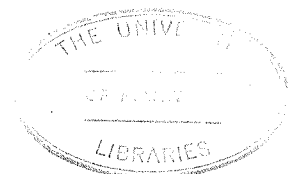


THE DEVELOPMENT AND EVALUATION
OF
PHOTOGRAPHIC COMMUNICATIONS I
AT
ABERDEEN JUNIOR HIGH SCHOOL

A Major Thesis
Presented to
the Faculty of Graduate Studies and Research
The University of Manitoba

In Partial Fulfillment
of the Requirements for the Degree
Master of Education

by
Murray Leslie Firman
April 1976



"THE DEVELOPMENT AND EVALUATION
OF
PHOTOGRAPHIC COMMUNICATIONS I
AT
ABERDEEN JUNIOR HIGH SCHOOL"

by

Murray Leslie Firman

A dissertation submitted to the Faculty of Graduate Studies of
the University of Manitoba in partial fulfillment of the requirements
of the degree of

MASTER OF EDUCATION

© 1976

Permission has been granted to the LIBRARY OF THE UNIVER-
SITY OF MANITOBA to lend or sell copies of this dissertation, to
the NATIONAL LIBRARY OF CANADA to microfilm this
dissertation and to lend or sell copies of the film, and UNIVERSITY
MICROFILMS to publish an abstract of this dissertation.

The author reserves other publication rights, and neither the
dissertation nor extensive extracts from it may be printed or other-
wise reproduced without the author's written permission.

ABSTRACT

PROBLEM

The study described and investigated Photographic Communications I, a new course that was developed and offered to grade seven industrial arts students at Aberdeen Junior High School during the 1975-76 school year. The study consisted of two primary components: course development and course evaluation. Course development, descriptive in nature, was treated by describing the specific steps taken in preparing the instructional unit for the curriculum. See Chapter III, page 21. Course evaluation, statistical in nature, was accomplished by answering the following questions:

1. Will each student score better than 0.90 in procedure related to daily course, field and laboratory assignments?
2. Will testing at the end of the five, one-half day photography experience, or term, confirm a positive cognitive student achievement in more than ninety percent of the participants?
3. a) Will Photographic Communications I meet the expectations of students?
b) How do students perceive the Industrial Arts Department and program at Aberdeen Junior High School?

4. a) Will Photographic Communications I affect a positive improvement in student attendance over the same in previous industrial arts classes?
- b) Will the pattern of student attendance in Photographic Communications I differ from the same in concurrent academic classes?
5. a) Will Photographic Communications I sufficiently interest the grade seven student sample to create a demand for future industrial arts photography course electives?
- b) Will Photographic Communications I affect the interest of other industrial arts students and create a demand for future photography course electives?
6. If given the opportunity, will students who have been involved in Photographic Communications I, react critically to parts of the course content, methods, organization or teacher?

PROCEDURE

The following research design was used to answer the six questions of the study:

1. Daily evaluation of student practical achievement; scoring procedure involved a positive or negative assessment for each related situation.
2. Administration of a twenty item multiple-choice

test at the end of the course to measure student cognitive achievement.

3. Administration of a sixteen item questionnaire to determine student opinion of Photographic Communications I, the industrial arts program, and the industrial arts staff at Aberdeen Junior High School.
4. Investigation and analysis of student attendance patterns for Photographic Communications I, concurrent academic classes, and previous industrial arts courses.
5. Administration of student industrial arts course preference indicator questionnaires to determine the change in student frequency of demand for future courses as affected by the study.
6. Encouragement of student reactions to Photographic Communications I and the analysis of the response.

CONCLUSIONS

The study consisted of two primary components: course development and course evaluation.

Course development, descriptive in nature, was treated in Chapter III by describing the instructional unit that was developed for Photographic Communications I.

Course evaluation was treated statistically and the following general conclusions were made as a result of the investigation:

1. Each student did not score better than 0.90 in procedure related to daily course, field and laboratory assignments. Scores ranged from 0.67 to 1.00. Thirty-one percent of the students scored lower than 0.90, however, the mean for the total student sample was 0.93.
2. More than ninety percent of the students in the sample scored fifty percent or better in the course end cognitive achievement test. Mean for the sample was 83.3 percent. Four students, or 4.4 percent of the sample failed to achieve fifty percent or better.
3. Results of student opinion questionnaire were as follows:
 - a) Photographic Communications I: "above average" to "outstanding".
 - b) The industrial arts program at Aberdeen Junior High School: "average" to "above average".
 - c) Industrial arts teaching staff at Aberdeen Junior High School: "above average" to "outstanding".
4. Sample mean attendance in Photographic Communications I was 95.9 percent compared to 85.2 percent for previous industrial arts classes. Attendance increased by 10.7 percent.
Sample mean attendance in Photographic Commun-

ications I was 95.9 percent compared to 94.5 percent for concurrent academic classes. No significant change in attendance pattern resulted.

5. Sample frequency of demand for future photography experiences indicated 63.3 percent positive response. Change in frequency of demand for future photography courses by the total grade eight and nine industrial arts student group indicated an increase of 11.0 percent during the time of the study. Of the 328 grade eight and nine industrial arts students at Aberdeen, 18 percent indicated interest in future photography courses.
6. Results of student critical reactions to Photographic Communications I were as follows:
 - a) Insufficient equipment and inadequate facilities: fifty percent.
 - b) Organizational policies related to course and content scheduling: thirty-seven percent.
 - c) Photographic Communications I: thirteen percent.

The analysis of all student achievement data, in terms of both written and practical performance, indicates that the instructional objectives were satisfied at a much high level than the traditional 50 percent "pass" level.

It is evident that Photographic Communications I was an effective and satisfactory industrial arts experience

for the grade seven students at Aberdeen Junior High School,
during the period of this study.

ACKNOWLEDGEMENTS

The qualities of patience and perseverance are required to write a thesis. One must also have advisors, colleagues, friends, and family with patience and perseverance. Without the continual support and understanding of the following people, this study would not have been completed:

To Dr. Lowell Anderson who as the writer's major advisor and committee chairman, has been more than helpful, patient, and understanding;

To Professor D. B. Sealey and Professor S. S. Seim, the other members of the committee, whose assistance and guidance was valued and appreciated;

To Gail Litke who so patiently and effectively typed this manuscript;

And to my wife Joan, whose patient understanding, support, invaluable proof reading assistance, and willingness to spare me the time, provided the necessary inspiration for the completion of this study.

TABLE OF CONTENTS

	Page
LIST OF TABLES	xi
LIST OF FIGURES	xiii
Chapter	
I. INTRODUCTION	1
The School Setting And Classification Of Students	1
A Change in Principles and Direction	2
Definition of the Problem	4
Rationale	5
Limitations of the Study	6
Future Implications	7
II. REVIEW OF THE LITERATURE	9
Introductory Statement	9
Historical Background	9
Industrial Arts at Aberdeen Junior High School	12
Implementation of the Special Grade Seven Program	13
Inception of Photographic Communications I	15
Affect of Photography on Other Instructional Programs	17
Congruency in Course Philosophy	18
Summary: Review of the Literature	19
III. PROCEDURE OF THE STUDY	21
Statement of the Problem	21
Population and Sample	22

Chapter	Page
Procedure of Study: Treatment	23
Research Procedure	26
Summary: Procedure of Study	32
IV. RESULTS OF THE STUDY	33
Delineation of the Problem	33
Identification of Statistical Groupings	34
Data and Analysis	35
Summary of the Data	69
V. CONCLUSIONS	71
Purpose of the Study	71
Definition of the Problem	71
Conclusion and Discussion	72
Success of Photographic Communications I	75
Summary Discussion	76
Possible Recommendations	77
BIBLIOGRAPHY	79
APPENDIX	82
PHOTOGRAPHIC COMMUNICATIONS I FINAL COURSE TEST	83
INDUSTRIAL ARTS COURSE SELECTION FORM	87
STUDENT OPINION QUESTIONNAIRE	88
PHOTOGRAPHIC EQUIPMENT AND SUPPLIES PURCHASED FOR IMPLEMENTATION OF PHOTOGRAPHIC COMMUNICATIONS I	90

LIST OF TABLES

Table	Page
I. Student Achievement in Related Daily Course, Field and Laboratory Assignments	36
II. Student Achievement in Related Daily Course, Field and Laboratory Assignments	37
III. Student Achievement in Related Daily Course, Field and Laboratory Assignments, Summary of the Mean	38
IV. Course End Cognitive Achievement Test, Raw Data	40
V. Course End Cognitive Achievement Test, Raw Data	41
VI. Course End Cognitive Achievement Test, Summary of the Mean	42
VII. Course End Cognitive Achievement Test, Summary Number and Percentage of Students Scoring More than Fifty Percent	43
VIII. Course End Cognitive Achievement Test, Item Analysis	44
IX. Course End Cognitive Achievement Test, Item Analysis Total Sample	45
X. Student Opinion of Industrial Arts Department, Related Courses, and Photographic Communications I	53
XI. Attendance Record of Study Group "A" Students in Previous Industrial Arts Classes, in Photographic Communications I, and Concurrent Academic Classes	55
XII. Attendance Record of Study Group "B" Students in Previous Industrial Arts Classes, in Photographic Communications I, and Concurrent Academic Classes	56
XIII. Attendance Record of Study Group "C" Students in Previous Industrial Arts Classes, in Photographic Communications I, and Concurrent Academic Classes	57

Table	Page
XIV. Attendance Record of Study Group "D" Students in Previous Industrial Arts Classes, in Photographic Communications I, and Concurrent Academic Classes	58
XV. Attendance Record of Study Group "E" Students in Previous Industrial Arts Classes, in Photographic Communications I, and Concurrent Academic Classes	59
XVI. Attendance Record of Study Group "F" Students in Previous Industrial Arts Classes, in Photographic Communications I, and Concurrent Academic Classes	60
XVII. Attendance Data of the Total Sample, Summary of Mean	61
XVIII. Demand for Future Photography Course Electives Grade Seven Sample Group	63
XIX. Industrial Arts Student Course Preference Questionnaire	64
XX. Net Change of Student Preference for Industrial Arts Course Option at Aberdeen Junior High School in March 1976	65
XXI. Frequency of Similar Student Criticism of Photographic Communications I	67
XXII. Frequency of Similar Student Criticism of Photographic Communications I, Summary	68

LIST OF FIGURES

Figure		Page
I.	Graph of Item Number Against Percentage of Students Having the Correct Answer, Group A	46
II.	Graph of Item Number Against Percentage of Students Having the Correct Answer, Group B	47
III.	Graph of Item Number Against Percentage of Students Having the Correct Answer, Group C	48
IV.	Graph of Item Number Against Percentage of Students Having the Correct Answer, Group D	49
V.	Graph of Item Number Against Percentage of Students Having the Correct Answer, Group E	50
VI.	Graph of Item Number Against Percentage of Students Having the Correct Answer, Group F	51

Chapter I

INTRODUCTION

The School Setting And Classification Of Students

Aberdeen Junior High School is a secondary level public educational institution which is part of the Winnipeg School Division Number I. The school provides an educational program for students in grades seven, eight, and nine. Aberdeen Junior High School has been located at Flora Avenue and Salter Street in the north end district of Winnipeg since 1892.

The school serves a population within the northern boundaries of the presently defined "Inner City Core Area". In January 1976, the student enrollment at Aberdeen Junior High School was approximately 430. At that time, students were taught by a staff of thirty-three teachers and the school was administered by a principal and one teaching vice-principal.

Originally, the student population at Aberdeen Junior High School was for the most part representative of several different ethnic backgrounds. Prior to 1960, and especially during the peak immigration periods of Europeans to Canada, many Jewish, Ukrainian, Polish, and other peoples from Eastern European countries, landed in Winnipeg. They settled in the north end of the city. This area was geographically defined as that part of Winnipeg, north of the

Canadian Pacific Railway yards and west of the Red River. Since it's construction in 1892, Aberdeen Junior High School has played an important role in providing education to Winnipeg's ethnic community.

Socio-economic upward mobility was achieved through hard work and as a result many families moved to more affluent sections of the city. Since 1960, different cultural groups have populated this area, primarily Indian and Metis families. Presently, the residential community surrounding Aberdeen Junior High School can be considered representative of the lower socio-economic class in Winnipeg. A large portion of the families are housed in subsidized housing such as the Lord Selkirk Development. These families are very mobile. This can be evidenced by approximately two hundred student transfers for a school of 430 pupils in the month of January 1976.

Since the construction of Aberdeen Junior High School in 1892, the role of educating children of a lower socio-economic level has not changed. The area of change has been in the different cultural groups.

A Change in Principles and Direction

In September 1974, grade seven students at Aberdeen Junior High School were given the opportunity to select their industrial arts program. This differed from previous years when only the grade eight and nine industrial arts students were allowed a choice of program. Difficulty experienced in scheduling these student demands, combined

with unusually high absenteeism which approached twenty percent, indicated that some change in principles and direction were necessary.

Rather than following traditional lines of preparing the student for some specific vocation, the industrial arts staff at Aberdeen Junior High School directed their attention towards preparing that student for the real world of work. The student was discouraged from choosing and remaining in particular industrial arts situations that appeared safe and comfortable. Alternative attractive industrial arts options to supplement the existing programs were considered. Industrial arts at Aberdeen Junior High School was ideally perceived as becoming a parameter of vocationally orientated experiences. Rather than the program concentrating on specific operational skills, emphasis was placed on the development of proper work habits, respect for tools and machines, an understanding of industry, self respect, and confidence. With this background, it was believed that the student would be able to quickly adapt to any future vocational situation successfully.

Commencing September 1975, the Industrial Arts Department at Aberdeen Junior High School decided to promote a program of varied and interesting vocational experiences. These would contribute to the development of student appreciation and awareness of potential vocational careers. The ultimate goal was to prepare the student for the real world of work.

Definition of the Problem

The study described and investigated Photographic Communications I, a new course that was developed and offered to grade seven industrial arts students at Aberdeen Junior High School during the 1975-76 school year. The study consisted of two primary components: course development and course evaluation. Course development, descriptive in nature, was treated by describing the specific steps taken in preparing the instructional unit for the curriculum. See Chapter III, page 21. Course evaluation, statistical in nature, was accomplished by answering the following questions:

1. Will each student score better than 0.90 in procedure related to daily course, field and laboratory assignments?
2. Will testing at the end of the five, one-half day photography experience, or term, confirm a positive cognitive student achievement in more than ninety percent of the participants?
3. a) Will Photographic Communications I meet the expectations of students?
b) How do students perceive the Industrial Arts Department and program at Aberdeen Junior High School?
4. a) Will Photographic Communications I affect a positive improvement in student attendance over the same in previous industrial arts classes?

- b) Will the pattern of student attendance in Photographic Communications I differ from the same in concurrent academic classes?
5. a) Will Photographic Communications I sufficiently interest the grade seven student sample to create a demand for future industrial arts photography course electives?
- b) Will Photographic Communications I affect the interest of other industrial arts students and create a demand for future photography course electives?
6. If given the opportunity, will students who have been involved in Photographic Communications I, react critically to parts of the course content, methods, organization or teacher?

Rationale

Photographic Communications I is a unique curriculum development for the industrial arts program, both at Aberdeen Junior High School and within Winnipeg School Division Number I. Photography had not been taught as an industrial arts experience at Aberdeen prior to December 1975. As of September 1975, photography was not included as a course of study in any of the thirty-five industrial arts shops within the secondary schools of Winnipeg School Division Number I. This excludes R.B. Russell and Technical Vocational High Schools which offer vocational programs.

Photography however, may have been present as part

of other instructional programs or hobby courses. Photographic Communications I differs from other instructional programs because:

1. It moved the student from the formal class room.
2. It provided the opportunity for student awareness and understanding of the environment and the real world of work.
3. It provided darkroom experiences that were designed to simulate and teach acceptable industrial processes and techniques.
4. It provided the student with the opportunity to explore an interesting and viable future potential vocation.

Limitations of the Study

For the most part, limitations of this study were related to technique of treatment procedure. Simulation of industrial atmosphere was difficult to provide due to facilities. Laboratory experiences for Photographic Communications I were conducted in either the plastics or wood-working area. These two rooms were without windows and a large dark curtain was used to limit light entering at the doors. The basic plumbing facilities, which consisted of a small hand washing sink and spring loaded water supply taps, were inadequate for washing any large volume of films and prints. The atmospheric and physical environment of both rooms was always dusty from previous classes.

Valuable class time was lost during each laboratory session as the supplies and equipment were stored in a security area located in another part of the building. Each laboratory situation required a minimum of four electrical sources which were provided by a network of extension cords.

All contact printing and enlarging was accomplished with the use of one photographic enlarger. This limited an average class of fifteen students to a maximum of three positive prints in the two hour class session.

As the program was so rigidly structured, there was no available time within the course to repeat any particular process, or correct and improve quality of results. If a class was missed, the student, by nature of the program structure, lost the benefit of that laboratory experience.

Effective cognitive learning was impeded due to the long interval of time between class sessions. As the photography class met once every sixth school day, some forgetting of previously taught subject matter occurred, and valuable lecture time was diverted to review.

An ERIC computer search of available related information produced twenty possible articles. Only eight of these were available in the University of Manitoba library. This situation created a limitation in the literature that was researched for the study.

Future Implications

Success of Photographic Communications I at Aberdeen

Junior High School could imply the following:

1. Inclusion of photography into the regular grade seven industrial arts exploratory program.
2. Regular five month industrial arts photography courses for grade eight and nine students.
3. Student special activity photography classes.
4. Involvement of photography by students in other instructional classes.
5. Incentive for other studies to develop and improve the industrial arts program at Aberdeen Junior High School.

Chapter II

REVIEW OF THE LITERATURE

Introductory Statement

The intent of this chapter was not only to review similar and related studies and experiments (Pages 17-19), but also to discuss the history and development of the industrial arts program at Aberdeen Junior High School. This treatment specifically relates to the study and includes the following:

1. "Historical Background" (Pages 9-12); the industrial arts program at Aberdeen Junior High School prior to September 1974.
2. "Industrial Arts at Aberdeen Junior High School" (Pages 12-13); industrial arts facilities, setting, and philosophy at Aberdeen Junior High School, September 1974 to time of study, December 1975.
3. "Implementation of the Special Grade Seven Program" (Pages 13-15); commencing September 1975.
4. "Inception of Photographic Communications I" (Pages 15-16); December 1975.

Historical Background

Prior to September 1974, the industrial arts program at Aberdeen Junior High School was traditional

and extremely rigid, both in philosophy and treatment. The program was mandatory for boys. Girls were not encouraged to participate in the industrial arts program. They were traditionally scheduled for classes in home economics. It should be noted that this situation was not unique to Aberdeen Junior High School, as for the most part, all schools within the Winnipeg School Division Number I treated industrial arts and home economics in this manner.

Metalworking, woodworking, and plastics were the three industrial arts areas available for study at Aberdeen Junior High School. The complete school year, September to June, was divided to provide two equal five month terms of industrial arts experience to each student. The first term, September through January, was followed by the second, February through June. The student was scheduled for two terms of instruction in each of the above industrial arts courses. The introductory and advanced level of a course did not necessarily occur during the same school year. For the most part, introductory courses were usually scheduled for grade seven and the corresponding advanced experience followed in grade nine.

Owing to the nature of industrial arts scheduling, each course was highly structured. For the most part, classes were homogeneous in student age and grade. The student was allowed minimal freedom in program and related project choice. The limitations were a structured curriculum which allowed the student to proceed only at the

same pace as classmates. This process did not allow for student individualism.

It should be noted at this time that the quality of industrial arts instruction was not in question. Concern was directed at the probability that not all students' needs and interests were being met by the traditional industrial arts approach. Apparent student dissatisfaction with their industrial arts experience at Aberdeen Junior High School became evident in September 1974.

During the spring of 1974, the Board of Trustees of the Winnipeg School Division Number I ruled that total integration must occur both in industrial arts and home economics. All students were to be allowed freedom of choice in all subject areas offered within the two Departments.

In September 1974, all students scheduled for industrial arts and home economics at Aberdeen Junior High School were allowed total freedom in program and course selection. It was noted that many boys registered for courses in the home economics program, however, the total enrollment of industrial arts increased as a result of female registration for shops courses. The fact that many boys and girls changed programs, when given the opportunity, was probably due in large part to student dissatisfaction with the traditional approach to both industrial arts and home economics.

Another area of concern that evolved as a result of the policy change for industrial arts and home economics,

involved the new grade seven student arrival from local feeder schools. In the spring of 1974, these children were grade six students at David Livingstone, King Edward, William Whyte, Victoria Albert, and other elementary feeder schools. These students were approached by principals and allowed to select their future grade seven industrial arts program at Aberdeen Junior High School. For the most part, these children did not have exposure or understanding of an industrial arts or home economics program at the junior high school level. The result was that most boys chose woodworking; most girls chose cooking. Once in grade seven at Aberdeen, these children demanded that they be allowed their initial choice of shops. The resulting situation proved impossible to schedule and the ultimate result was that there were many unhappy grade seven students in industrial arts at Aberdeen Junior High School from September 1974 to June 1975.

Industrial Arts at Aberdeen Junior High School

Supplementing the academic experience at Aberdeen Junior High School is a practical and fine arts program that includes four industrial arts shops, three home economics labs, and an art room. Students from several other secondary schools received their industrial arts and home economics classes at Aberdeen. These schools include: Isaac Newton, Hugh John Macdonald, Cecil Rhodes, Gordon Bell, Holy Ghost, Immaculate Heart of Mary, and St. Ignatius. The latter three are privately administered parochial schools.

Industrial arts facilities at Aberdeen Junior High

School include a metalworking, plastics, and two woodworking areas. The second woodworking area was originally established to provide practical oriented programs for children with certain learning disabilities. These classes were designated "Developmental Educational Occupational Skills" (DEOS). Current practice within the Winnipeg School Division Number I has removed distinguishing student labels. These children are included in regular class room situations, whenever possible. As a result of this change in philosophical direction, the second woodworking area, for the most part, has become available for regular industrial arts programming.

Traditional industrial arts philosophy at Aberdeen Junior High School, prior to September 1974, was centered on the preparation of students for specific vocational opportunities. Transition of philosophy and direction of industrial arts at Aberdeen occurred during the year, September 1974 to September 1975. Since September 1975, the industrial arts direction at Aberdeen Junior High School has been to expose the student to a variety of industrial arts experiences which help to prepare that person for post school life.

Implementation of the Special Grade Seven Program

In September 1975, the first major curriculum change in the industrial arts program at Aberdeen Junior High School was instituted to satisfy in part, the new philosophy and direction of the Industrial Arts Department. This change involved only the grade seven classes that were scheduled for industrial arts at Aberdeen and included three afternoons of

each six day school cycle. Grade seven students from Aberdeen, Hugh John Madonald, Immaculate Heart of Mary, and Isaac Newton Junior High Schools participated. Classes were scheduled for sixteen, one-half day sessions in industrial arts and equal time in home economics. This arrangement assured that each student would receive equal exposure to both programs.

Students in grade seven industrial arts program were assigned to one of four class groups by random selection. Each class group, averaging fifteen students, was arbitrarily placed into one of the four course areas. Each course involved four sessions. When this was completed, all class groups rotated to the next experience. This process was repeated until all students experienced the four courses in the grade seven industrial arts exploratory program. Students were then scheduled for the following sixteen sessions to exploratory programs in the home economics area.

In September 1975, the four courses offered in the grade seven industrial arts exploratory program included metalworking, woodworking, plastics, and silk screen printing. Silk screen printing was established to replace the second woodworking situation and to provide a balance of four course areas in the sixteen session program.

The objective, in each of the four courses, was to introduce the student to that specific industrial arts course area through an applied approach. The reward to each participant included a measure of gained understanding about

the related area, a development of some basic skills and tool handling techniques, as well as an acceptable take home project. This project was specifically chosen and designed to exemplify and summarize the complete learning experience.

Initially, the new grade seven curriculum appeared to be successful. However, within two months of implementation it became evident that the presentation of the silk screen printing experience was encountering difficulty. The course was being taught to alternate classes by different staff members. The silk screening experience was relatively successful in one situation, but not in another class. Improper shop ventilation for silk screen printing resulted in lingering, potentially dangerous solvent vapours. It became apparent that silk screening was not meeting the needs of the student or the expectations of the program.

In early November 1975, the Department decided to seriously consider a more viable industrial arts alternative and to terminate the silk screen printing experience by the end of the following month.

Inception of Photographic Communications I

An introductory experience in photography was considered to replace the silk screen printing course as a viable industrial arts alternative for the grade seven curriculum. The rationale for choosing photography follows:

1. Potential student interest.
2. Staff interest.
3. Staff knowledge of related techniques and processes.

4. Viable contemporary industrial process.
5. Vocational career opportunities in Winnipeg area.

The plastics and woodworking areas were possible locations for portable photographic darkroom teaching situations. Both rooms had basic plumbing facilities and were without windows.

Funding for the basic equipment and supplies was achieved by a five hundred dollar grant from the Winnipeg School Division Number I. The money was used in total to purchase the necessary photographic equipment and supplies. These monies were used to initiate and operate the program until the end of June 1976. Equipment and supplies included: ten cameras, developing tank, enlarger, print dryer, dark-room hardware, trays, photographic film, paper, and chemicals. An itemized list, complete with prices was included in the Appendix (Page 82). Equipment was selected so that it would complement future expansion of the program into a regular full term industrial arts photography experience at the grade eight and nine level.

Photographic Communications I was implemented in December 1975 as part of the grade seven industrial arts exploratory program at Aberdeen Junior High School. At this time, the photography experience replaced the introductory silk screen printing course.

Affect of Photography on Other Instructional Programs

Available literature was researched to determine the possible affect of photography on other instructional programs.

Ward (1973) described the positive affects of 35mm macro and micro photography assignments to improve student interest and knowledge in an introductory biology course.

Barnett and Carswell (1970), Silvernail (1967), Fernald (1968), McDermott (1969), and Kingsbury (1970) have published articles that attest to the value of photography for teaching geography or described successful ways in which photography may be used in the class room. Barnett and Carswell (1970) involved the use of vertical aerial photography in geography classes. They concluded that vertical aerial photography was very useful and that carefully planned use of the technique could aid students to develop better understandings of spacial inter-relationships on the earth.

Parikh (1972) described a project which involved New Orleans public and parochial school teachers in a special weekly inservice that was designed to initiate and support effective instructional media programs. Photography was scheduled for the complete third day of the inservice. Teachers were taught to use a Kodak Instamatic camera to produce instructional slides and positive photographic prints. The rationale was that the photography process could be involved and included in regular class room instructional programs to improve student interest and learning.

Newsome (1973) involved photography in a junior high class which had been characterized by "noninterest," "high absences," and "low achievement." Students planned and developed friezes, which are similar to written outlines with separate photographs used to illustrate each point of the story. This photography experience was used in their language communications course. Newsome (1973) also involved photography in a seventh grade science class. Students used cameras to photograph ecologically unbalanced situations which surrounded them in their neighborhoods and other areas.

The literature would seem to indicate that photography can affect student learning in other instructional programs. Success has been achieved by complementing courses in social studies, physical science, mathematics, language arts, and industrial arts with photography.

Congruency in Course Philosophy

The philosophy in providing young secondary students a photographic experience similar to Photographic Communications I at Aberdeen Junior High School was congruent with other studies.

Linville (1972) found that short "mini courses" in introductory photography were most effective and student enthusiasm grew through the years. Furthermore, many students returned for future courses and some pursued post high school training and careers in photography.

Zaslavsky (1973) found that the junior high student did best when the introductory photography experience con-

centrated on basic techniques and processes. Furthermore the student accepted the development and comprehension of technical or related photographic theory in later, more advanced courses.

Moeller and Cox (1971) involved students in photographing several on-site views of selected mechanical, industrial, and service occupations. The intent was to develop student vocational awareness. The photographic results were used to disseminate occupational information to junior high classmates.

Finkelstein (1973) developed a career education program that included a Communications Through Media curriculum. The four-year sequence was designed primarily for students oriented to media careers and included courses in still and motion picture photography. Finkelstein believed that high school students of the seventies should be prepared for new job opportunities spawned by an increasingly technical society, and that it was not a high school's role to prepare students for specific careers but to expose young adults to a variety of relevant post-graduation alternatives.

Summary: Review of the Literature

The history and development of the industrial arts program at Aberdeen Junior High School, specifically related to the study, was described in the chapter. The treatment included the following topics:

1. Historical background
2. Industrial arts at Aberdeen Junior High School

3. Implementation of the special grade seven program

4. Inception of Photographic Communications I

A review of available related study literature at the University of Manitoba provided research of the following topics:

1. Affect of Photography on other instructional programs
2. Congruency in course philosophy

Chapter III

PROCEDURE OF THE STUDY

Statement of the Problem

The study involved the development and evaluation of Photographic Communications I for grade seven industrial arts students at Aberdeen Junior High School during the 1975-76 school year. It consisted of two primary components: course development and course evaluation.

Course development, descriptive in nature, will be treated in this chapter by describing the instructional units that were developed for Photographic Communications I.

Course evaluation, statistical in nature, will be treated in this chapter by describing the methods of research design developed to answer the following questions:

1. Will each student score better than 0.90 in procedure related to daily course, field and laboratory assignments?
2. Will testing at the end of the five, one-half day photography experience, or term, confirm a positive cognitive student achievement in more than ninety percent of the participants?
3. a) Will Photographic Communications I meet the expectations of students?
b) How do students perceive the Industrial Arts Department and program at Aberdeen Junior

High School?

4. a) Will Photographic Communications I affect a positive improvement in student attendance over the same in previous industrial arts classes?
- b) Will the pattern of student attendance in Photographic Communications I differ from the same in concurrent academic classes?
5. a) Will Photographic Communications I sufficiently interest the grade seven student sample to create a demand for future industrial arts photography course electives?
- b) Will Photographic Communications I affect the interest of other industrial arts students and create a demand for future photography course electives?
6. If given the opportunity, will students who have been involved in Photographic Communications I, react critically to parts of the course content, methods, organization or teacher?

Population and Sample

During the time of this study, December 1975 through March 1976, the average total student enrollment in industrial arts at Aberdeen was 548. The Industrial Arts Department at Aberdeen Junior High School provided classes for local students and those from eight other schools within the territorial boundaries of the Winnipeg School Division

Number I. These are: Aberdeen, Andrew Mynarski, Cecil Rhodes, Gordon Bell, Hugh John Macdonald, and Isaac Newton schools from within the division, and Holy Ghost, Immaculate Heart of Mary, and St. Ignatius represented the parochial schools.

The regular, or traditional industrial arts program was provided to 328, grade eight and nine students. Seventy received varied, open-ended industrial arts experiences that were designed to meet the individual needs of Basic English and special education students. The special grade seven industrial arts exploratory program involved the remaining 138 students.

Ninety of the grade seven students, representing Isaac Newton, Aberdeen and Immaculate Heart of Mary schools, were scheduled for industrial arts on days 1, 2, and 5 respectively. These ninety grade sevens represented the six class groups that comprised the total student sample in the study.

Procedure of Study: Treatment

Course development, descriptive in nature, was treated by developing the following instructional units for Photographic Communications I:

1. Day One:

- a) Introduction to photographic composition involving lecture and eighty colour slide presentation.
- b) Introduction and orientation to basic

functions and operation of the Carsen Halina X-220, film cartridge camera.

- c) Structured, one hour outdoor field experience to expose twelve frames of film on specifically assigned subject matter.

2. Day Two:

- a) Review of Day One.
- b) Lecture and colour slide presentation on process involving the removal of exposed film from cartridge; loading of the exposed film into a Gaf Developing Tank; and the chemical processing of the exposed film to produce acceptable quality negatives.
- c) In a totally dark situation, individuals were required to perform tasks related to removing the exposed film from the cartridge and to load the film into a Gaf Developing Tank.
- d) In a normal room light situation, individuals were required to perform tasks related to chemical processing of exposed film to produce acceptable quality negatives.

3. Day Three:

- a) Review of Day Two.
- b) Lecture, demonstration, and colour slide presentation on techniques and processes involved in contact printing.

- c) In a red-light, darkroom situation, individuals were required to perform tasks related to producing acceptable quality positive photographic prints using an enlarger and the required chemical developing process.

4. Day Four:

- a) Review of Day Three.
- b) Lecture, demonstration, and colour slide presentation on techniques and processes involved in producing photographic enlargements.
- c) In a red-light, darkroom situation, individuals were required to perform tasks related to producing acceptable quality photographic enlargements using an enlarger and the required chemical developing process.

5. Day Five:

- a) General review of previous four photography sessions.
- b) Lecture and demonstration on techniques of rubber cement and dry mounting.
- c) Individuals were required to perform tasks related to mounting and displaying photographic results.
- d) Critique and evaluation of individual course results and performance.
- e) Administration of twenty item cognitive

- achievement test.
- f) Administration of a sixteen item course opinion questionnaire.
 - g) Encouragement and opportunity for individual student reaction to the treatment of Photographic Communications I.

Research Procedure

1. a) To measure student achievement in procedures related to daily course, field and laboratory assignments, the practical or procedural evaluation involved the following criteria.
 - (1) The student was required to correctly load the film cartridge into the camera and prepare it for use.
When the film was exposed, the student was required to correctly remove the film cartridge from the camera.
 - (2) The student was required to involve acceptable photographic composition techniques to expose twelve frames of film on assigned subject matter.
 - (3) The student was required to correctly load the exposed film into a Gaf Developing Tank, in total darkness.
The student was then required to correctly process the exposed film to produce acceptable quality negatives.

- (4) The student was required to use a photographic enlarger to produce an acceptable positive contact print proof of the twelve negatives. Total darkroom procedure was involved; exposing, chemical processing, washing, and drying.
 - (5) The student was required to use a photographic enlarger to produce a minimum of three acceptable enlargements. The student was responsible for the total darkroom procedure; exposing, chemical processing, washing, and drying.
 - (6) The student was required to plan, prepare and mount the photographic enlargements into a personal portfolio. This portfolio was displayed for critique and evaluation.
- b) The above criteria was scored using "satisfactory" or "unsatisfactory". For the purpose of evaluation, numerical value assigned was (+1) and (-1) respectively. The sum of all six scores for each student provided the raw score. Raw and equivalent percentage scores were applied to a simple frequency chart and recorded in Tables I and II (Pages 36-37). Table III (Page 38) provides summary of means for the total

student sample.

2. To measure student cognitive achievement, an objective test involving twenty carefully selected multiple-choice items was administered on the final class day of each course session. These items were designed to be congruent with the basic course criteria. The basic course criteria was listed on page 26. See the Appendix (Page 82) for the cognitive achievement test items. Tables IV to IX (Pages 40-45) and Figures I to VI (Pages 46-51) provide data and results of student cognitive achievement in Photographic Communications I.
3. To measure student opinion of Photographic Communications I, the industrial arts program and teaching staff at Aberdeen Junior High School, a carefully designed sixteen item questionnaire was administered on the final day of each course session. Students were required to respond to statements in the questionnaire by selecting one of five evaluative phrases that most closely described their personal reaction. The questionnaire and rating phrase guide were included in the Appendix (Page 82). For purpose of evaluation, numerical values were assigned to the statement rating phrases and the information was tabulated and recorded in Table X (Page 53).

Relevancy of questionnaire statements to the three areas of concern, for which student opinions were sought, was as follows:

- a) Analysis of student opinion responses to statements seven through twelve, measured reactions to Photographic Communications I.
 - b) Analysis of student opinion responses to statements one through seven, measured reactions to the industrial arts program at Aberdeen Junior High School.
 - c) Analysis of student opinion responses to statements thirteen through sixteen, measured reactions to the industrial arts teaching staff at Aberdeen Junior High School.
4. a) The attendance record for each student enrolled in Photographic Communications I was tabulated, recorded, and compared with that student's attendance in previous industrial arts classes. The data was presented in Tables XI through XVI, (Pages 55-60). Table XVII (Page 61) presents a summary of the attendance record for the total student sample.
- b) The attendance record for each student enrolled in Photographic Communications I was tabulated, recorded, and compared with that student's attendance in concurrent

academic classes. The data was presented in Tables XI through XVI (Pages 55-60). Table XVII (Page 61) presents a summary of the attendance record for the total student sample.

5. a) The total grade seven student sample was requested to indicate either a positive or negative interest for future industrial arts photography courses. The data was tabulated and presented in Table XVIII (Page 63).
- b) The 328 grade eight and nine students that were enrolled in the regular industrial arts program during the time of the study were sampled twice for indication of interest and demand for specific future industrial arts course electives. The first indicator of industrial arts course interest was recorded prior to the time of this study. During the first week of December 1975, these regular industrial arts program students were required to specify course areas of interest for their second term. The second term was scheduled to commence during the last week of January 1976, and continue until the end of the school year, June 1976. A sample of the registration form that was used can be examined in the

Appendix (Page 82). The relevant data was tabulated and included in Table XIX (Page 64). During the latter stages of this study, the third week of March 1976, the same students were requested to specify interests for future industrial arts course electives. The same registration form was used both times. The relevant data was tabulated and included in Table XIX (Page 64). Table XX (Page 65) was constructed to provide data that indicated the net change of student interests and preference for specific industrial arts courses, during the time of this study.

6. On the last day of each Photographic Communications I course session, the students were encouraged to react to the industrial arts experience that they had just completed. Space was provided on the last page of the student cognitive achievement test. The total student sample provided in excess of five hundred reactions. These responses were identified, categorized, and placed into seventeen dissimilar groups. Similar response statements representing each one of these groups were applied to a frequency distribution chart. These statements with indication of apparent frequency were provided

in Table XXI (Page 67). The seventeen statements of course critique were regrouped to form five common categories of student critical reaction to the course. This new data was tabulated and applied to a second frequency distribution chart and was presented in Table XXII (Page 68) as a summary of similar student criticism of Photographic Communications I.

Summary: Procedure of Study

The study involved two primary components: course development and course evaluation. Course development, descriptive in nature, was treated by describing the instructional units that were developed for the curriculum. Course evaluation, statistical in nature, was treated by describing the methods of research design used to answer the six study questions identified in the statement of the problem (Page 21). The research design included:

1. Daily objective evaluation of student practical performance.
2. Twenty item multiple-choice student cognitive achievement test.
3. Sixteen item student opinion questionnaire.
4. Analysis of student attendance patterns.
5. Frequency of demand study for future courses.
6. Analysis of student reactions to course.

The statistical data included twenty-two tables and six figures (graphs).

Chapter IV

RESULTS OF THE STUDY

Delineation of the Problem

The study involved the development and evaluation of Photographic Communications I at Aberdeen Junior High School. It consisted of two primary components: course development and course evaluation.

Course development, descriptive in nature, was treated in Chapter III by describing the instructional units that were developed for the curriculum.

Course evaluation, represented by six questions, was treated statistically and Chapter III described the methods of research design used to answer these questions. The results of the statistical treatment of course evaluation was included in this chapter. For purpose of reference, the questions were stated as follows:

1. Will each student score better than 0.90 in procedure related to daily course, field and laboratory assignments?
2. Will testing at the end of the five, one-half day photography experience, or term, confirm a positive cognitive student achievement in more than ninety percent of the participants?
3. a) Will Photographic Communications I meet the expectations of students?

- b) How do students perceive the Industrial Arts Department and program at Aberdeen Junior High School?
4. a) Will Photographic Communications I affect a positive improvement in student attendance over the same in previous industrial arts classes?
- b) Will the pattern of student attendance in Photographic Communications I differ from the same in concurrent academic classes?
5. a) Will Photographic Communications I sufficiently interest the grade seven student sample to create a demand for future industrial arts photography course electives?
- b) Will Photographic Communications I affect the interest of other industrial arts students and create a demand for future photography course electives?
6. If given the opportunity, will students who have been involved in Photographic Communications I, react critically to parts of the course content, methods, organization or teacher?

Identification of Statistical Groupings

The subjects in this study were ninety students divided in six class groups of fifteen, sixteen, sixteen, twelve, sixteen, and fifteen members respectively. For the purposes of this chapter, the groups will be referred to as

Groups A, B, C, D, E, and F.

Groups A and D were students from Isaac Newton Junior High School. Groups B and E were students from Aberdeen Junior High School. Groups C and F were students from Immaculate Heart of Mary School.

Data and Analysis

Course evaluation was represented by six questions and treated statistically. The following is devoted to the presentation of statistical data and analysis that provide answers to those questions.

1. Tables I, II, and III (Pages 36-38) refer to question one, and provide results of student achievement in related daily course, field and laboratory assignments.
 - a) Tables I and II indicate the results of course procedural field and laboratory achievements for the total student sample. Raw and equivalent percentage scores were provided.
 - b) Table III indicates the summary of sample mean of results in course procedural field and laboratory achievement for the individual study class groups and of the complete student sample.

TABLE I

STUDENT ACHIEVEMENT IN RELATED DAILY COURSE,
 FIELD AND LABORATORY ASSIGNMENTS
 MAXIMUM SCORE = 6

Group A N = 15		Group B N = 16		Group C N = 16	
Raw Score	%	Raw Score	%	Raw Score	%
4	67	4	67	5	83
4	67	4	67	5	83
5	83	5	83	6	100
5	83	5	83	6	100
5	83	5	83	6	100
6	100	5	83	6	100
6	100	5	83	6	100
6	100	6	100	6	100
6	100	6	100	6	100
6	100	6	100	6	100
6	100	6	100	6	100
6	100	6	100	6	100
6	100	6	100	6	100
6	100	6	100	6	100
6	100	6	100	6	100
6	100	6	100	6	100

Mean = 92.9

Mean = 90.5

Mean = 97.9

TABLE III

STUDENT ACHIEVEMENT IN RELATED DAILY COURSE, FIELD
AND LABORATORY ASSIGNMENTS, SUMMARY OF THE MEAN

Sample Group	Mean
Group A N = 15	92.2
Group B N = 16	90.5
Group C N = 16	97.9
Group D N = 12	94.4
Group E N = 16	85.9
Group F N = 15	98.9

Total N = 90

Total Sample Mean = 93.3

2. Tables IV to IX (Pages 40-45) and Figures I to VI (Pages 46-51) refer to question two and provide results of student cognitive achievement in Photographic Communications I.
 - a) Tables IV and V indicate the raw data of the course end cognitive achievement test for the total student sample. Raw and equivalent percentage scores were provided.
 - b) Table VI indicates the summary of sample mean results for the course end cognitive achievement test.
 - c) Table VII indicates a summary of the number and equivalent percentage of students that scored more than fifty percent on the course end cognitive achievement test.
 - d) Table VIII indicates the percentage of students in each group who achieved the correct answer for each particular item in the course end cognitive achievement test.
 - e) Table IX indicates the percentage of students that answered each test item correctly in the course end cognitive achievement test.
 - f) Figures I through VI are frequency polygon graphs which illustrate the percentage of students that answered each test item correctly, in each class group.

TABLE IV

COURSE END COGNITIVE ACHIEVEMENT TEST, RAW DATA
 MAXIMUM SCORE = 20

Group A N = 15		Group B N = 16		Group C N = 16	
Raw Score	%	Raw Score	%	Raw Score	%
12	60	7	35	15	75
13	65	9	45	16	80
13	65	10	50	16	80
14	70	11	55	17	85
14	70	12	60	18	90
16	80	14	70	18	90
17	85	15	75	19	95
18	90	15	75	19	95
18	90	16	80	19	95
19	95	17	85	19	95
19	95	18	90	20	100
20	100	18	90	20	100
20	100	19	95	20	100
20	100	20	100	20	100
20	100	20	100	20	100
20	100	20	100	20	100

TABLE V

COURSE END COGNITIVE ACHIEVEMENT TEST, RAW DATA
 MAXIMUM SCORE = 20

Group D N = 12		Group E N = 16		Group F N = 15	
Raw Score	%	Raw Score	%	Raw Score	%
13	65	6	30	14	70
14	70	9	45	16	80
14	70	10	50	17	85
15	75	12	60	18	90
16	80	13	65	18	90
16	80	14	70	18	90
17	85	14	70	19	95
18	90	15	75	19	95
18	90	15	75	19	95
19	95	17	85	19	95
20	100	18	90	20	100
20	100	19	95	20	100
		19	95	20	100
		20	100	20	100
		20	100	20	100
		20	100	20	100

TABLE VI

COURSE END COGNITIVE ACHIEVEMENT TEST
SUMMARY OF THE MEAN

Sample Group	Mean
Group A N = 15	84.3
Group B N = 16	75.3
Group C N = 16	92.5
Group D N = 12	83.3
Group E N = 16	75.3
Group F N = 15	92.0

Total N = 90

Total Sample Mean = 83.8

TABLE VII

COURSE END COGNITIVE ACHIEVEMENT TEST, SUMMARY
NUMBER AND PERCENTAGE OF STUDENTS SCORING MORE THAN 50 %

	Number of Students	Percentage of N
Group A N = 15	15	100.00
Group B N = 14	14	87.50
Group C N = 16	16	100.00
Group D N = 12	12	100.00
Group E N = 16	14	87.50
Group F N = 15	15	100.00
Total Sample N = 90	86	95.56

TABLE VIII

COURSE END COGNITIVE ACHIEVEMENT TEST, ITEM ANALYSIS

Item Number	% of Students With Correct Answer					
	Group A N = 15	Group B N = 16	Group C N = 16	Group D N = 12	Group E N = 16	Group F N = 15
1	73	81	88	84	75	87
2	100	100	94	92	100	100
3	100	94	94	92	100	100
4	87	94	88	94	94	93
5	80	88	94	75	100	100
6	93	81	100	84	75	100
7	80	63	94	67	69	100
8	93	75	100	92	81	100
9	80	56	94	84	63	87
10	80	56	94	84	56	87
11	93	75	100	75	69	93
12	87	75	94	58	63	87
13	67	75	94	75	44	80
14	93	81	100	100	94	100
15	80	63	94	100	81	87
16	80	63	94	100	75	87
17	93	63	81	92	50	100
18	87	69	88	75	63	87
19	67	69	88	75	56	80
20	73	88	81	84	88	93

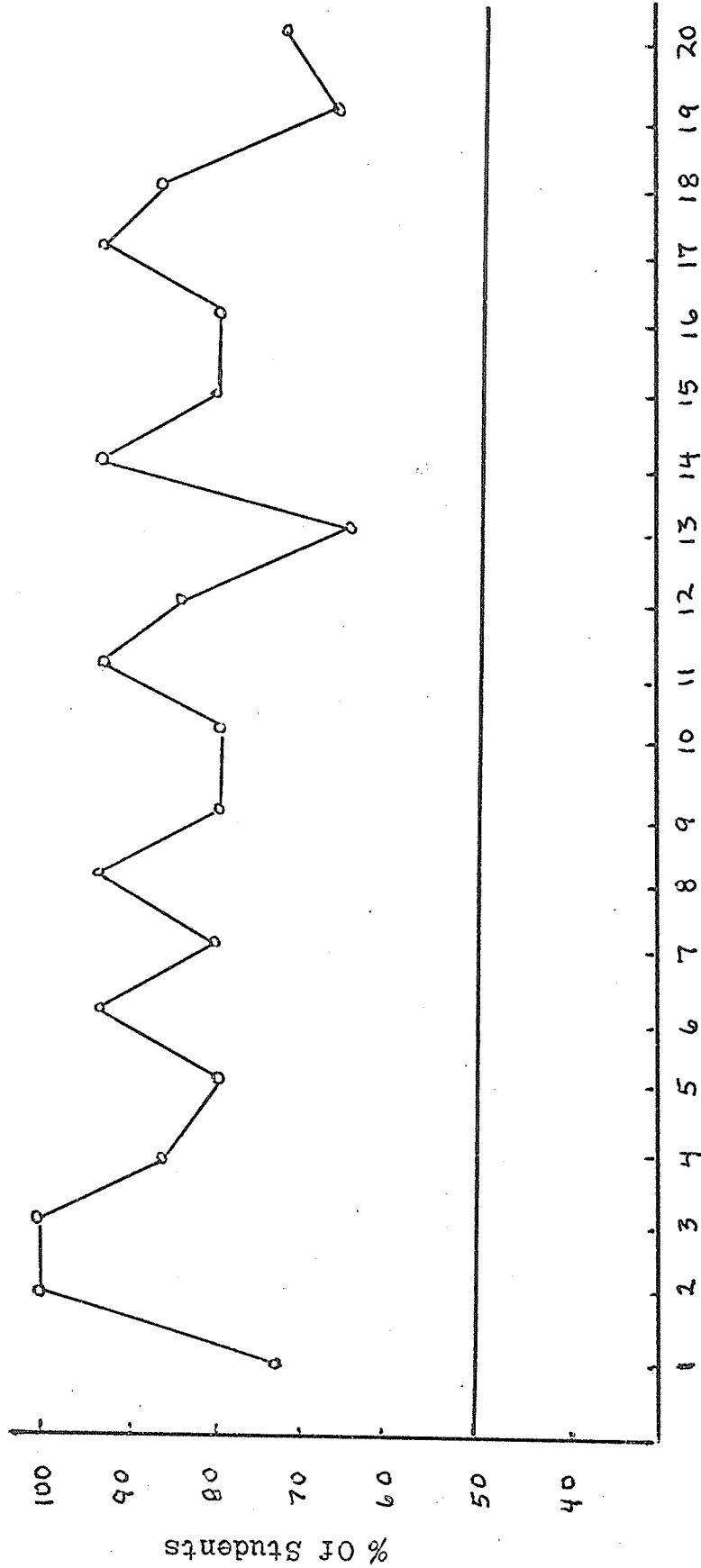
TABLE IX

COURSE END COGNITIVE ACHIEVEMENT TEST, ITEM ANALYSIS
TOTAL SAMPLE

Item Number	% of Students With Correct Answer N = 90
1	81
2	98
3	97
4	91
5	90
6	89
7	79
8	90
9	77
10	71
11	85
12	78
13	72
14	94
15	83
16	83
17	81
18	78
19	72
20	84

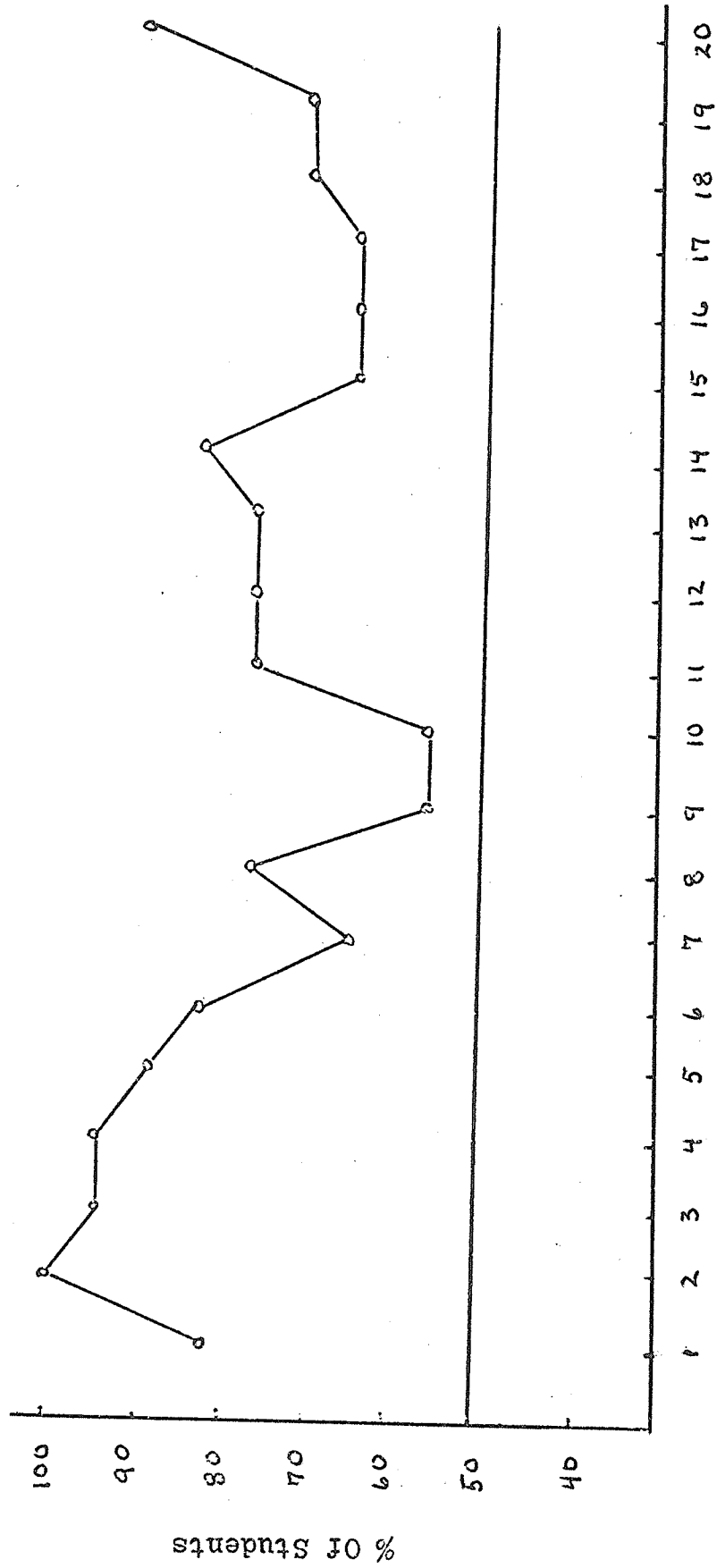
FIGURE I

GRAPH OF ITEM NUMBER AGAINST PERCENTAGE OF STUDENTS HAVING THE CORRECT ANSWER
GROUP A



Item Number

FIGURE II
GRAPH OF ITEM NUMBER AGAINST PERCENTAGE OF STUDENTS HAVING THE CORRECT ANSWER
GROUP B



Item Number

FIGURE III

GRAPH OF ITEM NUMBER AGAINST PERCENTAGE OF STUDENTS HAVING THE CORRECT ANSWER
GROUP C

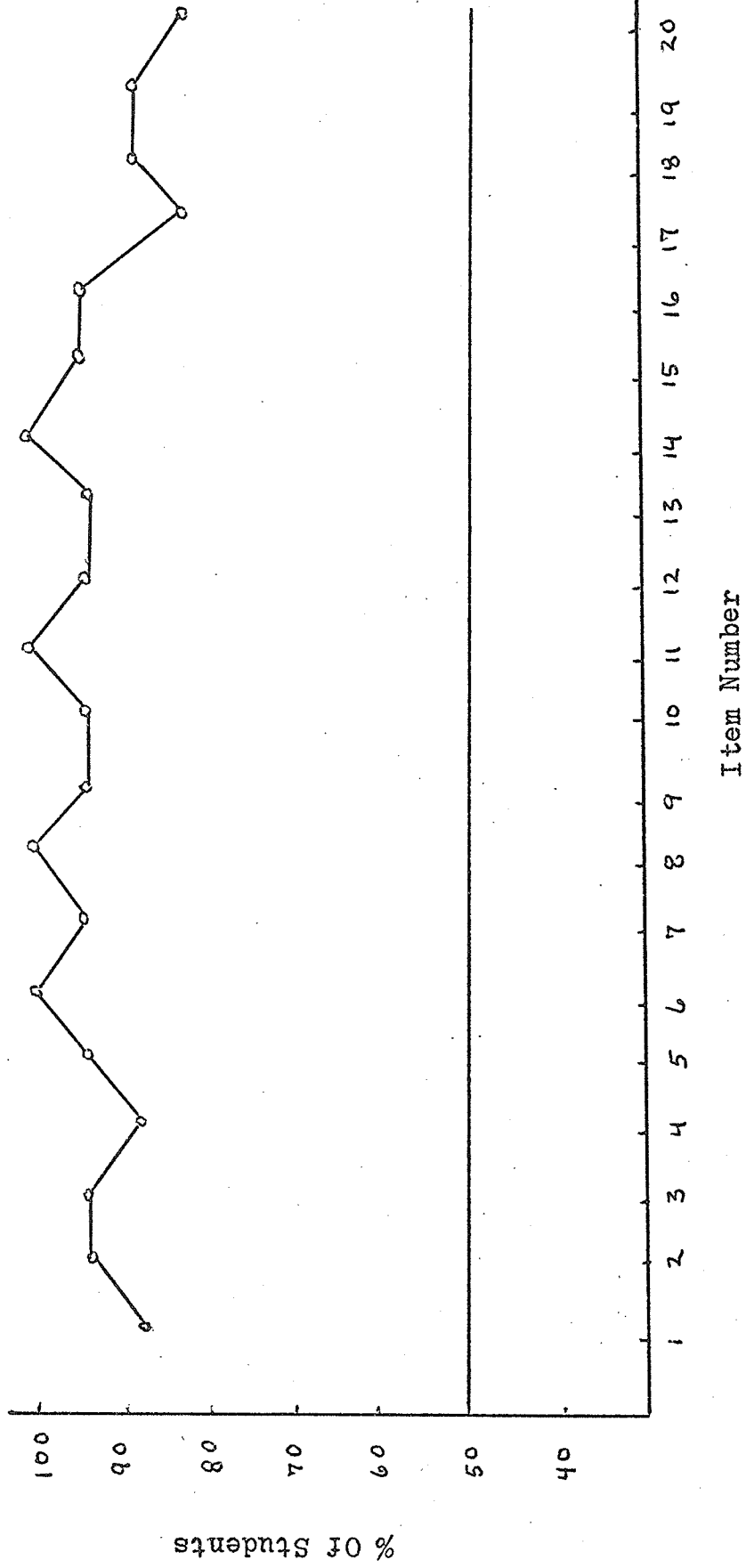


FIGURE IV
GRAPH OF ITEM NUMBER AGAINST PERCENTAGE OF STUDENTS HAVING THE CORRECT ANSWER
GROUP D

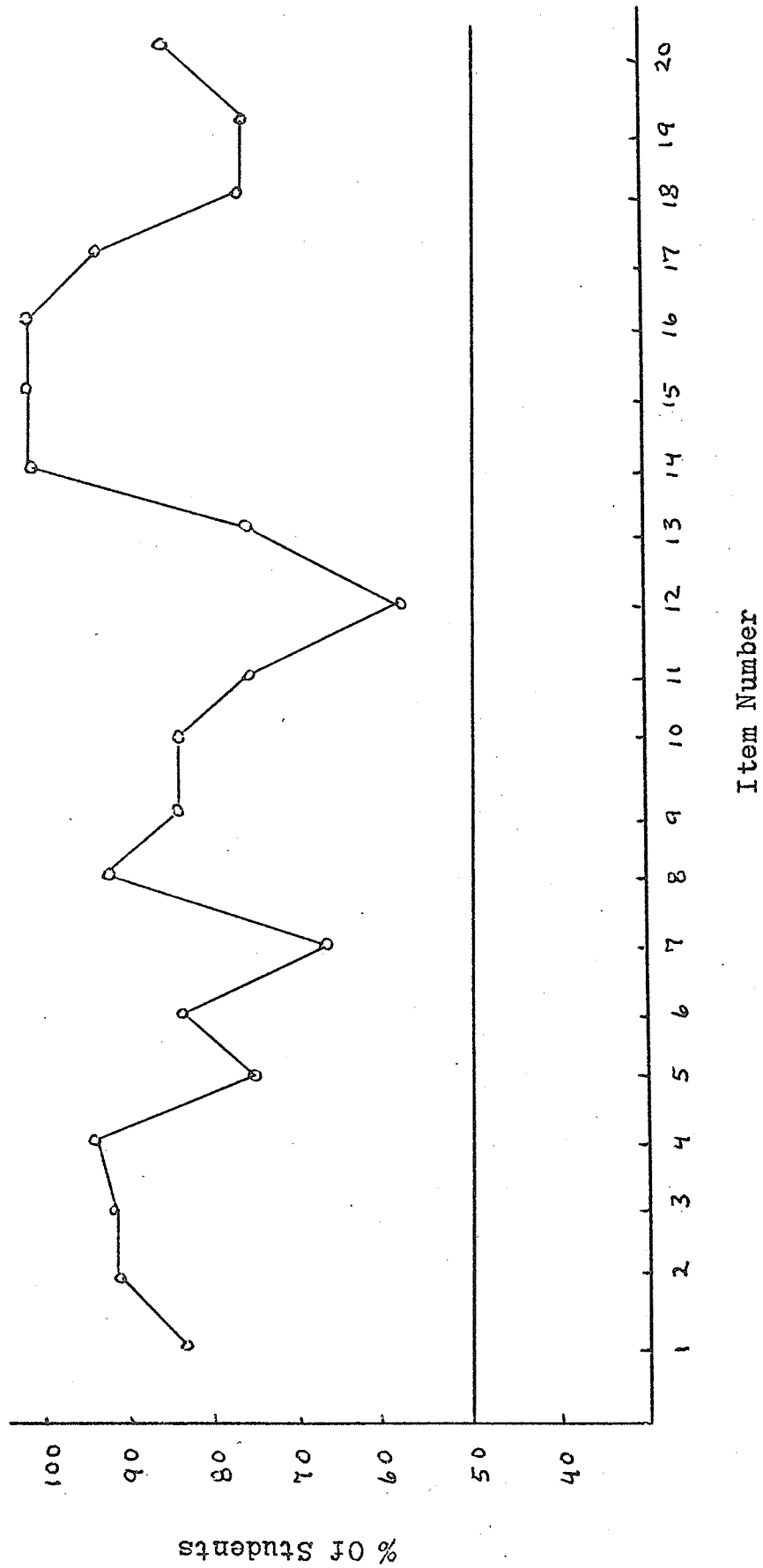


FIGURE V
GRAPH OF ITEM NUMBER AGAINST PERCENTAGE OF STUDENTS HAVING THE CORRECT ANSWER
GROUP E

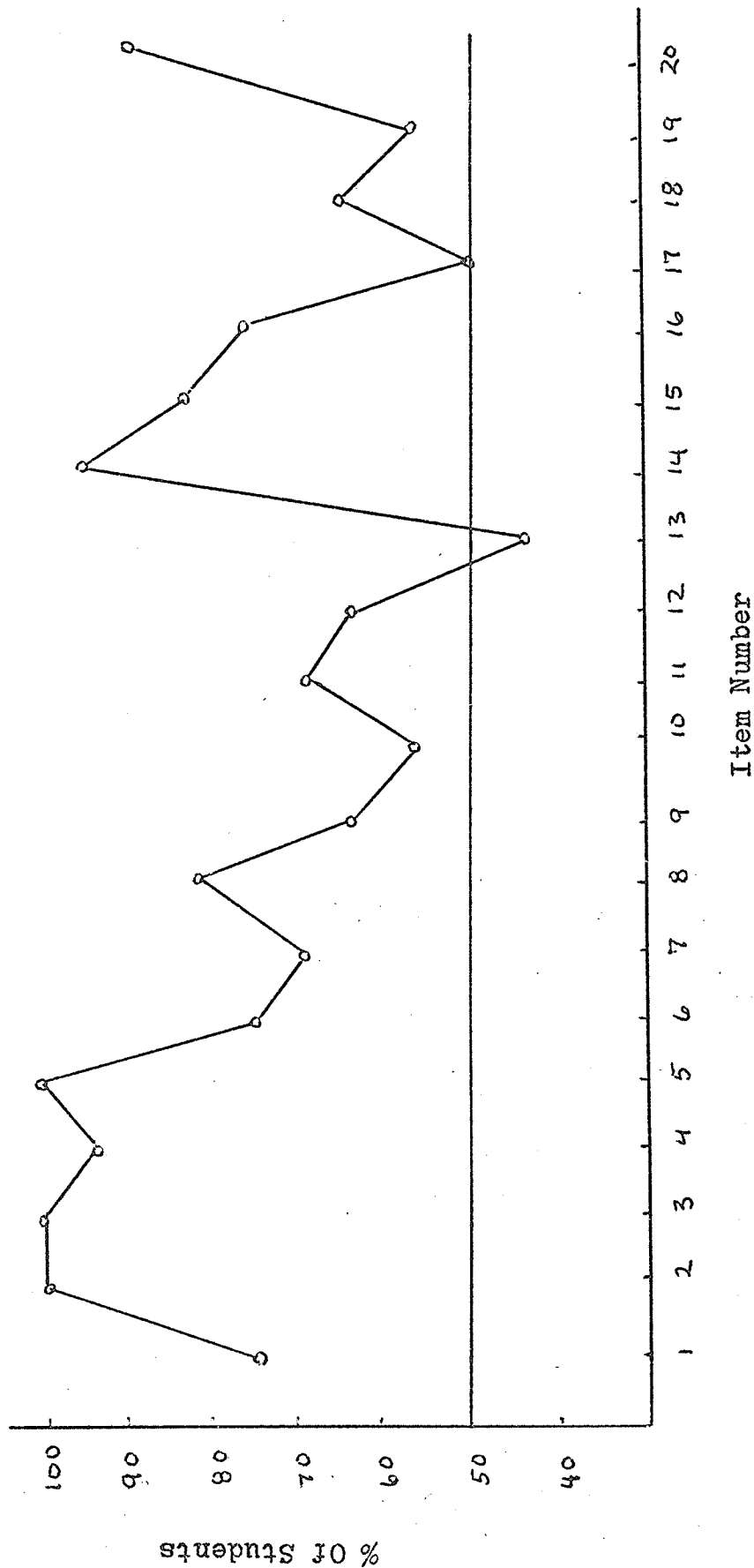
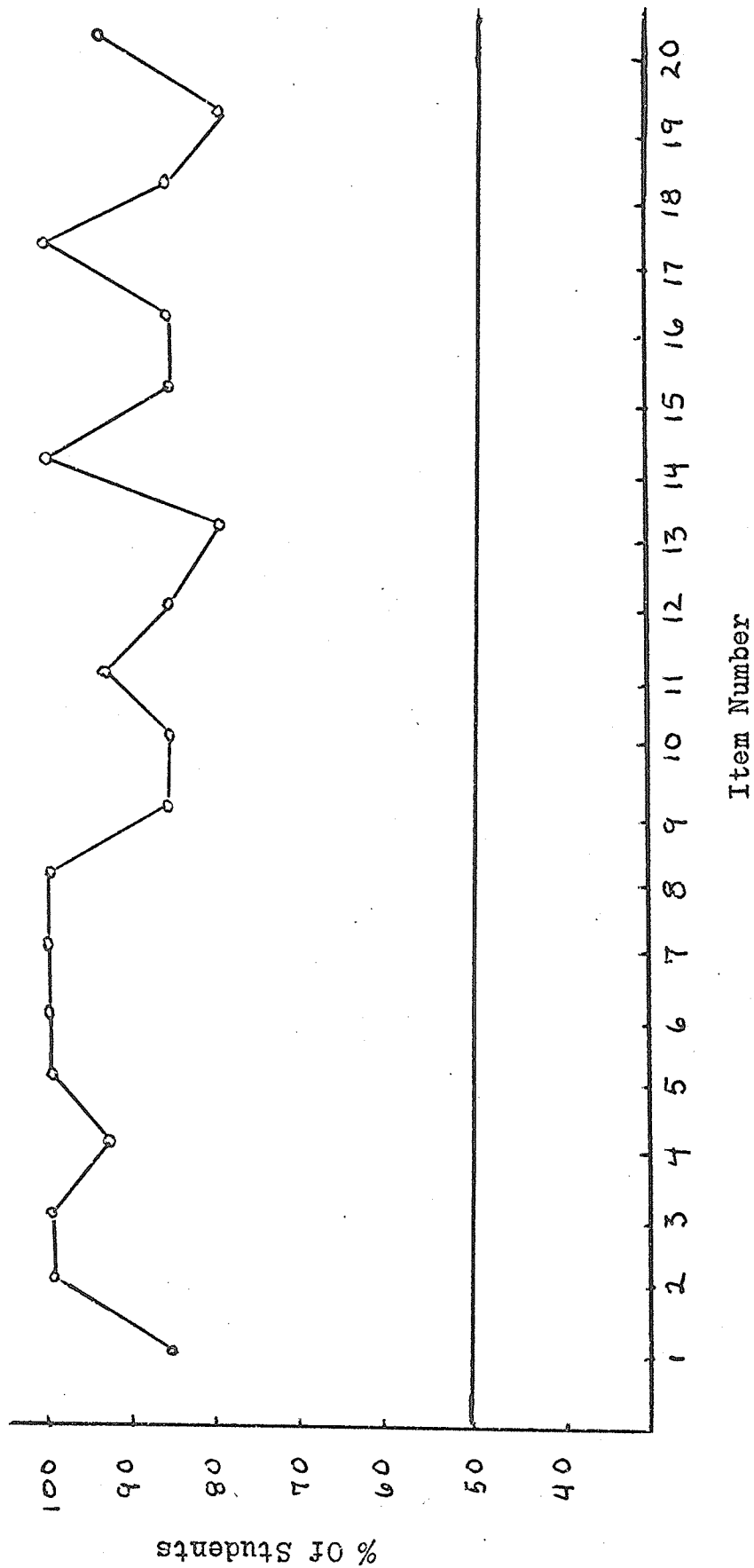


FIGURE VI

GRAPH OF ITEM NUMBER AGAINST PERCENTAGE OF STUDENTS HAVING THE CORRECT ANSWER
GROUP F



3. Table X (Page 53) refers to question three and provides results of student opinion of the Aberdeen Junior High School Industrial Arts Department, it's courses, and specifically, Photographic Communications I.
 - a) Items one through seven reflected student opinion of the industrial arts program at Aberdeen Junior High School.
 - b) Items seven through twelve indicated student opinion of Photographic Communications I.
 - c) Items thirteen through sixteen reflected student opinion of the industrial arts teaching staff at Aberdeen Junior High School.

TABLE X

STUDENT OPINION OF INDUSTRIAL ARTS DEPARTMENT, RELATED COURSES
AND PHOTOGRAPHIC COMMUNICATIONS I, ITEM ANALYSIS

Item Number	Item Score Analysis					Σ Scores	Mean
	+2	+1	0	-1	-2		
1	62	8	15	5	-	127	1.41
2	77	13	-	-	-	177	1.86
3	14	23	27	15	11	14	0.16
4	67	9	2	-	-	143	1.83
5	28	6	19	2	7	46	0.74
6	5	17	31	19	2	4	0.05
7	68	11	4	7	-	140	1.56
8	83	4	3	-	-	170	1.89
9	79	11	-	-	-	169	1.88
10	56	17	17	-	-	135	1.50
11	36	12	26	7	5	59	0.67
12	47	29	-	10	4	105	1.07
13	46	34	5	3	2	119	1.32
14	79	6	3	-	2	160	1.77
15	54	18	7	10	1	114	1.24
16	40	27	12	10	1	95	1.05

4. Tables XI through XVII (Pages 55-61) refer to question four and provide results of student attendance in Photographic Communications I, other concurrent academic classes, and previous industrial arts courses.
 - a) Tables XI through XVI indicate results of student attendance of Photographic Communications I and the same in previous industrial arts classes, for each of the six study class groups.
 - b) Tables XI through XVI indicate results of student attendance of Photographic Communications I and the same in concurrent academic classes, for each of the six study class groups.
 - c) Table XVII indicates data which summarizes the attendance Mean for each of the six study class groups.

TABLE XI

ATTENDANCE RECORD OF STUDY GROUP "A" STUDENTS IN PREVIOUS INDUSTRIAL ARTS CLASSES, IN PHOTOGRAPHIC COMMUNICATIONS I, AND CONCURRENT ACADEMIC CLASSES

Industrial Arts Attendance Previous Term 15 Classes		Photographic Communications I Attendance 5 Classes		Concurrent Academic Class Attendance 44 Classes	
Number Classes Absent	% Classes Absent	Number Classes Absent	% Classes Absent	Number Classes Absent	% Classes Absent
1	7	0	0	3	7
1	7	0	0	2	5
1	7	0	0	1	2
2	13	0	0	4	9
3	20	0	0	4	9
2	13	0	0	0	0
1	7	0	0	1	2
3	20	0	0	4	9
1	7	0	0	0	0
2	13	0	0	2	5
11	73	1	20	6	14
2	13	0	0	4	9
1	7	0	0	0	0
14	93	1	20	3	7
10	67	1	20	5	11
Mean = 24.5		Mean = 4.00		Mean = 5.90	

TABLE XII

ATTENDANCE RECORD OF STUDY GROUP "B" STUDENTS IN PREVIOUS INDUSTRIAL ARTS CLASSES, IN PHOTOGRAPHIC COMMUNICATIONS I, AND CONCURRENT ACADEMIC CLASSES

Industrial Arts Attendance Previous Term 15 Classes		Photographic Communications I Attendance 5 Classes		Concurrent Academic Class Attendance 44 Classes	
Number Classes Absent	% Classes Absent	Number Classes Absent	% Classes Absent	Number Classes Absent	% Classes Absent
3	20	0	0	2	5
0	0	0	0	0	0
1	7	0	0	6	14
1	7	0	0	4	9
0	0	0	0	2	5
1	7	0	0	0	0
3	20	0	0	5	11
0	0	0	0	0	0
8	53	1	20	9	20
12	80	1	20	14	32
1	7	0	0	1	2
0	0	0	0	1	2
3	20	0	0	3	7
12	80	2	40	10	23
1	7	0	0	2	5
0	0	0	0	2	5

Mean = 19.2

Mean = 5.00

Mean = 8.80

TABLE XIII

ATTENDANCE RECORD OF STUDY GROUP "C" STUDENTS IN PREVIOUS INDUSTRIAL ARTS CLASSES, IN PHOTOGRAPHIC COMMUNICATIONS I, AND CONCURRENT ACADEMIC CLASSES

Industrial Arts Attendance Previous Term 15 Classes		Photographic Communications I Attendance 5 Classes		Concurrent Academic Class Attendance 44 Classes	
Number Classes Absent	% Classes Absent	Number Classes Absent	% Classes Absent	Number Classes Absent	% Classes Absent
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
2	13	0	0	0	0
0	0	0	0	1	5
1	7	0	0	2	9
0	0	0	0	1	5
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	1	20	0	0
0	0	0	0	1	5
1	7	0	0	0	0
0	0	0	0	3	14
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	1	5

Mean = 1.60 Mean = 1.30 Mean = 2.60

TABLE XIV

ATTENDANCE RECORD OF STUDY GROUP "D" STUDENTS IN PREVIOUS INDUSTRIAL ARTS CLASSES, IN PHOTOGRAPHIC COMMUNICATIONS I, AND CONCURRENT ACADEMIC CLASSES

Industrial Arts Attendance Previous Term 15 Classes		Photographic Communications I Attendance 5 Classes		Concurrent Academic Class Attendance 44 Classes	
Number Classes Absent	% Classes Absent	Number Classes Absent	% Classes Absent	Number Classes Absent	% Classes Absent
3	20	0	0	6	14
3	20	0	0	4	9
1	7	0	0	2	5
5	33	1	20	4	9
2	13	0	0	3	7
0	0	0	0	0	0
1	7	0	0	0	0
1	7	0	0	2	5
1	7	0	0	2	5
1	7	0	0	4	9
3	20	1	20	1	2
1	7	0	0	5	11

Mean = 12.3

Mean = 3.30

Mean = 5.50

TABLE XV

ATTENDANCE RECORD OF STUDY GROUP "E" STUDENTS IN PREVIOUS INDUSTRIAL ARTS CLASSES, IN PHOTOGRAPHIC COMMUNICATIONS I, AND CONCURRENT ACADEMIC CLASSES

Industrial Arts Attendance Previous Term 15 Classes		Photographic Communications I Attendance 5 Classes		Concurrent Academic Class Attendance 44 Classes	
Number Classes Absent	% Classes Absent	Number Classes Absent	% Classes Absent	Number Classes Absent	% Classes Absent
1	7	0	0	2	5
14	93	1	20	10	23
1	7	0	0	3	7
0	0	0	0	0	0
9	60	0	0	5	11
9	60	0	0	4	9
9	60	0	0	7	16
1	7	0	0	0	0
1	7	0	0	1	2
2	13	0	0	4	9
12	80	0	0	7	16
1	7	1	20	3	7
8	53	1	20	3	7
1	7	0	0	0	0
3	20	0	0	5	11
0	0	0	0	2	5

Mean = 30.00 Mean = 3.80 Mean = 8.10

TABLE XVI

ATTENDANCE RECORD OF STUDY GROUP "F" STUDENTS IN PREVIOUS INDUSTRIAL ARTS CLASSES, IN PHOTOGRAPHIC COMMUNICATIONS I, AND CONCURRENT ACADEMIC CLASSES

Industrial Arts Attendance Previous term 15 Classes		Photographic Communications I Attendance 5 Classes		Concurrent Academic Class Attendance 44 Classes	
Number Classes Absent	% Classes Absent	Number Classes Absent	% Classes Absent	Number Classes Absent	% Classes Absent
0	0	0	0	2	9
0	0	0	0	0	0
1	7	0	0	0	0
0	0	0	0	4	18
0	0	0	0	1	5
0	0	0	0	0	0
1	7	0	0	0	0
0	0	0	0	0	0
1	7	1	20	1	5
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	2	9
0	0	0	0	0	0

Mean = 1.40 Mean = 1.30 Mean = 3.10

TABLE XVII

ATTENDANCE DATA OF THE TOTAL SAMPLE
SUMMARY OF MEAN

	Study Group					
	A	B	C	D	E	F
Industrial Arts Attendance Previous Term 15 Classes	75.5%	80.0%	98.4%	87.7%	70.0%	98.6%
Photographic Communications I Attendance 5 Classes	96.0%	95.0%	98.7%	96.7%	96.2%	98.7%
Concurrent Academic Class Attendance 44 Classes	94.1%	92.1%	97.4%	94.5%	91.9%	96.9%

5. Tables XVIII, XIX, and XX (Pages 63-65) refer to question five and provide data on the affect of Photographic Communications I on other students and the resultant interest in future related course offerings.
- a) Table XVIII indicates data that shows the demand for future photography course electives by the grade seven student sample.
 - b) Table XIX indicates data which shows the change in student selection or preference for future industrial arts course options. This change occurred during the time of the study.
 - c) Table XX indicates data that shows the net change of student preference for industrial arts course options. This change occurred during the time of the study and results are provided in terms of whole numbers and equivalent percentages.

TABLE XVIII

DEMAND FOR FUTURE PHOTOGRAPHY COURSE ELECTIVES
GRADE SEVEN SAMPLE GROUP
N = 90

Number Yes	Percent Yes	Number No	Percent No
57	63.3%	33	36.7%

TABLE XIX

INDUSTRIAL ARTS STUDENT COURSE PREFERENCE QUESTIONNAIRE

Industrial Arts Course Area	December 1975 N = 328		March 1976 N = 328	
	Number of Students	Percentage of N	Number of Students	Percentage of N
Woodworking	177	54	138	42
Metalworking	93	28	105	32
Plastics	36	11	26	8
Photography	22	7	59	18

TABLE XX

NET CHANGE OF STUDENT PREFERENCE FOR INDUSTRIAL ARTS COURSE
OPTION AT ABERDEEN JUNIOR HIGH SCHOOL IN MARCH 1976

Industrial Arts Course Area	Net Change In Student Numbers	Net Percentage Change in Student Numbers
Woodworking	-39	-12%
Metalworking	+12	+ 4%
Plastics	-10	- 3%
Photography	+37	+11%

6. Tables XXI and XXII (Pages 67-68) refer to question six and provide data on the frequency of similar critical reactions to Photographic Communications I by the student sample.
- a) Table XXI indicates a list of common student criticism of the photography experience and the frequency of similar statements.
 - b) Table XXII indicates a summary of data regarding frequency of common student criticism of Photographic Communications I. For the purpose of this data, all similar student criticism statements were grouped into five common categories. Results were provided in terms of whole number and equivalent frequency counts.

TABLE XXI

FREQUENCY OF SIMILAR STUDENT CRITICISM
OF PHOTOGRAPHIC COMMUNICATIONS I

Similar Statements Of Criticism	Frequency
Insufficient cameras	79
Insufficient darkroom equipment	79
Course too short	67
Time for picture taking experience too short	42
Enlarged picture quality not too good	42
Too many students in darkroom	37
Cannot stay in photography after five day class	36
Cameras too cheap, too simple	35
No flash cubes for indoor photography	35
Chemicals smell	32
Insufficient time to experiment	25
Cannot miss a class and make up the experience	18
Too long a time interval between classes	17
Pictures are black and white--not colour	15
Too many things to learn and remember	11
Size of enlargements too small	5
Compelled to take photography	5

TABLE XXII

FREQUENCY OF SIMILAR STUDENT CRITICISM OF
PHOTOGRAPHIC COMMUNICATIONS I, SUMMARY

Categories of Similar Statements of Criticism N=580	Frequency of Criticism N = 580	Percent of Criticism N = 580
Lack of photographic equipment	228	39.4%
Lack of proper facilities	69	11.9%
Organizational policies	210	36.2%
Rejection of practical results	47	9.8%
Rejection of Photographic Communications I	16	2.8%

Summary of the Data

Course evaluation was represented by six questions. See "Delineation of the Data", page 33. The treatment was statistical in nature and the method of research design was described in Chapter III, page 21. Results of the study were recorded in twenty-two tables and six figures (graphs), and included in this chapter. A summary of the data follows:

1. Tables I, II, and III (Pages 36-38) refer to question one, and provide results of student achievement in related daily course, field, and laboratory assignments.
2. Tables IV to IX (Pages 40-45) and Figures I to VI (Pages 46-51) refer to question two and provide results of student cognitive achievement in Photographic Communications I.
3. Table X (Page 53) refers to question three and provides results of student opinion of the Aberdeen Junior High School Industrial Arts Department, its courses, and specifically, Photographic Communications I.
4. Tables XI through XVII (Pages 55-61) refer to question four and provide results of student attendance in Photographic Communications I, other concurrent academic classes, and previous industrial arts courses.
5. Tables XVIII, XIX, and XX (Pages 63-65) refer to question five and provide data on the affect

of Photographic Communications I on other students and the resultant interest in future related course offerings.

6. Tables XXI and XXII (Pages 67-68) refer to question six and provide data on the frequency of similar critical reactions to Photographic Communications I by the student sample.

Discussion and conclusions of the results were provided in Chapter V of this study.

Chapter V

CONCLUSIONS

Purpose of the Study

The purpose of this study was to develop an instructional unit for Photographic Communications I and to evaluate the effectiveness of the curriculum.

Definition of the Problem

The evaluation of Photographic Communications I was represented by six questions. They were stated as follows:

1. Will each student score better than 0.90 in procedure related to daily course, field and laboratory assignments?
2. Will testing at the end of the five, one-half day experience, or term, confirm a positive cognitive student achievement in more than ninety percent of the participants?
3. a) Will Photographic Communications I meet the expectations of students?
b) How do students perceive the Industrial Arts Department and program at Aberdeen?
4. a) Will Photographic Communications I affect a positive improvement in student attendance over the same in previous industrial arts courses.

- b) Will the pattern of student attendance in Photographic Communications I differ from the same in concurrent academic classes?
5. a) Will Photographic Communications I sufficiently interest the grade seven student sample to create a demand for future industrial arts photography course electives?
- b) Will Photographic Communications I affect the interest of other industrial arts students and create a demand for future photography course electives?
6. If given the opportunity, will students who have been involved in Photographic Communications I, react critically to parts of the course content, methods, organization or teacher?

Conclusion and Discussion

Course evaluation was treated statistically and the resultant data provided answers to the six questions that defined the problem in this study. Specifically stated, the statistical analysis provided the following answers:

1. Each student did not score better than 0.90 in procedure related to daily course, field and laboratory assignments. Scores ranged from 0.67 to 1.00. Thirty-one percent of the students scored lower than 0.90, however, the mean for the total student sample was 0.93.
2. More than ninety percent of the students in the

sample scored fifty percent or better in the course end cognitive achievement test. Mean for the sample was 83.3 percent. Four students, or 4.4 percent of the sample failed to achieve fifty percent or better.

3. a) Analysis of student opinion responses to statements seven through twelve, of the questionnaire related to question three, provided a sample mean of 1.30. Applying this mean value of 1.30 to the related rating scale, sample students regarded Photographic Communications as "above average" to "outstanding".
- b) A sample mean of 0.93 resulted from data analysis of student opinion responses to statements one through seven. Mean sample opinion of the industrial arts program at Aberdeen was "average" to "above average". A sample mean of 1.20 resulted from data analysis of student opinion responses to statements thirteen through sixteen. Mean sample opinion of the industrial arts teaching staff at Aberdeen was "above average" to "outstanding".
4. a) The sample mean for attendance in previous industrial arts classes was 85.2 percent. The sample mean for attendance in Photographic

Communications I was 95.9 percent.

Photographic Communications I affected an improvement in sample attendance by 10.7 percent.

- b) The sample mean for attendance in Photographic Communications I was 95.9 percent.

The sample mean for attendance in concurrent academic classes was 94.5 percent.

Sample mean attendance patterns in Photographic Communications I and concurrent academic classes differed by 1.4 percent.

5. a) The students in the sample indicated a 63.3 percent positive response for interest in future industrial arts photography course electives.

- b) Interest generated in other students by Photographic Communications I affected an increase in elective demand for industrial arts photography options by 11.0 percent. Fifty-nine students, or 18 percent of the 328 grade eight and nine students enrolled in the regular industrial arts program during the study, expressed positive interest in future photography courses.

6. A total of 580 criticisms of Photographic Communications I were presented by students in the sample. Criticism was grouped into five

common categories and analyzed. Fifty percent of the criticism was directed at insufficient equipment and inadequate facilities. Thirty-six percent of the reaction involved student critique of course organizational policies related to course and content scheduling. The remaining 12.6 percent of criticism was student negative reaction to the Photographic Communications I experience.

The analysis of all student achievement data, in terms of both written and practical performance, indicates that the instructional objectives were satisfied at a much higher level than the traditional 50 percent "pass" level.

It is evident that Photographic Communications I was an effective and satisfactory industrial arts experience for the grade seven students at Aberdeen Junior High School, during the period of this study.

Success of Photographic Communications I

Photographic Communications I is an industrial arts course designed specifically for grade seven students at Aberdeen Junior High School.

An improvement in sample attendance over previous industrial arts courses, positive cognitive learning, expression of positive opinions, and demand for future photography courses, clearly indicate that Photographic Communications I was successful.

Further curriculum development in industrial arts photography, particularly at the grade eight and nine level, is very necessary. This study clearly indicates student interest, acceptance, and demand for photography, as a viable industrial arts alternative at this school. One would hope that all further development in this area will pay due regard and attention to the basic requirements of the industrial arts student at Aberdeen Junior High School.

Summary Discussion

Results of the study would appear to indicate that Photographic Communications I was successful. This exploratory industrial arts photography experience interested and retained the student in the class room. Results of data revealed a significant improvement in sample attendance over previous industrial arts courses. Attendance pattern did not vary when Photographic Communications I was compared with concurrent student academic classes. This would appear to indicate that students are reacting to the traditional industrial arts approach. Students, both within the sample group and others indicated a positive interest and demand for future photography experiences. This was at the expense of the traditional industrial arts programs in which student demand for future involvement decreased. Some attitudes of students appear negative towards the choice of industrial arts course projects. Possibly this should be studied and considered by the involved staff as a potential area for curriculum change. Hopefully, Photographic Communications I

was the necessary catalyst to stimulate improvement and change in the industrial arts program at Aberdeen Junior High School.

Possible Recommendations

An introductory industrial arts photography course similar to Photographic Communications I should not be scheduled for less than five days. To control for unfavourable outdoor picture taking conditions, such as poor light, rain, and extreme cold, an alternate indoor experience is recommended. This could include: photography with indoor lighting and flash, photographic copying, and titleing. It is recommended that during the scheduled contact printing class, opportunity be provided for film negative processing to those students that were required to repeat the film taking experience. This would also allow for a catch-up opportunity for those students that missed a previous class. Each student should be provided with a film processing tank and that student must be made responsible for proper cleaning procedures to minimize chemical contamination of equipment. The maximum number of students for each enlarger station should not exceed four. For the most part, the Carsen Halina X-220 camera did not produce acceptable photographic results larger than 3 x 4 inches. It is recommended to control enlargement size to avoid consistantly poor results. As a final suggestion, selected photographic results should be appropriately credited and displayed to encourage, promote,

and share the experience with the total student body.

BIBLIOGRAPHY

1. Single-Volume Works

- Bakamis, William A., Improving Instruction In Industrial Arts. New York: The Bruce Publishing Company, 1966.
- Brown, James W., Richard B. Lewis, and Fred F. Harcleroad, AV Instruction: Media and Methods. 3d ed. New York: McGraw-Hill Book Company, 1969.
- Giachino, J. W., and Ralph O. Gallington, Course Construction In Industrial Arts, Vocational and Technical Education. 2d ed. Chicago: American Technical Society, 1967.
- Prakken, Laurence W., (ed). Modern School Shop Planning. 5th ed. Ann Arbor: Prakken Publications, Inc., 1967.
- Scoby, Mary-Margaret, Teaching Children About Technology. Bloomington, Illinois: McKnight & McKnight, 1968.
- Silvius, Harold G., and Estell H. Curry, Teaching Successfully In Industrial Education. 2d ed. Bloomington, Illinois: McKnight & McKnight, 1967.

2. Periodicals

- Barnett, Don C., and Ronald J. B. Carswell. "Using Vertical Aerial Photographs In the Junior High Grades," Journal of Geography, 69; 7; 423-427, October, 1970.
- Comba, John. "Photography: A Key To Learning," Audiovisual Instruction, 14; 9; 66-67, November, 1969.
- Fernald, Edward A. "Aerial Photographs: A Tool for Teaching High School Geography," Journal of Geography, 68; 3; 147-151, March 1968.
- Harris, Howard T., Jr. "Basics Of Photography: Developing Negatives," Photolith, 23; 4; 10-12, December to January, 1973.
- Hughes, Margaret. "Straw Weaving," School Arts, 74; 5; 30-39, January, 1975.
- Johnson, Margaret. "Monoprints From Watercolors," School Arts, 73; 1; 24-25, September, 1973.

- Kellington, Stewart H. "Photography For Secondary School Science Teachers," Visual Education, 35-37, February, 1972.
- Kingsbury, Robert C. "Maps and Aerial Photographs," Journal of Geography, 68; 7; 426-429, October, 1969.
- Latta, Richard. "Micro-Photos Made Simple," Science Activities, 7; 5; 32-33, June, 1972.
- Linville, Justine. "A Summer Art Program," School Arts, 71; 10; 12-13, June, 1972.
- McDermott, Paul D. "Geographic Graphics," Journal of Geography, 68; 6; 147-151, September, 1968.
- Merrick, Wayne R. "Architecture," School Arts, 73; 8; 22-23, April, 1974.
- Murphy, Harry J. "The Impact of Technology In A School For The Deaf," Hearing And Speech News, 39; 4; 20-22 July to August, 1971.
- Newsome, Larry. "Teaching Story Plot With A Camera," Instructor, 82; 8; 78-79, April, 1973.
- Reading, Reba. "Local Newspaper Opens Pages To High School Journalism Classes," Photolith, 24; 4; 22-23, January, 1974.
- Silvernail, Richard. "Aerial Photography in Secondary Schools," Journal of Geography, 66; 5; 250-252, May 1967.
- Vargo, Jerry. "Photograms," School Arts, 74; 4; 12-13, December, 1974.
- Ward, Bill. "The Photographer As Reporter/13; The Distinctive News Image," Scholastic Editor Graphic/Communications, 53; 5; 22-25, February, 1974.

3. Other Sources

- Finkelstein, Norman H. Communications Through Media: A Career Program For High School Students, U.S., Educational Resources Information Center, ERIC Document ED 084815, November, 1973.
- Moeller, Carl A., and Walter L. Cox Jr. Development And Evaluation Of Single Concept Film Loops For Dissemination Of Occupational Information To Youth In

The Middle School. Phase I. Final Report, U.S.,
Educational Resources Information Center, ERIC Document
ED 051637, January, 1971.

Parikh, Arvind Kumar M. Report On The Institute For
Preparing Media Specialists For Local High Schools,
1972. Final. U.S., Educational Resources Information
Center, ERIC Document ED 084791, 1972.

Ward, Jack A., and Barry Cronin. The Effective Use Of
Educational Television For Instruction Of College
Freshmen In Introductory Biology: The Training Of
Personnel And The Effect Upon Students. U.S.,
Educational Resources Information Center, ERIC Document
ED 079975, 1973.

Zaslavsky, Gerald. Lights Came as Action.
Filmmaking For The Junior High School, Grades 7-9, An
Annotated Bibliography And Filmography. U.S., Educational
Resources Center, ERIC Document ED 088472, May, 1973.

APPENDIX

PHOTOGRAPHIC COMMUNICATIONS I
FINAL COURSE TEST

Student _____ School _____ Gr. ___ Rm. ___

Please read each question carefully and indicate with an "X", that response which appears to be most correct to you. This test has no "trick" questions. Each question has only One correct answer. All questions relate directly to experiences and processes that were involved in the course treatment of Photographic Communications I, during the past five day session.

- (1) The Carsen Halina X-220 camera was used with the following film:
- A. 126 Kodachrome - 12 exposures
 - B. 126 panchromatic - black and white - 20 exposures
 - C. 126 panchromatic - black and white - 12 exposures
 - D. 135 panchromatic - black and white - 20 exposures
 - E. 135 panchromatic - black and white - 12 exposures
- (2) The film cartridge was loaded into the camera in:
- A. bright sunlight
 - B. ordinary room light conditions
 - C. red-light darkroom conditions
 - D. total darkness
- (3) On a sunny, cloudless day, where should the sun be in relation to the subject and camera?
- A. behind the subject
 - B. to the extreme right of the subject
 - C. to the extreme left of the subject
 - D. behind the camera
- (4) On a cloudy day, where should the sun be in relation to the subject and camera?
- A. directly overhead
 - B. to the extreme right of the subject
 - C. to the extreme left of the subject
 - D. behind the subject
- (5) The exposed film, which was encased in a plastic cartridge, was removed from the camera in:
- A. bright sunlight
 - B. ordinary room light
 - C. red-light darkroom conditions
 - D. total darkness

- (6) The exposed film was removed from it's plastic cartridge and loaded into the day-light type film processing tank in:
- A. bright sunlight
 - B. ordinary room light conditions
 - C. red-light darkroom conditions
 - D. total darkness
- (7) Once the exposed film was loaded into the day-light film tank, the processing was done in:
- A. bright sunlight
 - B. ordinary room light conditions
 - C. red-light darkroom conditions
 - D. total darkness
- (8) The first chemical stage of the negative developing process involved a critical six minute time period and the following photographic processing chemical:
- A. Kodak D-76 Developer
 - B. Kodak Stop Bath solution
 - C. Kodak Acid Fixer
 - D. Kodak Hypo Eliminator
 - E. Kodak Foto-Flow solution
- (9) At precisely the six minute mark, the critical first stage chemical was discarded and the following introduced, into the film processing tank:
- A. Kodak D-76 Developer
 - B. Kodak Stop Bath solution
 - C. Kodak Acid Fixer
 - D. Kodak Hypo Eliminator
 - E. Kodak Foto-Flow solution
- (10) The third chemical stage of the negative developing process involved fifteen minutes and the following chemical:
- A. Kodak D-76 Developer
 - B. Kodak Stop Bath solution
 - C. Kodak Acid Fixer
 - D. Kodak Hypo Eliminator
 - E. Kodak Foto-Flow solution

- (11) The fourth chemical stage of the negative developing process involved only two minutes, however this step reduced the final washing stage from two hours to thirty minutes. The chemical involved in this fourth stage was:
- A. Kodak D-76 Developer
 - B. Kodak Stop Bath solution
 - C. Kodak Acid Fixer
 - D. Kodak Hypo Eliminator
 - E. Kodak Foto-Flow solution
- (12) The normal washing time for processed negatives is:
- A. two minutes
 - B. six minutes
 - C. fifteen minutes
 - D. thirty minutes
 - E. one hundred and twenty minutes (two hours)
- (13) The thoroughly washed negatives are introduced to a Foto-Flow solution for one minute prior to drying, to:
- A. prevent clouding
 - B. prevent curling
 - C. prevent water spotting
 - D. prevent scratching by hardening the emulsion
- (14) The negative image is correctly transferred to photographic print paper by light exposure with the enlarger. The exposed photographic print paper is then introduced into the following chemical for image development:
- A. Kodak Dektal Developer
 - B. Kodak Stop Bath
 - C. Kodak Acid Fixer
 - D. Kodak Hypo Eliminator
- (15) Once the image is properly developed, the print is introduced to the following chemical for two minutes:
- A. Developer
 - B. Stop Bath
 - C. Acid Fixer
 - D. Hypo Eliminator
- (16) The third chemical stage in photographic print processing involved fifteen minutes and the following chemical:
- A. Developer
 - B. Stop Bath
 - C. Acid Fixer
 - D. Hypo Eliminator

- (17) The final chemical stage in photographic print processing involved two minutes and the following chemical, which significantly reduced the final washing time:
- A. Developer
 - B. Stop Bath
 - C. Acid Fixer
 - D. Hypo Eliminator
- (18) The normal washing time for prints after the "Fixer" stage is:
- A. two minutes
 - B. six minutes
 - C. fifteen minutes
 - D. thirty minutes
 - E. two hours
- (19) To soften and minimize curling, the washed print was immersed in the following solution for two minutes, prior to drying:
- A. Hypo Eliminator
 - B. Foto-Flow
 - C. Glycerin
- (20) When mounting photographic print for permanent display, you should:
- A. apply Rubber Cement to print and mount immediately
 - B. apply Rubber Cement to print, let dry, and mount
 - C. apply Rubber Cement to print, and display card, mount immediately
 - D. apply Rubber Cement to print and display card, let dry on both surfaces, then mount

Now that the course is finished and you have experienced an introduction to photography, please use the following space to react to the course and offer suggestions for improvement.

INDUSTRIAL ARTS COURSE SELECTION--TERM 2--JANUARY TO JUNE 1976

STUDENT'S NAME _____ DAY _____

HOME SCHOOL _____ GRADE _____ ROOM _____

First Term Industrial Arts or Home Economics Area _____

Please choose at least three areas in order of individual interest and preference. Every attempt will be made to provide your first choice, but if more than enrollment limit for any shop is in demand--then a "democratic" draw will be held. It should be noted that preference to any specific area will be given first to those students that were enrolled in one of the other Areas, last term.

Students are reminded that they will be allotted a materials allowance of \$2.00 towards their project(s) during this second term and any costs above this amount must be born by the student before his/her project can be removed from the school. Should students find difficulty in raising necessary funds to pay for their project materials, they may negotiate arrangements with their Industrial Arts Teacher or Department to "work off" that expense at \$1.50 per hour.

PLEASE CHOOSE IN ORDER OF PREFERENCE -- 1, 2, 3, etc.

_____ Metal Working
 _____ Wood Working
 _____ Plastics
 _____ Photographic Communications
 _____ Home Economics
 _____ Other - Please Specify _____

I HEREBY APPLY FOR THE ABOVE INDUSTRIAL ARTS AREA AND DO CLEARLY UNDERSTAND ALL STATED POLICIES WITH REGARDS TO THE METHODS OF "COURSE SELECTION" AND "MONITARY" OBLIGATIONS TOWARDS COST OF PROJECT MATERIALS.

SIGNED _____

STUDENT OPINION QUESTIONNAIRE
PHOTOGRAPHIC COMMUNICATIONS I

DIRECTIONS: Please read each statement carefully and mark the response that most closely reflects your personal opinion or reaction to the situation. The following guide must be used to identify the acceptable responses:

Outstanding	Above Average	Average	Below Average	
Very Much	Much	Satisfactory	Not Much	Not At All
(+2)	(+1)	(0)	(-1)	(-2)

1. What is your opinion of the industrial arts program at Aberdeen Junior High School?
 (+2) (+1) (0) (-1) (-2)
2. Are industrial arts courses at Aberdeen Junior High School more fun than regular academic classes at your school?
 (+2) (+1) (0) (-1) (-2)
3. How do you feel about the selection of industrial arts projects at Aberdeen?
 (+2) (+1) (0) (-1) (-2)
4. How did you enjoy your woodworking experience at Aberdeen?
 (+2) (+1) (0) (-1) (-2)
5. How did you enjoy your metalworking experience at Aberdeen?
 (+2) (+1) (0) (-1) (-2)
6. How did you enjoy your plastics experience at Aberdeen?
 (+2) (+1) (0) (-1) (-2)

7. How did you enjoy your photography experience at Aberdeen?
 +2 +1 0 -1 -2
8. How interesting was your photography picture taking field experience at Aberdeen?
 +2 +1 0 -1 -2
9. How interesting were your photography darkroom laboratory experiences at Aberdeen?
 +2 +1 0 -1 -2
10. How much did you learn about basic photographic techniques and processes in your five day photography experience?
 +2 +1 0 -1 -2
11. Were you pleased with your photography results?
 +2 +1 0 -1 -2
12. How interested would you be in taking a future, full term industrial arts photography course?
 +2 +1 0 -1 -2
13. How patient and understanding do you find the industrial arts teachers at Aberdeen Junior High School?
 +2 +1 0 -1 -2
14. To what extent do the industrial arts teachers at Aberdeen appear to make their courses fun and interesting?
 +2 +1 0 -1 -2
15. How approachable are the industrial arts teachers at Aberdeen for help and advice?
 +2 +1 0 -1 -2
16. To what degree do the industrial arts teachers at Aberdeen Junior High School appear to care about their students?
 +2 +1 0 -1 -2

PHOTOGRAPHIC EQUIPMENT AND SUPPLIES PURCHASED FOR
IMPLEMENTATION OF PHOTOGRAPHIC COMMUNICATIONS I

Quantity	Item	Price Each \$	Total Price \$
10	Carsen Halina X-220 Cameras	10.00	100.00
10	Gaf Developing Tanks	5.20	52.00
1	Vivitar E-34 Enlarger	120.00	120.00
6	Patterson Developing Trays 11X14	4.20	25.20
1	Gra-Lab Timer #165S	38.40	38.40
1	30" Roll Print Dryer (Used)	40.00	40.00
100	126/12 Kodak Verichrome Pan Film	0.72	72.00
3	Ilford Single Weight Paper 5X7 (100 Sheets)	4.30	12.90
3	Ilford Double Weight Paper 5X7 (100 Sheets)	5.85	17.25
-	Kodak Photographic Chemicals	22.00	22.00
-	Darkroom Assessorries (Thermom- eters, Tongs, Film Clips, Measuring Graduates, Red Bulb)	16.00	16.00

Total Expenditure \$515.75