8-1-1959

A course of study in photographic techniques for inclusion in a course of preparation and production of audio-visual materials

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A COURSE OF STUDY IN PHOTOGRAPHIC TECHNIQUES FOR INCLUSION IN A COURSE OF PREPARATION AND PRODUCTION OF AUDIO-VISUAL MATERIALS

A Thesis

Presented to

The Faculty of the Department of Education

Indiana State Teachers College

In Partial Fulfillment

of the Requirements for the Degree

Master of Arts

by

Keith Allen Hall

August 1959

THESIS APPROVAL SHEET

The thesis of Keith Allen Hall, Contribution of the Graduate Division, Indiana State Teachers College, Number 794, under the title -- A Course of Study in Photographic Techniques for Inclusion in a Course of Preparation and Production of Audio-Visual Materials is hereby approved as counting toward the completion of the Master's Degree in the amount of 8 hours' credit.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF ILLUSTRATIONS

CHAPTER I

INTRODUCTION

CHAPTER I

INTRODUCTION

The manifest reason for photography is that it can produce pictures of benefit to those who study them. The taking and study of pictures make young people really see what is around them. They become more aware of beauty and ugliness, more observant of acts, moods, patterns, history--of life. Photography, like art and music--which the schools also encourage--is a medium of communicating appreciation of nature, culture, and society. It gives reins to imagination; it promotes intent thought; it is a language that with equal readiness can speak realistically, suggestively, or abstractly. It provides the means for communicating among groups and is a tool for aesthetic and interpretative self-expression of individuals.[1]

Photography, through its many roles in the school, is a vital factor in meeting successfully the increasing demands on education. School production of instructional materials is becoming a necessity to meet the needs of

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[1]Lester B. Sands, Audio-Visual Procedures in Teaching (New York: Ronald Press, 1956), p. 256.

the expanding curriculum. Much instructional material is most economically secured from commercial producers. Some, however, must be produced locally to meet special needs. A camera in the hands of a teacher of a class or a class provides specialized instructional material that is highly effective.[2]

Statement of the Problem.--The purposes of this study were 1) to study the present photographic facilities and equipment in certain selected high schools in Indiana to determine whether or not teachers would have the opportunity to use photography to aid them in their teaching if they were skilled enough to use it, 2) to prepare and present to a group a series of ten hours of instruction and laboratory work in photography, and 3) to study this method of presenting the content to determine the effectiveness of the method.

Importance of the Problem.--The writer has long felt the need and value of the use of photography as an aid to teachers in preparing teaching materials for use in their classes. According to Robert R. Wilson, educational director for Argus Cameras, the camera as a means of creating practical visual aids for use in the classroom

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[2]Photography in the School (Rochester, New York: Eastman Kodak, 1955), p. 7.

is gaining recognition rapidly as a powerful educational tool:[3]

> Teachers, students, yearbook sponsors, and school administrators in co-operation with school camera clubs and photography classes, are producing a variety of excellent visual aids that rival commercially prepared materials.
>
> Classroom teachers find the camera a help in preparing 'tailor-made' visual aids to meet the needs of individual instruction programs. Students use photography to illustrate class reports, document field trips, preserve art and craft projects on film, and to record scientific experiments for their notebooks.
>
> The school paper and yearbook sponsor relies on the camera to put human interest, spontaneity and sparkle into the pictorial life of these publications. School administrators use color slides and black-and-white prints to build and strengthen a bridge of understanding between school and community. In short, the entire school depends on photography to document, supplement, and enrich school and community life.

If teachers were better instructed in the techniques of photography and the use of photography in education, the writer feels that their teaching would become more interesting and more permanent.

Research Methods.--The research methods used in this study were of several kinds. A three-page letter and questionnaire were mailed to selected high schools in Indiana to determine general practices and facilities concerning photography. From the results and responses

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[3]Robert R. Wilson, "Photography: A New Educational Tool," Audio-Visual Instruction, II (June, 1957), 172.

to the questionnaire and based upon photography text books designed for beginning classes in photography, a ten hour unit of study in photography was developed. This unit of study was then carried out by a group of twenty-one graduate and under-graduate students. A comparison of a pre-test and a follow-up test was used to help determine the effectiveness of the unit of study. Each student in the group was also given an opportunity to make suggestions for improving the unit to make it more helpful for him in his situation.

Definition of Term.--Photography is used to mean the process or art of producing images of objects on sensitized surfaces by the chemical action of light.

Organization of the Remainder of the Thesis.--Chapter II is a review of the literature related to the use of photography for educational purposes with the intention of showing that there was a need and a basis for research in this area. Chapter III reports the findings of the research done to determine the attitudes, needs and availability of facilities concerning photography in selected high schools in Indiana. From the two previous studies, a teaching unit was developed. Chapter IV reports the activities of an experimental group which studied photography using the teaching unit which was developed as a guide. Chapter V reports the evaluation of the

experimental unit and shows the progress achieved concerning certain photographic concepts which were emphasized in the teaching unit. It also reports the reactions and attitudes of the students in the experimental group toward the unit of study. The findings, summaries, and conclusions drawn from this study are set forth in Chapter VI.

CHAPTER II

REVIEW OF RELATED LITERATURE

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REVIEW OF RELATED LITERATURE

In reviewing the literature in the area of photography and its application to education, it was found that much emphasis was placed on the use of pictures themselves as a teaching material. Dale listed the following classifications of use for still pictures:[4]

To translate word symbols.
To enrich reading.
To introduce and motivate.
In assigning research.
In preparing reports.
To correct mistaken impressions.
To recapitulate a unit.
To stir the emotions.

Picture magazines, illustrations in the newspapers, and the wide use of pictures in modern texts have made the present generation of children picture conscious according to Schuller.[5] Foster added to this theory

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[4] Edgar Dale, Audio-Visual Methods in Teaching (New York: Dryden Press, 1954), p. 250.

[5] Charles F. Schuller (ed.), The School Administrator and His Audio-Visual Program (Washington, D.C.: National Education Association, 1954), p. 90.

when he stated that children are stimulated by and will react to the visualization of problems which they understand as being of immediate concern to them.[6] He went on to add to this that soon in every school it becomes desirable to have available for both teachers and students, a good camera for use in taking black-and-white pictures.[7]

De Bernardis stated that teachers should look upon photography as another means of helping any child express himself.[8] De Bernardis went farther to say that the important criterion of evaluating photographic work of children was to determine what photography offers in the way of motivation, skill, understanding, and appreciation.[9] Purcell[10] and Miles[11] both emphasized the importance of photographing many and most of the things that happen and

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[6] I. Owen Foster, et. al., The Audio-Visual Program (State of Indiana Department of Public Instruction, Bulletin 218: Indianapolis, Indiana: State of Indiana Department of Public Instruction, 1956), p. 59.

[7] Ibid., p. 60.

[8] Amo De Bernardis, "Let's Take Pictures," Grade Teacher, LII (September, 1954), 86.

[9] Ibid., p. 88.

[10] Carl Purcell, "Camera in the Classroom," National Education Association Journal, XLVIII (February, 1959), 27.

[11] Kay Burkit Miles, "Visual Aids with Your Box Camera," School Arts, LV (October, 1955), 20.

are present in the classroom. They also placed great emphasis on the fact that expensive equipment is not needed. Degenhart[12] and Sasser[13] both encouraged the use of photography in teaching the principles of art.

The great use of photography in improving the schools' public relations was brought out by Snider[14] and Foster.[15] Foster said the the public relations program of every school requires that classroom activities be presented to the community in dynamic form.. He added that every school needs to be able to document, through means of graphic presentations, it progress in terms of the accomplishments of its students.

Parish,[16] Compton,[17] and Roberts,[18] all advocated

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[12]Pearl C. Degenhart, "Teaching Art with Cameras," School Arts, LV (May, 1956), 23.

[13]Elizabeth Skidmore Sasser, "Teachers and Creative Cameras," School Arts, LV (May, 1956), 25.

[14]Robert Snider, "School Photojournalism," National Education Association Journal, XLVII (February, 1958), 75.

[15]Foster, op. cit., p. 61.

[16]Charles C. Parish, "Vacation Photography with a Purpose," Grade Teacher, LXXIII (June, 1956), 79.

[17]Carl Benton Compton, "Put the Camera to Work," Education , LXXIV (September, 1953), 58-64.

[18]Alvin B. Roberts, "Course in Field Photography," Educational Screen and Audio-Visual Guide, XXXVII (March, 1958), 123-25.

that teachers plan their vacations and their vacation pictures with their teaching in mind. They stressed the importance of determining the purpose of taking the pictures and how they would be used before the vacation started. Roberts, who is the aduio-visual director at Western Illinois University, developed a course of study and orientation to photography which he used with tour groups that he was conducting before he started on the tour with them. Goldstein[19] also developed a photographic course of study for use in a graphic-arts laboratory. Another course of study prepared by TerLouw and Harkness[20] was also found to be quite helpful in this study.

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[19]Harry A. Goldstein, "Photography in the Graphic-Arts Laboratory," Industrial Arts and Vocational Education, XLIV (December, 1955), 320-21.

[20]Adrian L. TerLouw and Norris Harkness, Abbreviated Syllabus for a Basic Photography Course in an Academic High School, (New York: U. S. Camera Publishing Corporation, 1951).

CHAPTER III

FACILITIES AND NEEDS IN SELECTED INDIANA SCHOOLS

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A three-page questionnaire and cover-letter were sent to one-hundred and ninety-two secondary schools in Indiana with an enrollment in grades nine through twelve of over two hundred students.[21] The enrollment and address list were taken from the 1957-58 Indiana Public School Directory which was the latest one available at the time. The letters were addressed only to the school with the intention that the school principal would receive the letter and ask one of the teachers on his staff to complete the questionnaire. It was suggested that the teacher most directly responsible for the photographic work in the school be selected to complete the questionnaire in order that any opinions or suggested needs would be those of the teachers directly involved with the classroom needs rather than those of an administrator. Of the one hundred and ninety-two questionnaires that were mailed, one hundred and twenty-seven were completed and returned making a return of sixty-six per cent.[22] The writer realizes that probably more of the questionnaires would have been returned

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[21] See Appendix I.

[22] See Appendix II.

had it not been so late in the school year when they were mailed from Terre Haute. On May 20, 1959, when the questionnaires were mailed, many of the schools in Indiana had already closed for the summer vacation.

Interpretation of Questionnaire Data

Photography Classes and Clubs.--It can be seen in Table 1 that 92.5 per cent of the respondents did not

TABLE 1

PHOTOGRAPHY CLASSES AND CLUBS IN SELECTED INDIANA SCHOOLS

Responses	Yes	No
Is photography taught as a class with credit in your school?	10	122
Is there a photography club in your school?	42	90

have photography taught as a class with credit in their school. Also, 68 per cent of the schools did not have photography clubs in their school wereas 32 per cent did have. This would seem to indicate that even though photography was not taught as a class with credit in the curriculum in many schools, there was a greater number of schools that met the interest in photography through a photography club rather than through formal class work.

Responsibility for Photography.--The study indicated that in 30 per cent of the responding schools the science teacher was in charge of any photographic work that was done as can be seen in Table 2.

TABLE 2

FACULTY RESPONSIBILITY FOR PHOTOGRAPHY

Responses	Number	Per Cent
Art	4	5
Industrial Arts	14	16
Science	26	30
Other	42	49

In 16 per cent of the schools, the industrial arts teacher was in charge of the photographic work, and in 5 per cent the art teacher was in charge of the work. In the remaining 49 per cent of the cases there was a variety of responses including the journalism teacher, coach, and band director.

Equipment, Facilities, and Supplies.--Of the one hundred and thirty-two schools responding to the questionnaire, 58.3 per cent indicated that there were darkroom facilities in their schools; and in 48 per cent of all of the cases, the darkroom facilities were adequate and met the needs of the schools as is shown in Table 3. Fifty-nine per cent indicated that the darkrooms were available for

TABLE 3

PHOTOGRAPHIC FACILITIES IN SELECTED INDIANA SCHOOLS

	Yes	No
Are there darkroom facilities in your school? .	77	55
Are they available for student use?	73	50
Are they available for faculty use?	66	55
Do the darkroom facilities meet the needs of the school?	62	67
Does your school provide cameras for students to use?	55	77
For teachers to use?	57	74
For administrators to use?	47	77
Does your school provide film for students to use?	32	100
For teachers to use?	34	96
For administrators to use?	35	94

student use, and 55 per cent reported that they were available for faculty use.

In 41.7 per cent of the responding schools, cameras were provided for the use of students. However, in most of these cases it was indicated that cameras were provided for students to use in taking pictures for the yearbook staff or school newspaper staff. Forty-four per cent of the respondents indicated that their schools provided cameras for the use of teachers, and 38 per cent indicated that they provided cameras for the use of administrators. The most common type of a camera among the respondents was the press camera as is indicated in Table 4. Fifty-two schools indicated that they had press cameras; forty-two had 35mm cameras; thirty-eight had roll film cameras; nine had 16mm cameras; and two had Polaroid cameras.

TABLE 4

TYPES OF CAMERAS PROVIDED BY SCHOOLS

Responses	Number
Press Camera	52
35mm Camera	42
Roll Film Camera	38
16mm Camera	9
Polaroid Camera	2

Twenty-four per cent of the responding schools indicated that their schools provided film for students to use. Additional comments showed that the film provided for the students to use was for publication staffs in the schools. The survey showed that 26 per cent of the schools provided film for teachers to use, and 27 per cent provided film for administrators to use.

Use of Photography in Classrooms.--Thirty-eight per cent of the respondents reported that photography was used in the classrooms in their school. However, 68 per cent thought that teachers in their school would use photography more in their teaching if they were more skilled in it. Fifteen per cent thought that probably photography would be used more in their school if the teachers were more skilled in it, whereas 17 per cent said that teachers in their school would not use photography more if they were more skilled in it.

TABLE 5

AREAS WHERE HELP IS NEEDED

Responses	Per Cent Needing Help
Camera Use	41
Selection of Equipment	39
Processing Film	39
Lighting	39
Picture Composition	39
Contact Printing	36
Projection Printing	36
Calculating Exposure	34
Mounting Photographs	33
Calculating Floodlamp Exposure	31
Calculating Daylight Exposure	31
Calculating Flash Exposure	30

Where Assistance Is Needed.--A list of twelve items was provided where the respondents were requested to check the areas in which they specifically needed help in their school. Twenty-three per cent of the respondents checked all twelve of the areas. Help was needed in each of the areas as is indicated by Table 5.

Summary of Questionnaire.--This questionnaire first through determining the amount and type of equipment that was generally available in certain Indiana high schools; second, through determining the general availability to teachers of equipment and facilities; third, through finding from teachers themselves that they would use photography more in their classrooms if they were more skilled in it; and fourth, through determining directly from those teachers most concerned with photography

in their schools specifically what their needs were, tended to indicate very strongly that there was a need and a desire to learn more about photography and its use in learning situations. This strong indication of desire and need led to the development of an experimental resource unit in photography which was included in a course of study in the preparation and production of audio-visual materials.

CHAPTER IV

THE EXPERIMENTAL UNIT

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THE EXPERIMENTAL UNIT

Because of the strong indication of desire and need for assistance in learning more about photography, a unit of study was developed and taught by the writer in a class in preparation and production of audio-visual materials during the first summer term in 1959 under the supervision of Howard Gillaspie, Assistant Professor of Education, at Indiana State Teachers College, Terre Haute, Indiana.[23] It was decided at that time by Gillaspie and by the writer that ten hours of instruction in photography were all that could be alloted in a class of that type. Any less than ten hours would not have allowed enough time for the areas of photography that were taught.

There was an enrollment in the class of twenty-one students--fifteen graduates and six under-graduates. The class was divided into two groups at random with pairings made within the two groups on the basis of convenience in issuing cameras for use outside of class. Each group met alternate days with Gillaspie and the writer for a two hour period each day. There were several

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[23]See Appendix III.

advantages found in this plan of work: 1) a long period of time for involved laboratory work in the darkroom, 2) an early acquaintance of the class in the term with both Gillaspie and the writer for making long term assignments, 3) both groups doing the same work within a few days so that any rented audio-visual materials could be used with both groups, 4) enough time between meetings for the students to gather material and plan their work, and 5) the photographic work completed with a relatively short period of time to free facilities and equipment for other use.

The Unit of Study

During the first two-hour meeting the group was given an overview of the work that they would be doing during the rest of the unit of study. A multiple-choice test was prepared and administered to the group to determine their present knowledge and past experience in photography.[24] The remainder of the time was spent discussing the basic structure of cameras. Specific instruction was given in the use of the press camera in preparation of the work that the students would be doing during the following meeting.

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[24]See Appendix IV.

On the second day that each photography group met, the students each brought to class a black-and-white picture without any gray tones to copy with high contrast film. Specific instruction was again given in the proper use of the press camera. Each student loaded his own filmholder, exposed the film, and developed the negative. After the group instruction at the beginning of the class, the students worked independently with supervision and help wherever it was needed.

The third two-hour period was spent in the darkroom with the students making positive prints from their high contrast negatives. These were either transparencies or opaque paper prints depending on the needs and purposes of the respective students.[25]

At the beginning of the fourth class meeting, the basic elements of cameras and their uses were reviewed. The discussion then went on over the effect of focus, depth-of-field, shutter speed, and camera steadiness on picture sharpness. Then the relationship of shutter speed and aperture and their effect on exposure was developed. The Eastman Kodak slide-set "Making Pictures That People Like" was shown to the class with a tape-recorded commentary. A picture assignment sheet and a

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[25]See Appendix V.

35mm camera with film was given to each student.[26] As the cameras and films were turned in, each roll was developed and contact prints were made for the purpose of evaluating the pictures.

The last day that each group met was spent in reviewing the work done during the teaching unit. The film "High Contrast Photography for Instruction" was shown as part of the review. Again a multiple-choice test had been prepared and was administered to the group. This test was essentially the same as the first test for the purpose of comparing results and determining the effectiveness of the unit. Each student was also given the opportunity to evaluate the unit and make suggestions for improving the work and making it more helpful to the student in his teaching.[27]

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[26] See Appendix VI.

[27] See Appendix VII.

CHAPTER V

EVALUATION OF THE TEACHING UNIT

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EVALUATION OF THE TEACHING UNIT

Two methods of evaluation were employed in the course of the unit: a testing device and the opinion of the students. The testing device appeared to measure the amounts of gain made by the students in certain areas while the student evaluation appeared to be mostly personal opinion and attitude.

The Testing Device

A thirty question multiple-choice test was devised and administered to the experimental group during the first meeting of the class.[28] The same questions were used on the test that was given at the conclusion of the unit of study except that the order of the questions on the test and the order of the choices for the correct answer for each question were mixed in an attempt to prevent any memorizing of order. The first test was not discussed at all with the class. As is shown in Table 6 there was found to be a significant difference in scores

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[28] See Appendix IV.

on the two tests at the one per cent level. The tests were found to have a coefficient of correlation of .75.

TABLE 6

DATA FROM EVALUATION DEVICES

Mean Score of First Test	13.33
Mean Score of Second Test	21.13
Difference	7.80
T-Test	7.03
Level of Significance	1%
Relationship of Test One and Test Two	.75

The testing device tested many of the same concepts that were indicated as needs on the questionnaire. These concepts were categorized according to the following:

Utilizing and Planning Pictures.
Use of Cameras.
Exposure.
Processing Films and Prints.

Utilizing and Planning Pictures.--The test indicated that fifteen per cent of the class learned that the first step in planning a series of pictures to illustrate a story or to visualize some abstract idea was to determine the purpose and general nature of the picture series.

Use of Cameras.--In explaining the parts of the camera and the specific use of each part, it was found helpful to compare the parts of the camera to the parts of the human eye. As many of the students were already familiar with the function of the parts of the eye, it became more meaningful to them to have the camera explained to them in those terms. It was found that about fifty-two per cent were able to correctly identify the parts of the eye in relation to the parts of the camera on the first test while on the second test about ninety-three per cent were able to make the comparison correctly.

The test indicated that in learning how to hold the camera steady, how to turn the film forward properly, and how to frame the picture correctly there was an increase from seventy-six per cent correct on the first test to about ninety-three per cent correct on the second test.

Exposure.--In learning the concepts of lens speed, depth-of-field, the theory of exposure meters, and the relationship of shutter speed and aperture, the test indicated an increase to seventy-two per cent correct answers on the final test compared to twenty-one per cent correct on the first test.

Developing and Printing.--The test did not indicate any appreciable gain nor loss concerning selecting the

proper paper grades for printing, the negative-positive relationship between the negative and the final print, and the functions of developing chemicals. This was probably caused by a slight change in the meaning and interpretation of the paired questions on the two tests. The change would seem to invalidate any comparison that might have been made regarding these three items.

The Student Evaluation

Each student was provided with an evaluation sheet for making any suggestions or comments they thought might improve the unit of study.[29] The students were instructed not to sign the sheets.

Part Most Helpful.--Sixty-two per cent of the group indicated that they thought learning to take pictures and learning to adjust the shutter and aperture of the camera had been most helpful to them. Fifty-two per cent stated that they thought the darkroom work had been most helpful to them. Thirty-three per cent indicated that learning to use a relatively inexpensive camera like the 35mm cameras that they used was most beneficial to them because it was a piece of equipment that they very likely could acquire.

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[29]See Appendix VII.

Part Least Helpful.--There was no general tendency nor grouping of items suggested. One person indicated each of the following items as least helpful: too much time spent on commercial materials, high contrast photography, developing techniques (no equipment available for him to use in his teaching situation), use of press camera, and the outside picture assignment.

Phases of Photography to be Added or Stressed.--Fourteen per cent of the group mentioned a desire to spend more time on how to make 2x2-inch slides and more time on composition. The other responses were scattered and included requiring ten hours of laboratory time, motion picture photography, and color photography.

Suggestions for Improving the Unit.--Thirty-eight per cent of the group suggested that more time be spent on the unit with an equal number suggesting that time and facilities be provided for taking, developing, and printing pictures other than high contrast. It was also suggested that more source material and literature from commercial companies describing equipment, materials, and techniques be available for passing out to the class.

Additional Comments.--Forty-two per cent of the group stated that they felt that the unit had been well planned and carried out. Twenty per cent felt that many audio-visual materials had been used carefully and effectively. Other comments which were made included: much self-satisfaction in being able to develop useful materials; enough background was given to be helpful; it was better to actually do the work than to watch and listen; grateful for the amount of personal attention given; Kodak and Argus companies are doing a good job of selling by providing film and cameras for student use. (The cameras were provided for this purpose by the Argus Camera Company. However, all of the film, paper, and chemicals that were used were provided by the Indiana State Teachers College, Audio-Visual Center.)

CHAPTER VI

SUMMARY AND CONCLUSIONS

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Summary

The steps followed in the development of the work presented are enumerated as follows:

1. Determining the problem and deciding upon a method of research and study.

2. Determining the need for such a study by reviewing the literature in the field.

3. Studying the needs, facilities, and attitudes concerning photography in selected Indiana high schools.

4. Writing a resource unit in photography based upon the findings of the review of the literature and based upon the findings of the research done in the public schools.

5. Presenting the resource unit to an experimental group to determine the effectiveness of the unit.

6. Evaluating the unit both from the tested concepts and from the students' reactions to the unit.

7. Presenting the resource material used in preparing the study for further study and research in the area.

The report also includes in the appendices many of the forms, materials, and examples of student work which were developed during the course of the study. Included in these are:

1. The questionnaire sent to selected Indiana high schools.

2. The address list of the schools responding to the questionnaire.

3. The resource unit in photography that was used as a guide in presenting the unit to the experimental group.

4. The evaluation device used with the experimental group.

5. Examples of high contrast photography done by the class.

6. The picture assignment sheet given to each student.

7. The sheet which the students used for evaluating the unit of study.

8. Examples of some of the teaching materials which were used in the unit.

Conclusions

The review of the related literature seemed to suggest that the value of photography in education as an educational tool and as an important factor in increasing public support of education has just begun to be realized. A fuller use of photographic processes is a goal toward which schools should work.

Whereas the survey of schools in Indiana indicated that 58 per cent of the respondents had darkroom facilities, 44 per cent of the schools provided cameras for teachers to use, and only 38 per cent indicated that photography was used in the classrooms in their school, it would seem to imply that the high per cent indicating that photography was not used in the classrooms in their schools (62 per cent) is not caused by a lack of equipment or facilities. A high per cent (68 per cent) stating that teachers in their school would use photography more in their teaching if they were more skilled in it might imply that it is a lack of skill and knowledge rather than a lack of facilities and equipment which has kept photography from advancing farther than it has as an invaluable teaching aid to teachers. This might suggest an area where a college and particularly an audio-visual department could be of great service to teachers in the field of public education.

The writer feels that the experimental unit was quite successful in orienting the students to thinking about their teaching situation and problems in terms of photography. This conclusion is based upon informal conversations with various students from the group. From observing certain ones of the group in more advanced work concerning photography and the production of teaching materials, they would appear to have a good foundation

in the field of photography upon which they can build to meet their individual needs.

This study has brought several problems to the attention of the writer which might suggest areas for further research and study. Several of the schools which returned questionnaires indicated that they had equipment and facilities, but they had no person who was skilled enough to use the equipment. This might suggest a need for a series of instruction periods at the various schools or for more written information to be made available to the schools.

The unit of study which was conducted with the experimental group was basic in nature and appeared to motivate the students in the class. However, many of them, once they were motivated, could have continued work in this area had time and equipment been available. This might imply a need for a more advanced unit or course.

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APPENDICES

APPENDIX I

QUESTIONNAIRE

Indiana State Teachers College

Terre Haute, Indiana

AUDIO-VISUAL CENTER

Dear Friend:

The use of audio-visual materials in effective teaching has long been recognized. One of these materials, photography, has only recently been utilized to any considerable extent as an instructional material in itself.

I am undertaking a study to determine if Indiana schools utilize photography in their work, and to determine directly from teachers what their needs are in this area. I am enclosing a questionnaire for securing these data. Would you be so kind as to ask someone on your staff to assume the responsibility for completing it? May I suggest one of the following:

1. Teacher of a photography class or camera club sponsor.
2. Teacher with much interest in photography.
3. Audio-visual director.

Your school will be doing a real service by cooperating in this project. I am enclosing a self-addressed, stamped envelope for your convenience. Thank you for your assistance in helping to complete this study.

Very truly yours,

Keith A. Hall
Graduate Assistant

SCHOOL _____
(Name) (City)

_____
(State)

TYPE OF SCHOOL: Elementary ____ Junior High ____

Senior High ____

(Please feel free to write in additional comments.)

1. Is photography taught as a class with credit in your school?

Yes _____ No _____

2. Is there a photography club in your school?

Yes _____ No _____

3. If so, what are the activities of the club?

4. What teacher is in charge of photography in your school?

Art _____ Science _____
Industrial Arts _____ Other(s) (Please state) _____

5. Are there darkroom facilities in your school?

Yes _____ No _____

a. Are they available for student use? Yes _____ No _____

b. Are they available for faculty use? Yes _____ No _____

6. Do the darkroom facilities meet the needs of the school?

Yes _____ No _____

7. Does your school provide cameras for the use of students?

Yes _____ No _____

a. For the use of teachers? Yes _____ No _____

b. For the use of administrators? Yes _____ No _____

c. What kind of cameras? 35mm ____ roll film ____ press ____

8. Does your school provide film for students to use?

Yes _____ No _____

a. For teachers to use? Yes _____ No _____

b. For administrators to use? Yes _____ No _____

9. Is photography used in the classrooms in your school?

Yes _____ No _____

9. (Continued)

a. If so, what classrooms?

b. If so, for what purpose?

10. Would teachers in your school use photography more in their teaching if they were more skilled in it?

Yes _____ No _____

11. In what specific areas of photography do you need help? (Please check)

Selection of equipment _____

Techniques of:

Camera use _____
Calculating exposure _____
Flash _____
Daylight _____
Floodlamp _____
Contact printing _____
Projection printing _____
Processing film _____
Lighting _____
Mounting photographs _____
Picture composition _____

Photography is interpreted to mean 2" x 2" slides, flat photographs, home movies, Polaroid pictures, and the processes of taking and developing pictures.

ADDITIONAL COMMENTS:

Please return to:

Keith A. Hall
Audio-Visual Center
Indiana State Teachers College
Terre Haute, Indiana

APPENDIX II

SCHOOLS RESPONDING TO THE QUESTIONNAIRE

APPENDIX II

SCHOOLS RESPONDING TO THE QUESTIONNAIRE

Adams Central High School and Grade School
Monroe, Indiana

Alexandria High School
Alexandria, Indiana

Allen High School
428 South Oak Street
Bluffton, Indiana

Anderson Senior High School
1301 Lincoln Street
Anderson, Indiana

Attica High School
Attica, Indiana

Auburn High School
800 South Main Street
Auburn, Indiana

Aurora High School
615 Green Blvd.
Aurora, Indiana

Bedford High School
Bedbord, Indiana

Ben Davis High School
6200 West Morris Street
Indianapolis, Indiana

Benjamin Bosse High School
1300 Washington Avenue
Evansville, Indiana

Berne-French Township School
Berne, Indiana

Brazil Junior-Senior High School
Brazil, Indiana

Broad Ripple High School
115 East Broad Ripple Avenue
Indianapolis, Indiana

Calumet High School
6111 West Ridge Road
Gary, Indiana

Carmel School
Carmel, Indiana

Central High School
203 North West Sixth Street
Evansville, Indiana

Central High School
Lewis and Bafr Streets
Fort Wayne, Indiana

Central High School
South High Street
Muncie, Indiana

Charlestown School
Charlestown, Indiana

Churubusco School
Churubusco, Indiana

Clarksville Senior High School
Clarksville, Indiana

Columbia City Joint High School
North Walnut Street
Columbia, Indiana

Columbus Senior High School
1400 Twenty-fifth Street
Columbus, Indiana

Concord Junior-Senior High School
115 Harding Road
Elkhart, Indiana

Connorsville Senior High School
1900 North Grand Avenue
Connorsville, Indiana

Covington Community High School
Covington, Indiana

Crispus Attucks High School
1140 North West Street
Indianapolis, Indiana

Crown Point Junior-Senior High School
Crown Point, Indiana

Dale High School
Dale, Indiana

Decatur Central High School
R.R. #3, Box 881
Indianapolis, Indiana

Eel River-Perry Consolidated School
Huntertown, Indiana

Elkhart High School
215 West High Street
Elkhart, Indiana

Elmhurst School
R.R. #8, Hayden Road
Fort Wayne, Indiana

Fairmont High School
201-223 South Vine Street
Fairmont, Indiana

Fort Branch High School
Fort Branch, Indiana

Francis Joseph Reitz High School
Forest Hills
Evansville, Indiana

Franklin Township School
Wanamaker, Indiana

Frankton School
Frankton, Indiana

Garfield High School
Twelfth and Maple Avenue
Terre Haute, Indiana

Garrett High School
700-800 East Houston Street
Garrett, Indiana

George Rogers Clark School
1921 Davis Avenue
Whiting, Indiana

George Washington High School
2215 West Washington
Indianapolis, Indiana

Gerstmeyer Technical High School
Thirteenth and Locust Streets
Terre Haute, Indiana

Glenn High School
6835 Wabash Avenue
Terre Haute, Indiana

Goshen High School
Lincolnway East
Goshen, Indiana

Greenfield High School
North and School Streets
Greenfield, Indiana

Greensburg Community High School
Greensburg, Indiana

Greenwood Junior-Senior High School
South Madison Avenue
Greenwood, Indiana

Griffith High School
Griffith, Indiana

Hammond Technical-Vocational High School
5727 Sohl Street
Hammond, Indiana

Harry E. Wood High School
501 South Meridian Street
Indianapolis, Indiana

Hartford City High School
701 North High Street
Hartford City, Indiana

Highland High School
9135 Erie Street
Highland, Indiana

Highland Junior and Senior High School
R.R. #1, Box 685
Anderson, Indiana

Huntingburg High School
Huntingburg, Indiana

Isaac C. Elston Senior High School
Lafayette and Detroit Streets
Michigan City, Indiana

Jackson Central High School
Arcadia, Indiana

Jeffersonville Senior High School
601 East Court Avenue
Jeffersonville, Indiana

Knightstown High School
Knightstown, Indiana

Kokomo High School
303 East Superior Street
Kokomo, Indiana

Laboratory School
Seventh and Chestnut Streets
Terre Haute, Indiana

La Porte High School
1000 Harrison Street
La Porte, Indiana

Lawrenceburg Consolidated High School
Lawrenceburg, Indiana

Lebanon High School
Essex Drive
Lebanon, Indiana

Lincoln High School
Cambridge City, Indiana

Lincoln High School
500 Block Buntin Street
Vincennes, Indiana

Linton-Stockton High School
Linton, Indiana

Logansport High School
1301 East Broadway
Logansport, Indiana

Madison Heights Junior and Senior High School
4610 Madison Avenue
Anderson, Indiana

Madison High School
First and Broadway
Madison, Indiana

Marion High School
Nelson and A Streets
Marion, Indiana

Mississinewa Joint High School
Main and Broadway
Gas City, Indiana

Mitchell High School
Mitchell, Indiana

Montpelier-Harrison Township High School
Montpelier, Indiana

Nappanee Community High School
Nappanee, Indiana

New Albany Senior High School
1020 Vincennes Street
New Albany, Indiana

New Castle Senior High School
1407 Walnut,
New Castle, Indiana

New Haven High School
900 Prospect Avenue
New Haven, Indiana

New Paris High School
New Paris, Indiana

New Washington School
New Washington, Indiana

Noblesville Senior High School
300 North Seventeenth Street
Noblesville, Indiana

North Central High School
Farmersburg, Indiana

North Central High School
8401 Westfield Blvd.
Indianapolis, Indiana

North Central School
Ramsey, Indiana

North Side High School
2319 Stringtown Road
Evansvile, Indiana

North Side High School
475 East State Street
Fort Wayne, Indiana

North Vernon Junior-Senior-High School
North Vernon, Indiana

Northwestern High School
R.R. #2
Kokomo, Indiana

Odon-Madison Township School
Odon, Indiana

Ossian School
Ossian, Indiana

Otter Creek High School
North Terre Haute, Indiana

Pendleton High School
Pendleton, Indiana

Plainfield High School
315 East Main Street
Plainfield, Indiana

Portland-Wayne Township Senior High School
Portland, Indiana

Princeton High School
Princeton, Indiana

Richmond Senior High School
Whitewater Blvd.
Richmond, Indiana

Rochester Joint High School
Seventh and Pontiac Streets
Rochester, Indiana

Rockport High School
Rockport, Indiana

Roosevelt High School
730 West Twenty-fifth Avenue
Gary, Indiana

Royerton School (West Building)
R.R. #7
Muncie, Indiana

Sheilds High School
Fifth and Walnut Streets
Seymour, Indiana

Sheridan School
Sheridan, Indiana

Silver Creek High School
Sellersburg, Indiana

Speedway High School
5151 West Fourteenth Street
Speedway, Indiana

South Side High School
3500 South Calhoun Street
Fort Wayne, Indiana

Sullivan High School
220 West Wolfe Street
Sullivan, Indiana

Swayzee High School
Swayzee, Indiana

Theodore Roosevelt High School
4020 Indianapolis Blvd.
East Chicago, Indiana

Thomas A. Edison Senior High School
2295 North Parke Street
East Gary, Indiana

Thomas Carr Howe High School
4900 Julian Avenue
Indianapolis, Indiana

Tolleston School
1700 Taney Street
Gary, Indiana

Van Buren High School
Van Buren, Indiana

Van Buren School
R.R. #3
Brazil, Indiana

Wabash High School
North Miami Street
Wabash, Indiana

Wakarusa Community School
Wakarusa, Indiana

Warren Central High School
901 Post Road
Indianapolis, Indiana

Washington High School
600 East Walnut Street
Washington, Indiana

Wendell L. Wilkie High School
1622 Main Street
Elwood, Indiana

Western High School
Russiaville, Indiana

Wheatfield School
Wheatfield, Indiana

Whiting Junior-Senior High School
Whiting, Indiana

Wiley High School
Seventh and Walnut Streets
Terre Haute, Indiana

Woodburn High School
Woodburn, Indiana

Zionsville School
Zionsville, Indiana

APPENDIX III

RESOURCE UNIT IN PHOTOGRAPHY

APPENDIX III

RESOURCE UNIT IN PHOTOGRAPHY

I. Grade Placement and Time Allotment

A. Education #543-443 12:00-2:00 First Summer Term, 1959
Mr. Howard Gillaspie, Assistant Professor of Education
Indiana State Teachers College, Terre Haute, Indiana

B. Ten clock hours
1. Group I 12:00-2:00
June 17-19-23-25-29
2. Group II 12:00-2:00
June 18-22-24-26-30

II. Objectives of the Unit

A. Primary Objectives
1. To integrate information drawn from physics, chemistry, fine arts, industrial arts, and related fields.
2. To develop an appreciation of photography as a medium of artistic expression.
3. To develop as a worthwhile leisure-time activity.

B. Secondary Objectives
1. To give the student an understanding of basic photography so that his practice of photography will be an intelligent application of principle rather than a blind application of rules of thumb.
2. To give the student sufficient and varied practical experience so that he will be familiar with common procedures in photography and develop efficient working habits and methods.
3. To give the student sufficient background in theory to permit him to use new products effectively and apply new technical information to his photographic work.
4. To impart a knowledge of the use of photography as an important implement in many professions and occupations with emphasis on education.
5. To produce some photographic materials for the students to use in their own teaching.

III. Introductory Activities

A. Orientation and Overview
1. Give a comprehensive view of the subject by showing the many applications of photography in teaching and education.
2. Give an overview of the entire unit.
3. Administration of evaluation device.

B. Introductory Activities
1. Discussion and demonstration of basic camera techniques.
a) A discussion of the various kinds of cameras. Emphasis is placed on their essential similarity.
b) The concept of lens aperture and its relationship to shutter speed and exposure is developed.
c) The basic controls of the camera are discussed, explained, and demonstrated.
d) Emphasis is placed on the mechanics of the press camera in preparation of the students for using the camera at the following meeting.

IV. Developmental Activities

A. Film Processing
1. Each student is to bring to this class period a drawing or picture in black-and-white without any gray tones for high contrast photographic copy work.
2. The objective is to produce a negative free from mechanical defects such as finger marks, abrasions, and dust.
3. Students load holders (after demonstration by instructor), expose as directed, and develop by examination under a red safelight.
a) Explanation of developing chemicals.
b) Explanation of darkroom habits in terms of location of equipment and supplies and neatness.
4. While films are washing and drying, instructor demonstrates the effect of exposure and development on negative quality.
5. Discussion of the necessity of cleanliness and orderliness both in the darkroom and studio and each student's responsibility in this respect.

B. Printing and Enlarging
1. Each student is to use the high contrast negative made at the previous meeting to make a projection print.
2. Explanation of the print washers and how to use them.
3. Explanation of the print driers and how to use them.

C. Camera Techniques
   1. A review of the work done earlier concerning the basic elements and use of cameras.
   2. Picture Sharpness.
      a) A discussion of the effect of focus, depth-of-focus, shutter speed, camera steadiness, and direction of motion relative to the camera axis on sharpness of the picture.
      b) Discussion of varying the aperture and shutter speed accordingly to gain advantage in motion stopping or depth-of-focus.
      c) Discussion and practice in determining exposure by the use of tables, calculators, and exposure meters.

D. Making Pictures That People Like.
   1. A discussion of the elements of a good picture and some of the things to do in making interesting pictures with the emphasis on making pictures for use in teaching.
   2. "Making Pictures People Like" a slide set and script from Eastman Kodak Company consisting of 56 black-and-white slides.

V. Individual Activities

A. Each student is given an assignment sheet listing nine pictures for each person to take. An Argus C-3 camera and film to be provided for each student to use.
   1. Emphasis is placed on the subject matter and composition and on the technical qualities of the pictures.

VI. Culminating Activities

A. Review
   1. Discussion of any questions brought up by the students.
   2. Show "High Contrast Photography for Instruction" 16mm sound, color film.

B. Evaluation
   1. Administration of the same test as was given at the beginning of the unit only with the questions and answers in different sequence.
   2. Student evaluation of the unit.

APPENDIX IV

EVALUATION DEVICE USED WITH EXPERIMENTAL GROUP

NAME_____

1. Whichof the following steps should come first in planning a series of pictures to illustrate a story or to visualize some abstract idea?
   a. Shoot the pictures and arrange finished pictures in the best sequence.
   b. Prepare a rough story outline.
   c. Determine the purpose and general nature of the picture series.
   d. Prepare a shooting script.

2. The lens of the camera is often compared to
   a. the retina of the eye
   b. the pupil of the eye
   c. the iris of the eye
   d. the cornea of the eye

3. Discounting focus, when the entire negative is blurred, it is caused by
   a. subject movement
   b. shutter movement
   c. camera movement

4. When using a camera the film should be turned forward to the next picture
   a. just before taking a picture
   b. just after taking a picture
   c. while taking a picture
   d. whenever you happen to think of it

5. The farther the distance between the moving subject and the camera
   a. the shorter time the subject will take to cross the camera's field of view
   b. the shorter the subject-to-camera distance and the faster the shutter speed required
   c. the slower the shutter speed required
   d. the more critical the matter of focus
   e. the larger the aperture necessary

6. The closer the camera is to the subject
   a. the more accurate is the average viewfinder
   b. the more inaccurate is the average viewfinder
   c. the smaller the image
   d. the greater the depth-of-field
   e. the less acute is the problem of focus

7. Action moving obliquely toward the camera requires
   a. a faster shutter speed than action moving at right angles to the camera
   b. a faster shutter speed than action moving directly toward the camera
   c. a slower shutter speed than action moving directly toward the camera
   d. a slower shutter speed than action moving directly away from the camera
   e. the same shutter speed as any other action

8. When looking at the subject through the viewfinder on your camera, the closer you are to the subject
   a. the smaller he will appear in the picture and the less background you will see around him
   b. the smaller he will appear in the picture and the more background you will see around him
   c. the larger he will appear in the picture and the less background you will see around him
   d. the larger he will appear in the picture and the more background you will see around him

9. The speed of the lens in the average box camera is
   a. between f/22 and f/32
   b. between f/16 and f/22
   c. between f/11 and f/16
   d. between f/8 and f/11
   e. between f/5.6 and f/8

10. When light falls upon an object from the camera position, the texture of the subject is
   a. exaggerated
   b. subdued
   c. normal

11. When making a flash exposure
   a. the shutter should be set at "B" (Bulb)
   b. the shutter should be set at "T" (Time)
   c. the distance from the subject to the camera is the variable factor in determining the proper exposure
   d. the "open flash" method is most often used
   e. the synchronization of the flash and the shutter has little effect on the picture

12. The "X" setting found on some cameras indicates
   a. self timer
   b. electronic flash synchronization
   c. extra pictures

13. The lens aperture
   a. regulates the length of time that light passes through the lens
   b. is used to create a sharp image on the film
   c. controls the size of the image on the film
   d. regulates the amount of light that passes through the lens
   e. is found only on cameras

14. "Grade 2" photographic printing papers
   a. are used with negatives of normal contrast
   b. are used with negatives of extremely low contrast
   c. are used with negatives of extremely high contrast
   d. must be handled in complete darkness
   e. may be handled in ordinary room light

15. A dark area on a black-and-white negative will
    a. be dark on the print
    b. be light on the print
    c. allow light in the enlarger to strike the emulsion of the print paper creating a light area in the print
    d. allow the light in the enlarger to strike the emulsion of the print paper creating a dark area in the print
    e. not allow the light in the enlarger to strike the emulsion of the print paper creating a dark area in the print

16. In calculating a flash exposure when the guide number is 160 and the subject is 10 feet from the light source, the "f" stop should be at
    a. f/32
    b. f/8
    c. f/16
    d. f/1.6
    e. f/4

17. An exposure meter
    a. is a device for measuring the intensity of light absorbed by the subject
    b. is a device for measuring the intensity of light reflected by the subject
    c. estimates a "guess" at the proper exposure
    d. is infallible
    e. tells the exact "f" stop and shutter speed to use requiring no judgment by the user

18. f/32
    a. is a larger opening than f/16
    b. is a smaller opening than f/16
    c. has a shallower depth-of-field than f/16
    d. requires a faster shutter speed than f/22 for a given amount of light
    e. is the best "f" stop to use because of its great depth-of-field

19. The film of the camera is often compared to
    a. the retina of the eye
    b. the pupil of the eye
    c. the iris of the eye
    d. the cornea of the eye
    e. the optic nerve

20. The higher the "f" number
    a. the greater the depth-of-field
    b. the more light that enters the camera
    c. the faster the shutter speed required for a given amount of light
    d. the less the depth-of-field
    e. the larger the aperture

21. The primary function of acetic acid short stop is
    a. to wash the developer off of film and paper to prolong the life of the hypo
    b. to stop the action of the developer
    c. to create the image on the film or paper
    d. to prevent the image from changing when the light strikes it
    e. to speed the process of washing

22. Depth-of-field increases with
    a. an increase of image size
    b. an increase in shutter speed
    c. an increase in the focal length of the lens
    d. an increase in the "f" stop number
    e. a decrease in the subject-to-lens distance

23. Everything else remaining constant, which of the following is true?
    a. The larger the lens opening, the shorter the exposure needed.
    b. The "faster" the lens (regardless of the opening used), the shorter the exposure time required.
    c. The larger the lens opening, the longer the exposure needed.
    d. The smaller the lens opening, the shorter the exposure time required.

24. The permanence of the photographic image depends very largely upon
    a. having the correct exposure in the first place
    b. the freshness of the hypo
    c. the temperature of the wash water
    d. how thoroughly the film is fixed and washed
    e. the temperature of the hypo

25. The diaphragm or aperture of the camera is often compared to
    a. the retina of the eye
    b. the pupil of the eye
    c. the iris of the eye
    d. the cornea of the eye
    e. the optic nerve

26. In most black-and-white film
    a. slow speed, low contrast, and coarse grain go hand in hand
    b. fast speed, low contrast, and fine grain go hand in hand
    c. fast speed, high contrast, and fine grain go hand in hand
    d. slow speed, high contrast, and fine grain go hand in hand
    e. slow speed, high contrast, and coarse grain go hand in hand

27. The best film for copying black-and-white line originals is one of
    a. slow speed
    b. medium speed
    c. fast speed

28. When stopping down the lens three major stops, the light is decreased
    a. 6 times
    b. 8 times
    c. 10 times
    d. 12 times
    e. 3 times

29. The maximum aperture
    a. is used to designate lens speed
    b. has the greatest depth-of-field
    c. has the smallest diameter of any aperture of that lens
    d. requires a slower shutter speed than any other aperture of the same lens for a given amount of light
    e. is usually the best aperture to use whenever possible

30. The amount of light reaching the film is decreased by
    a. 1/4
    b. 2/3
    c. 1/2
    d. 1/10
    e. 1/3
    when stopping down from one major stop to another.

APPENDIX V

HIGH CONTRAST WORK DONE BY THE STUDENTS

APPENDIX V

HIGH CONTRAST WORK DONE BY THE STUDENTS

Fig. 1.--The Golfer

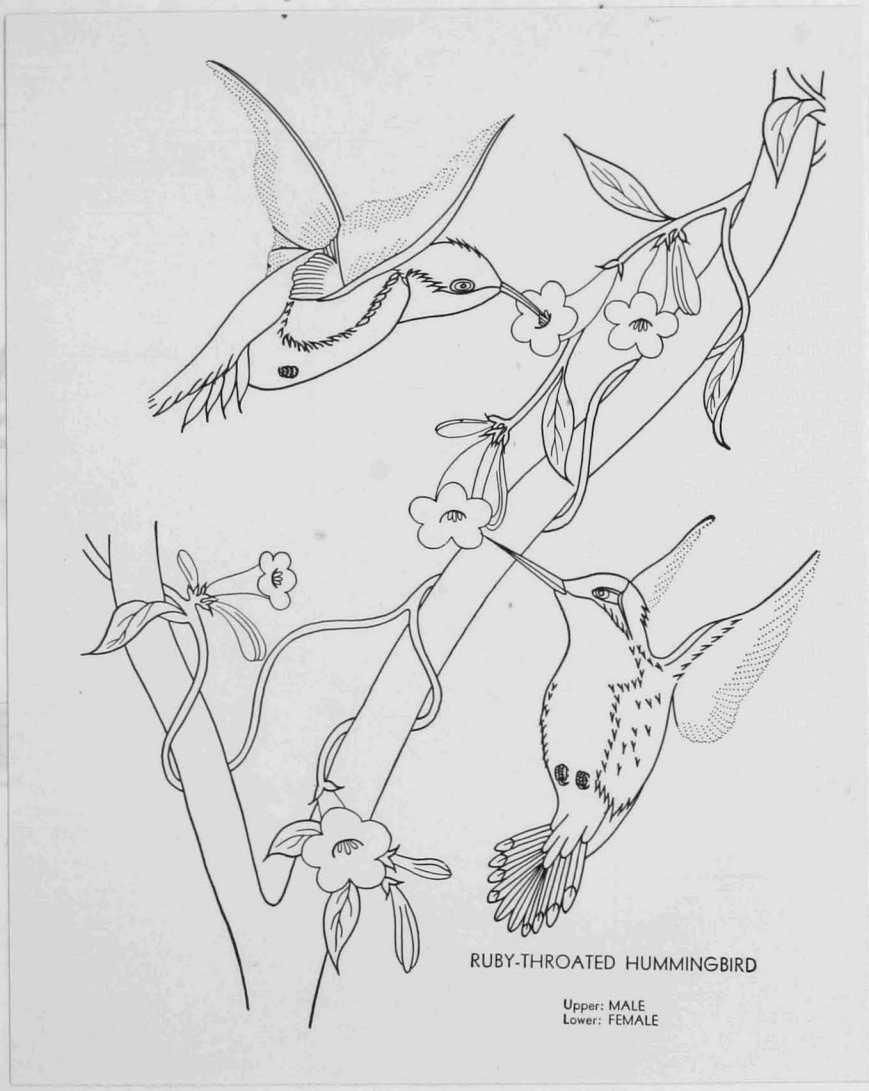
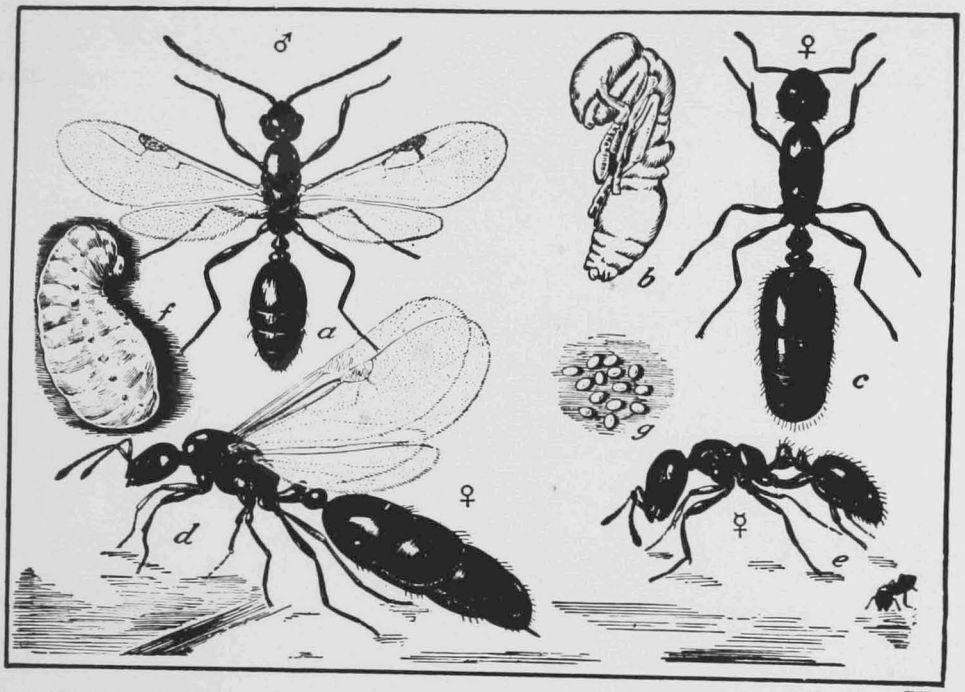


Fig. 2.--Ruby-Throated Hummingbird



USDA

The diagrams given above illustrate the various stages in the development of ants. A, adult male; B, pupa; C, adult female; D, female with wings; E, worker; F, larva; G, eggs.

Fig. 3.--Various Stages in the Development of Ants

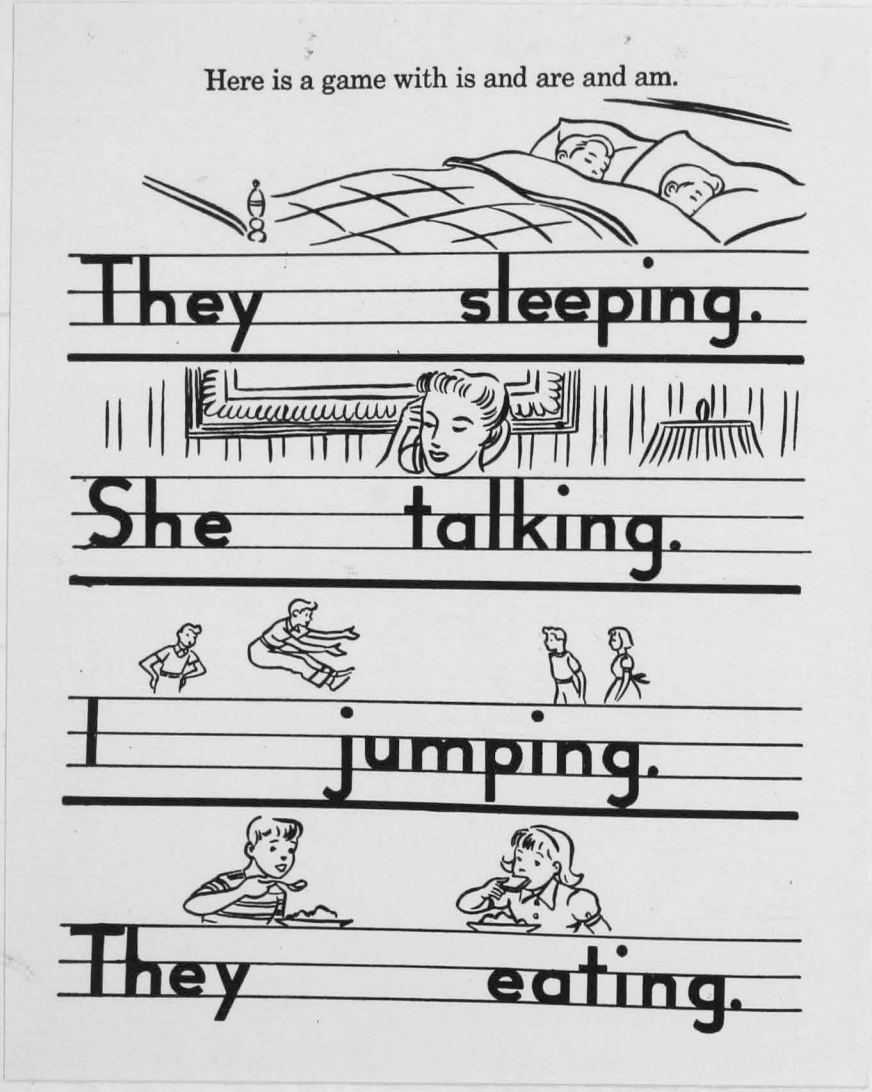


Fig. 4.--Language Development Game

DISCOVERY OF THE ELEMENTS

TIME CHART

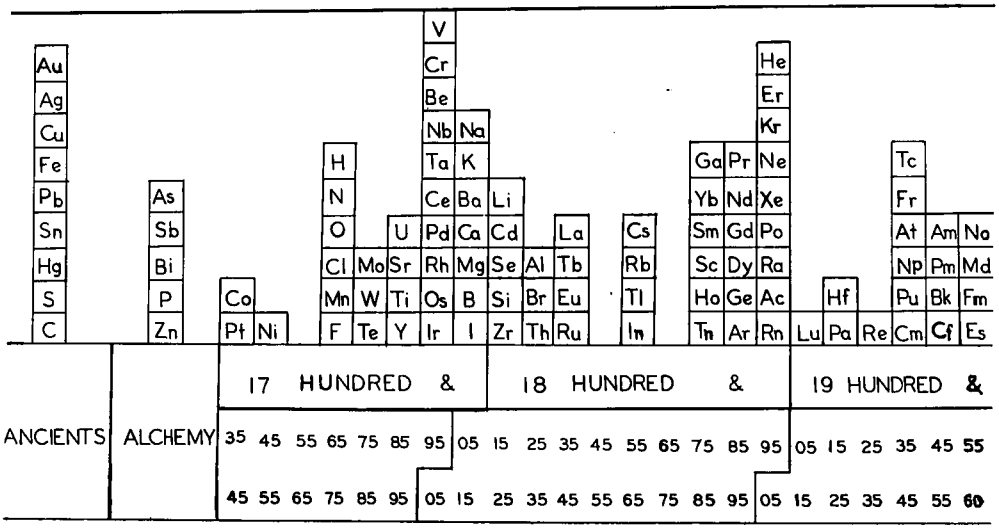


Fig. 5.--Discovery of the Elements Time Chart

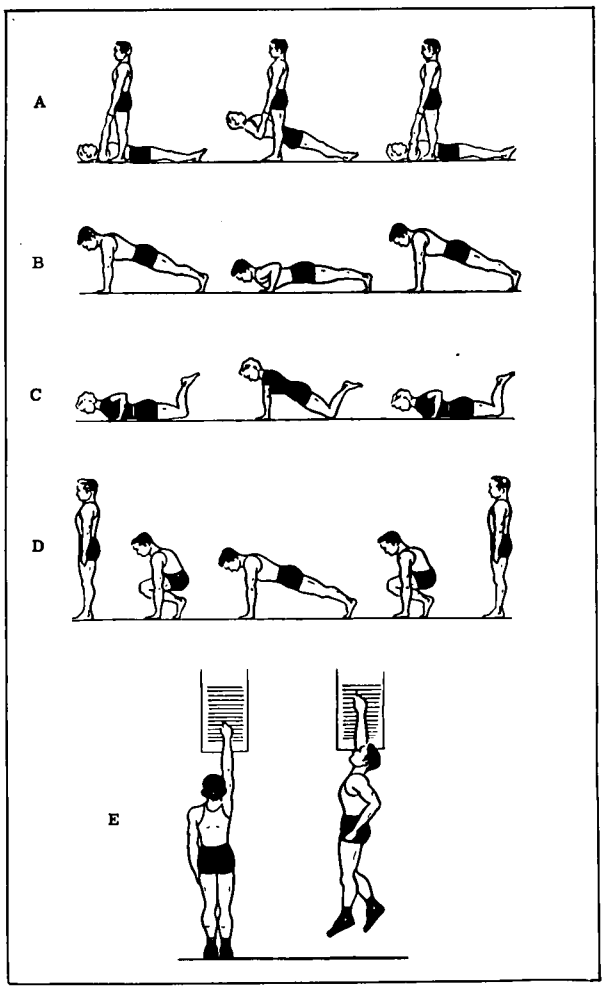


Fig. 6.--Physical Exercise Chart

APPENDIX VI

PICTURE ASSIGNMENT SHEET

Picture Assignment

I. Select a subject similar to a landscape or building.
   1. Make a long shot
   2. Make a medium shot
   3. Make a close-up

II. Select a subject. A person is suggested. Select an appropriate background and setting and experiment with camera position using the following positions
   4. Eye-level--photographer standing on ground in upright position
   5. Low angle--move the camera as close to the ground as possible
   6. High angle--move high over the subject and make a picture

III. Select a subject and create a "3 picture" picture story.

In selecting your subject matter any of the following suggestions could be used:

Weather and Seasons	Fog, Rainy Days, Snowstorms, Wind, Winter, Spring Flowers, Summer, Autumn Color, Dog Days, Lightning
People	Formal Portraiture, Babies, Children with Their Pets, People at Work
Patterns	Abstract Design, Reflections, Texture, Shadows, Curves, Glassware
Outdoor Scenes	General Landscapes, Roofs, Trees, Sailing Clouds, Gardens, Seascapes, The Farm
Mood	Atmosphere, Mother's Love, Happiness, Sorrow, Anger, Frustration, Let's Live a Little, At Worship
Community	Know Your City, Parks, Architecture, Time for School, Churches, Market Place
Activity	Industry, Transportation, Street Scenes, Beaches, Carnival Time, The Circus, Recreation, Vacations, Night Life

In taking your pictures you should keep in mind what we have discussed concerning both the technical aspects of photography and the subject matter. Here is what you should remember about each aspect:

Subject Matter	Technical
Planned Subject Matter	F Focus
Keep 'Em Busy	A Aperture
Take Closeups	S Shutter
Keep It Simple	T Think

APPENDIX VII

SHEET FOR STUDENT EVALUATION OF PHOTOGRAPHY UNIT

Student Evaluation of Photography Unit

Any remarks or comments that you might make on this evaluation sheet will in no way affect your future work in this class or your grade at the end of the class. This is simply to help us evaluate the work that we are doing and make revisions where it seems necessary. You will be doing us a great service by answering the following questions as completely as possible.

1. What specific part of this unit has been most helpful to you?

What part has been the least helpful?

2. Would you find the unit more helpful if some other phase of photography were stressed? If so, what specific phase or phases?

3. What suggestions would you make for improving the unit?

4. Additional Comments:

APPENDIX VIII

TEACHING MATERIALS USED IN THE UNIT

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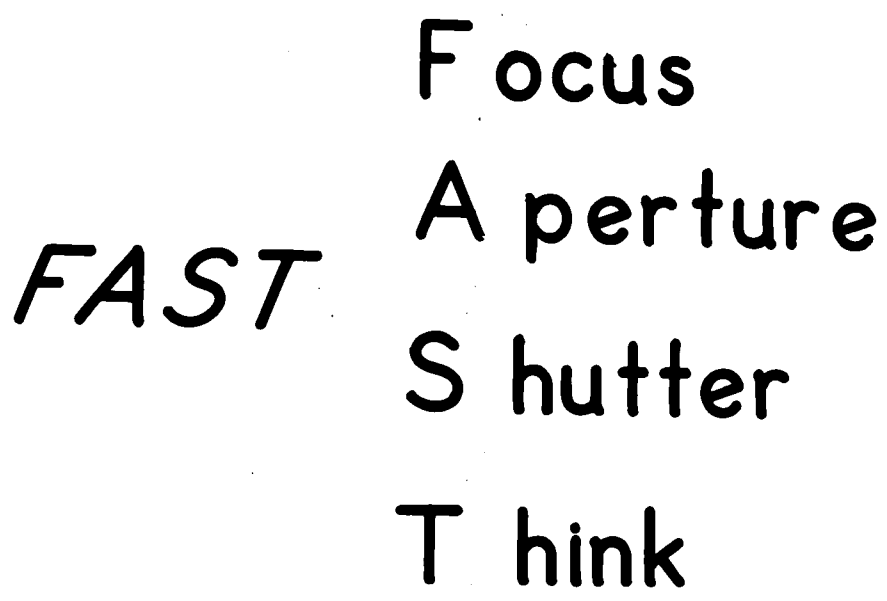


Fig. 7.--Basic Steps in Taking Pictures*

*These teaching materials were originally transparencies for use with an overhead projector.

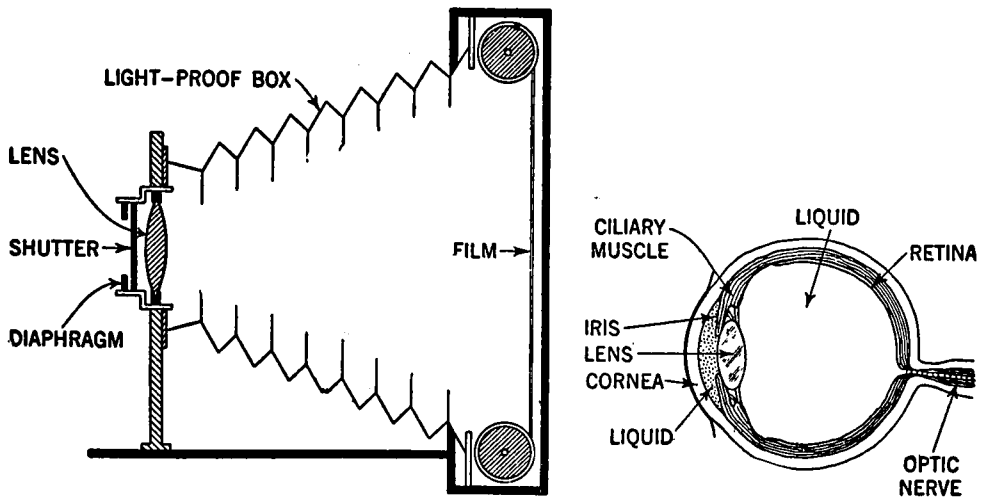


Fig. 8.--The Camera and the Eye*

*Thomas H. Miller and Wyatt Brummitt, This Is Photography (Garden City, New York: Garden City Publishing Co., 1947), p. 10.

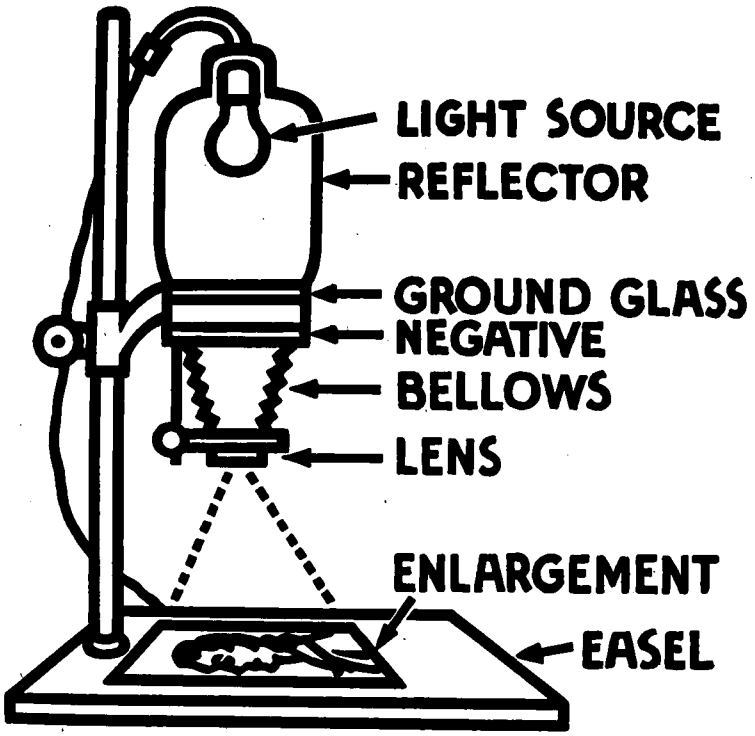


Fig. 9.--The Enlarger*

*Lucile Robertson Marshall, Photography for Teen-Agers (New York: Prentice-Hall, 1952), p. 159.

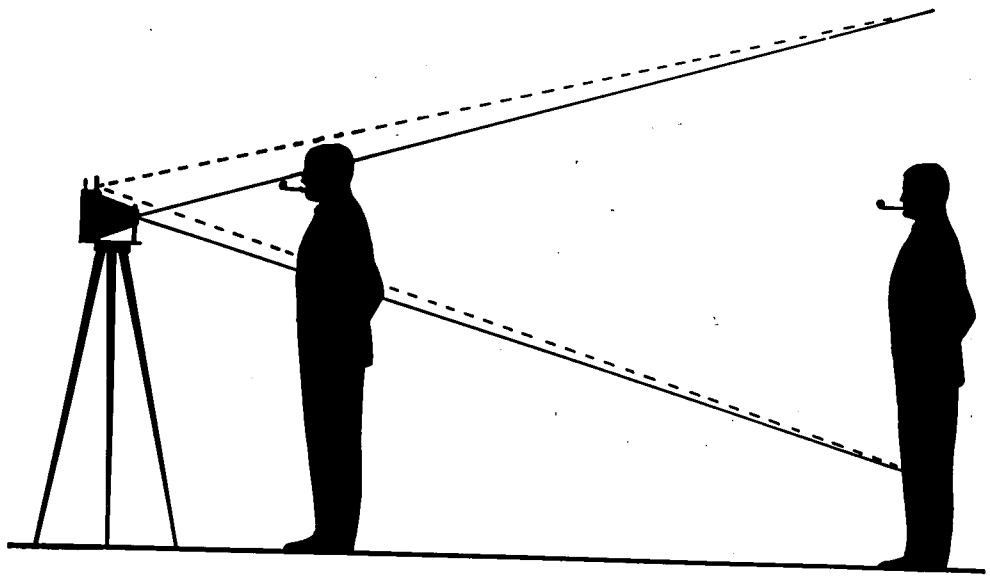


Fig. 10.--The Problem of Parallax*

*Miller and Brummitt, op. cit., p. 47.

RECOMMENDED SHUTTER SPEEDS TO STOP SUBJECTS IN MOTION

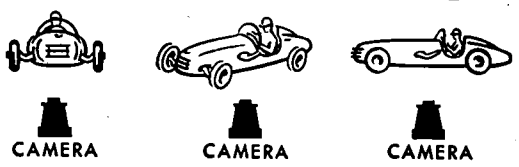
Subjects	approx. speed mph.	distance from camera	PROPER SHUTTER SPEED  CAMERA subject moving toward or away from camera	CAMERA subject moving at 45° angle to camera	CAMERA subject moving at right angle to camera
Slow moving people, cars, animals, etc.	5-15	15 feet	1/200	1/300	1/400
		25 feet	1/100	1/200	1/300
		50 feet	1/50	1/100	1/200
Fast moving objects, athletic events, etc.	15 mph. and faster	25 feet	1/300	1/400	1/500
		50 feet	1/200	1/300	1/400
		100 feet	1/100	1/200	1/300

Fig. 11.--Shutter Speeds to Stop Motion*

*How to Take Better Pictures (Binghamton, New York: General Aniline and Film Corp., 1957), p. 38.

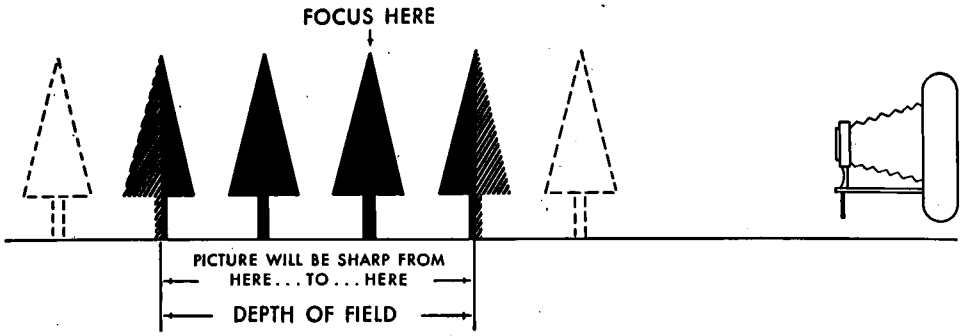


Fig. 12.--Depth of Field*

*Miller and Brummitt, op. cit., p. 34.