPE 135 [RETURN] AFTER '?'. SCREEN WILL LOOK
 LIKE THIS:"
85PRINT"ANSWER 4?135":PRINT
100REM MENU
105PRINT"TYPE 1 TO ENTER ANSWERS TO QUESTIONS"
110PRINT"TYPE 2 TO PLOT RESULTS"
115PRINT"TYPE 3 TO ADD ANSWERS TO PREVIOUSLY STORED ANSWER
S"
120PRINT"TYPE 4 TO LIST ANSWERS THAT ARE STORED IN MEMORY"
149INPUTQ
150IFQ=1 GOTO 200
152IFQ=3 GOTO 180
153IFQ=4 GOTO 6950
155IF Q=2 GOTO 2000
156GOTO 105
180GET A(0,0),A(T8)
200PRINT:PRINT"TYPE AN 8 FOLLOWED BY A RETURN TO STORE INP
UT ON DISK FILE"
210PRINT"STUDENT NO.";:INPUT N1
220PRINT"QUESTION NO.";:INPUTQ1
230PRINT
240PRINT"ANSWER Q";Q1;"=";:INPUT Q
250IFQ=0GOTO290
252IFQ=-1THEN LETQ=0:GOTO280
255LETQ2=Q*T2:IFQ2-INT(Q2)>E8GOTO300
```

```
260IFQ2-INT(Q2)>E7GOTO330
280LETA(N1,Q1)=Q
290LETQ1=Q1+1:IFQ1>Q7THENLETN1=N1+1:LETQ1=1:IFN1>NGOTO300
295GOTO240
300PRINT:PRINT"LAST STUDENT NO. WAS";N1
310PRINT"LAST QUESTION WAS";Q1:PRINT"NEW":GOTO210
320REM STORE DATA ON DISK
330PUT A(0,0),A(T8)[49]
335GOTO105
599REM SUBROUTINE TO DECODE A(N1,Q1)
600LETQ=A(J,Q3)
610FORI=1 TO 6:LETA1(I,Q1)=0:NEXTI
620IFINT(Q)=0THEN RETURN
625REMPRINT#P,"Q=";Q
630LETQ=Q*T2:LETI=INT(W+T1*(Q-INT(Q))):LETA1(I,Q1)=1:LETB1
(I,Q2)=B1(I,Q2)+1
640REMPRINT#P,"I,Q1,Q2";I,Q1,Q2
660GOTO620
1999REM MAIN ROUTINE TO PLOT
2000GET A(0,0),A(T8)
2001FORK=1 TO N7
2002FORI=1TO6
2003FORJ=1TON6:LETB1(I,J)=0:NEXTJ
2004NEXTI
2007PRINT#P,:PRINT#P,:PRINT#P,"            TOPIC";K
2010LETJ=0
2015LETQ1=1:LETN3=N2
2020FORJ2=0TO N2
2025LETQ2=1:LETQ3=T(K)
2030LETJ=J+1:IFJ>NTHENLETN3=J2-1:GOTO2400
2045LETS3(J2)=J
2050FOR K1=1 TO N6
2060GOSUB 600
2070LETQ1=Q1+1:LETQ2=Q2+1:LETQ3=Q3+1
2090NEXTK1
2110NEXTJ2
2400PRINT#P,:IFN3<0GOTO3000
2401REMFORI=1TO6
2402REMFORQ1=1TON6*(N2+1):PRINT#P,A1(I,Q1);:NEXTQ1
2403REMPRINT#P,:NEXTI
2405LETK1=T(K)
2410FOR I=0TON3
2420LETQ=S3(I)
2422PRINT#P,"       STUDENT";Q;"    ";
2440IFQ<100THENPRINT#P," ";
2450IFQ<10THENPRINT#P," ";
2460PRINT#P,"       ";
2470NEXTI
```

```
2480PRINT#P,:PRINT#P,
2600FORI=0TO N3:LETY1=4:PRINT#P,"SR : ";
2630GOSUB4200
2640NEXTI
2650GOSUB4000
2660FORI=0TON3:LETY1=3:PRINT#P,"JR : ";
2675GOSUB4200
2680NEXTI
2685GOSUB4000
2690FORI=0TON3:LETY1=2:PRINT#P,"SO : ";:GOSUB4200
2710NEXTI
2715GOSUB4000
2720FORI=0TON3:LETY1=1:PRINT#P,"FR : ";:GOSUB4200
2740NEXTI
2745GOSUB4000
2750FORI=0TON3:LETY1=5:PRINT#P,"OR : ";:GOSUB4200
2770NEXTI
2775PRINT#P,
2780FORI=0TON3:GOSUB4100
2800NEXTI
2810PRINT#P,
2820FORI=0TON3:PRINT#P," Q#:";
2840FORK2=K1TOK1+4:IFK2<10THENPRINT#P,"  ";
2860PRINT#P,K2;
2870NEXTK2
2880PRINT#P,"        ";
2885NEXTI
2890PRINT#P,:PRINT#P,:PRINT#P,
2994GOTO2015
3000LETQ=T8*10+K:PUTB1(1,1),B1(Q)[4]
3100PRINT#P,:PRINT#P,:PRINT#P,"       ALL STUDENTS":PRINT#P
,
3110PRINT#P,"SR : ";:LETY1=4:GOSUB4350
3130PRINT#P,"JR : ";:LETY1=3:GOSUB4350
3150PRINT#P,"SO : ";:LETY1=2:GOSUB4350
3160PRINT#P,"FR : ";:LETY1=1:GOSUB4350
3170PRINT#P,"OR : ";:LETY1=5:GOSUB4350
3180PRINT#P,"   ----------------------"
3190PRINT#P," Q#: ";
3300FORK2=K1TOK1+4
3310PRINT#P,"  ";:IFK2<10THENPRINT#P,"  ";
3320PRINT#P,K2;
3330NEXTK2
3340PRINT#P,:PRINT#P,:PRINT#P,
3400FORI1=1TO6
3410PRINT#P,"       QUESTION";I1+K1-1:PRINT#P,
3420LETY1=4:PRINT#P,"SR :";:GOSUB4500
3440LETY1=3:PRINT#P,"JR :";:GOSUB4500
```

```
3460LETY1=2:PRINT#P,"SO :";:GOSUB4500
3470LETY1=1:PRINT#P,"FR :";:GOSUB4500
3475LETY1=5:PRINT#P,"OR :";:GOSUB4500
3480PRINT#P,"    :     ";
3490FORI=1TO6:PRINT#P,":     ";:NEXTI
3500PRINT#P,:PRINT#P,"    0    ";
3510FORI=5TO30STEP5:PRINT#P,I;"   ";:NEXTI
3520PRINT#P,:PRINT#P,:PRINT#P,"       NUMBER OF STUDENTS"
3530PRINT#P,
3540NEXTI1
3550NEXTK
3560STOP
3561REM
3562REM
4000PRINT#P,:FOR I4=0TON3
4010PRINT#P,"    :                          ";
4020NEXTI4
4030PRINT#P,
4040RETURN
4100PRINT#P,"    ----------------          ";
4110RETURN
4200FOR J3=1 TO 5
4210LETQ=J3+I*N6:IFA1(Y1,Q)=0THENPRINT#P," .  ";:GOTO4240
4230PRINT#P," X  ";
4240NEXTJ3
4250PRINT#P,"       ";
4280RETURN
4350FORJ3=1TO5:LETQ=B1(Y1,J3)
4360GOSUB4400
4370NEXTJ3
4375PRINT#P,:PRINT#P,"    :"
4380RETURN
4400IFQ<100THENPRINT#P," ";
4405REMIFQ=0GOTO4420
4410IFQ<10THENPRINT#P," ";
4420PRINT#P,Q;
4430RETURN
4500FORI=1TO B1(Y1,I1):PRINT#P,"X";:NEXTI
4530PRINT#P,:PRINT#P,"    :"
4535RETURN
6950PRINT"TYPE 1 IF YOU WANT TO TRANSFER NUMBERS FROM DISK
 INTO MEMORY"
6955PRINT"BEFORE LISTING. THIS WILL DESTROY NUMBERS NOW IN
 MEMORY";:INPUTQ
6960IFQ=1THEN GET A(0,0),A(T8)
7000FORI=0TO37:LETA(0,I)=I:NEXTI
7005FORJ=0TON:LETA(J,0)=J:NEXTJ
```

```
7007FORI=0TO37
7010FORJ=0TON
7020PRINT#1, A(J,I);:IFA(J,I)<100THENPRINT#1," ";:IFA(J,I)
<10THENPRINT#1," ";
7030NEXTJ
7040PRINT#1,
7050NEXTI
7100GOTO100
8000END
```