School Use of Visual Aids

An Interpretative Study

OF THE DATA COLLECTED IN THE NATIONAL SURVEY OF VISUAL INSTRUCTION IN ELEMENTARY AND SECONDARY SCHOOLS

by Cline M. Koon

Senior Specialist in Radio and Visual Education

BULLETIN, 1938, NO. 4

UNITED STATES DEPARTMENT OF THE INTERIOR

HAROLD L. ICKES, Secretary

OFFICE OF EDUCATION

J. W. STUDEBAKER, Commissioner of Education

Maps are among the most useful of visual aids.

CONTENTS

FOREWORD

The type of instruction we speak of as visual, meaning that which is emphasized through an appeal to the eye, the use of interesting or clarifying objective illustrations such as specimens, maps, pictures, and the like, are as old, no doubt, as instruction; certainly as old as formal instruction or what we now think of as organized education. In recent years, however, new visual mediums or aids have been introduced into instructional practices, many of which have a special appeal to the interest of youth of school age. The use of the sound film in the classroom is perhaps the most recent innovation, but moving pictures, film strips, the silent movie, stereoptican slides, are other visual aids of comparatively recent development.

Among the first questions to receive attention when one wishes to examine ways in which new instruments of instruction should be introduced and integrated into the regular school program, are those concerned with present practices. To what extent and how are these newer instruments used? What problems are involved in their introduction, and in what ways is their use evaluated? The effort to throw light on these questions is responsible for a Nation-wide survey of the use of visual aids in school systems, of which this bulletin is an interpretive report. The survey was made by the Office of Education with the cooperation of the American Council on Education, in 1936. The Council cooperated in financing the survey, and published as one result, The National Visual Education Directory, and assisted in financing through its visual motion-picture project the compilation of the material collected. Two publications of the Office of Education have resulted in whole or in part from the survey—Pamphlet No. 80, *Sources of Visual Aids and Equipment for Instructional Use in Schools*, and this bulletin.

I wish to express appreciation for the cooperation of the American Council in making the information contained in these publications widely available. This particular bulletin will, I believe, be definitely suggestive to school officials and teachers interested in initiating a program or in extending and developing one now under way in which the use of visual aids is an important part.

BESS GOODYKOONTZ,
Assistant Commissioner of Education.

CHAPTER I: VISUAL AIDS IN ELEMENTARY AND SECONDARY SCHOOLS

A NATION-WIDE SURVEY OF VISUAL AND AUDITORY AIDS WITHIN SCHOOLS

As a means of providing authentic information to individuals and agencies interested in the development of visual and auditory aids appropriate for use in schools, the Office of Education, with the cooperation of the American Council on Education, in January 1936, undertook a Nation-wide survey to determine the nature of such aids owned by school systems, the extent of their use, and some of the problems involved. This publication is one of the results of that survey.

The forms used in the survey were prepared by a representative committee of workers in the field, and sent to 21,000 superintendents of schools and heads of private schools throughout the United States (appendix A). They were asked to (1) list the types of projectors, films, slides, phonographs, and radios owned by respective school systems; (2) indicate the frequency of use of specific types of audio-visual aids in the primary, intermediate, junior high- and senior high-school grades, designated as "often," "some," and "never"; (3) supply descriptions of programs of visual instruction followed, answering specific questions concerned with electrical equipment of school buildings, the use of museums, field trips, school journeys, libraries as sources of visual aids, pupil attendance at motion-picture theaters, or the like; and (4) report the major difficulties encountered in carrying out programs in visual education, with suggestions and ways in which National agencies could be of assistance.

Among the aids considered are: (1) Objects, specimens, and models, either collected by schools or studied on field trips, excursions to museums, or on school journeys; (2) unprojected still pictures and graphic representations, includ-

ing maps, charts, graphs, posters, and cartoons; also projected still pictures such as lantern slides, film strips, and still films; (3) silent and sound motion pictures; and (4) radio programs and recordings.

Due to the widespread interest in these modern aids to learning and to the cooperation of State departments of education, a splendid response was received. Eight thousand eight hundred and six complete reports were sent in by schools and school systems with a combined enrollment of 16,836,677 pupils. The representativeness of the data reported may be judged by the fact that the number of children concerned equals approximately two-thirds of the total enrollment in public elementary and secondary schools in the United States. Reports were received from 95 percent of the school systems in cities of 5,000 or more in population. A large percentage of the school systems not reporting were in the outlying rural districts. The data concern, therefore, conditions in urban communities primarily.

In the treatment of the data it was deemed advisable to compare the use of audio and visual aids in different-sized school systems. Therefore the data were assembled separately for the following groups: Group I with a total enrollment of fewer than 750 pupils; group II with a total enrollment of from 750 to 2,499; group III with a total enrollment of from 2,500 to 9,999; and group IV with a total enrollment of more than 10,000 pupils each. Where it seemed desirable to determine the total or average use of different aids for all the schools reporting, each group was weighted according to the average number of pupils enrolled.

A PREVIEW OF THE FINDINGS

Of the total number of 8,806 school systems included in the National Visual Education Directory, 89 had full-time directors of visual instruction, and 226 additional systems had part-time directors. Thirty-five school systems out of every thousand have either full- or part-time directors of visual instruction. Of this number, one school system out of every hundred has a full-time director. A number of other school systems place the responsibility for visual education with a member of the central staff, not specified as a director.

The survey shows that pictorial materials are used more extensively than any other group of visual aids. They are used often [1] in the instruction of 61 percent of the pupils included in the survey. Objects, specimens, and models are used often to instruct 52 percent of the pupils; and visual aids which require mechanical equipment for their use are used often in the instruction of 27 percent of the pupils. The following table concerns the frequency of use of different groups of visual aids in school systems of different sizes.

TABLE 1.—USE OF VISUAL AIDS IN DIFFERENT-SIZED SCHOOL SYSTEMS

Aids	Percent by enrollment of school systems of—				
	Fewer than 750	750–2,499	2,500–9,999	More than 10,000	Average [1]
1	2	3	4	5	6
Unprojected pictorial materials	[2] 54	56	60	67	61
Objects, specimens, models	37	43	46	59	52
Projected visual aids (requiring mechanical equipment for their use)	10	21	22	34	27

[1] Weighted according to pupil enrollment.
[2] Percent reported as using often.

It will be noted from table 1 that large school systems make more use of visual aids than small systems. This is especially true in the use of aids requiring mechanical equipment. They are used often nearly three and one-half times as much in the large school systems as in the small systems. Pictorial materials, on the other hand, are used often in only about 25 percent more of the large than small systems.

Wall maps are used more extensively than any other type of audio-visual aids included in the survey. Charts and graphs are second, posters and cartoons third. The other types, in the order of frequency of use are: Mounted pictures; objects, specimens, and models; phonograph records; lantern slides; motion pictures; radio programs; stereographs; film strips; and still films.

[1] The terms used in the survey form to designate extent of use as explained above are used throughout this bulletin.

TABLE 2.—FREQUENCY OF USE OF AUDIO AND VISUAL AIDS

Aids	Percent by enrollment of school systems of—							
	Fewer than 750		750–2,499		2,500–9,999		More than 10,000	
	Often	Some	Often	Some	Often	Some	Often	Some
Wall maps	[1] 69	26	76	30	76	19	80	16
Charts and graphs	52	42	56	38	56	39	64	32
Posters and cartoons	50	45	45	52	58	39	61	38
Mounted pictures	43	49	47	48	50	45	61	38
Objects, specimens, etc.	37	55	43	52	46	48	59	40
Phonograph records	34	45	42	48	44	47	54	43
Lantern slides	11	36	26	50	29	54	48	41
Motion pictures	15	36	26	46	28	49	41	47
Radio programs	15	47	18	51	18	57	23	61
Stereographs	10	24	17	32	19	43	25	47
Film strips and still films	5	20	13	29	13	37	23	44

[1] Percent of the total number of reports within the group indicating the use often of the aid indicated.

It will be noted from table 2 that there is a steady increase in the use of every type of aid considered, as the size of the school system increases. The table further reveals that none of the aids requiring equipment are used as extensively as the least-used type of aid not requiring mechanical equipment. With the exception of stereographs, aids requiring electrical current are less frequently used than aids not requiring current. This is due in part to the fact that half the school buildings (41,928 out of 82,297) do not have electrical current.

The data concerned with the extent of use of various audio and visual aids were also compared according to the following grade levels: Primary, intermediate, junior high, and senior high school. Table 3 shows the frequency of use of the various types of aids on different grade levels.

According to the table more use is made of mounted pictures, objects, specimens, models, and phonograph records in the primary grades than in any other grade group. More use is made of posters and cartoons, radio programs, and stereographs in the intermediate grades than in any other grade group. More use is made of wall maps, motion pictures, and film strips in the junior high school than in any other grade group. Charts and graphs are used more in high schools than in elementary schools, and lantern slides are used more in intermediate and junior high-school grades than in primary and senior high-school grades. In

the main there is a gradual increase in the use of audio and visual aids from the primary through the junior high-school grades, and a slight reduction in their use in senior high-school grades.

Large school systems use museums nearly three times as much as small systems. More than two-thirds of all systems use libraries as sources of visual instruction material, and five-sixths of the school systems make field trips or school journeys. Four-fifths of the systems encourage pupils to see selected motion pictures in local theaters and use the information thus acquired in school.

Superintendents were asked whether the courses of study in use specifically suggested the use of visual aids. Six thousand one hundred and ninety-two replied. The following figures show the replies classified according to the size of the school systems:

TABLE 3.—FREQUENCY OF USE OF VARIOUS AUDIO AND VISUAL AIDS ACCORDING TO DIFFERENT GRADE LEVELS

Aids	Percents by grade levels														
	1-3			4-6			7-9			10-12			Average		
	Often	Some	Never	Often	Some	Never	Often	Some	Never	Often	Some	Never	Often	Some	Never
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Wall maps	47	38	15	83	16	1	88	11	1	85	14	1	76	20	1
Charts and graphs	48	38	14	55	41	4	67	32	1	67	32	1	59	36	5
Posters and cartoons	59	37	4	62	36	2	53	45	2	51	47	2	56	41	3
Mounted pictures	69	29	2	65	33	2	44	53	3	38	56	6	54	43	3
Objects, specimens, models	55	41	4	53	44	3	49	49	2	50	47	3	52	45	3
Phonograph records	59	37	4	57	39	4	43	49	8	29	57	14	47	46	7
Lantern slides	31	42	27	40	42	18	40	48	12	36	50	14	37	45	18
Motion pictures	21	49	30	29	45	26	41	41	18	37	48	15	32	46	22
Radio programs	18	49	33	24	54	22	21	62	17	17	65	18	20	58	22
Stereographs	26	39	35	30	45	25	18	44	38	9	39	52	21	42	37
Film strips and still films	14	31	55	18	36	46	21	41	38	17	45	38	18	38	44

The chart shows that 53 percent of the courses of study in the largest school systems suggest the use of visual aids, while one-third of the school systems with enrollments between 750 and 2,500 suggest such use. At the present time less than half of the courses of study used in all systems reporting suggest the use of visual aids.

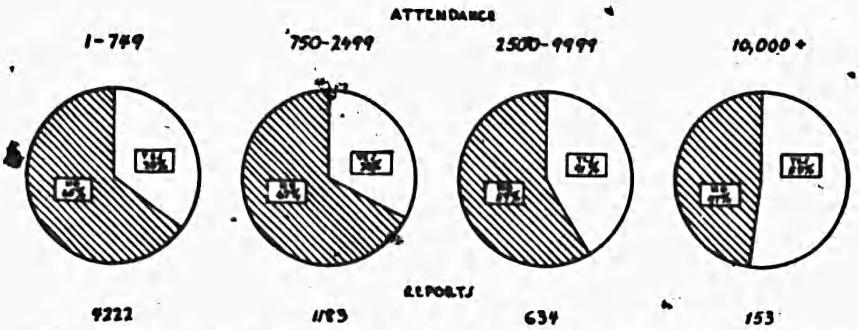


FIGURE 1.—Percentage of schools in which use of visual aids is suggested in the course of study.

The following audio and visual types of equipment were reported as owned by elementary and secondary school systems representing approximately two-thirds of all the enrolled pupils in the United States:[3]

17,040 Lantern-slide projectors
3,007 Still-film attachments
2,733 Film-strip projectors
2,073 Micro-slide projectors
2,720 Opaque projectors
6,074 16 mm silent motion-picture projectors
458 16 mm sound motion-picture projectors
3,230 35 mm silent motion-picture projectors
335 35 mm sound motion-picture projectors
11,501 Radio receiving sets
841 Centralized radio-sound systems
38,116 Phonographs
504 Motion-picture cameras

The following films, slides, and records were reported as being owned by the same school systems:

3,431,605 Lantern slides
67,898 Rolls of film strips
1,051,813 Stereographs
732,048 Phonograph records
6,074 Reels of 16 mm silent film
458 Reels of 16 mm sound film
3,230 Reels of 35 mm silent film
357 Reels of 35 mm sound film

DIFFICULTIES AND NEEDS

A number of difficulties accounting for the fact that audio and visual aids were not used widely in schools were listed on the report forms and the respondents were asked to indi-

[3] Much equipment used in schools is not owned, but borrowed by the school system.

cate their relative importance. The results of this section of the inquiry are shown in table 4.

TABLE 4.—MAJOR DIFFICULTIES INVOLVED IN SCHOOL USE OF AUDIO AND VISUAL AIDS

Difficulty	Number and percent by rank					
	First		Second		Third	
	Number	Percent	Number	Percent	Number	Percent
1	2	3	4	5	6	7
Insufficient budgetary provisions	[1] 5,222	82	[2] 334	6	277	6
Lack of aids in classroom when most needed	370	6	2,387	43	753	15
Teacher insufficiently trained in use of aids	276	4	1,029	19	1,081	22
Available aids inadequate in scope	197	3	774	14	954	20
Lack of understanding of values	155	2	642	12	938	19
Lack of information on sources of desirable films and other aids	159	3	358	[illegible]	863	18

[1] Number of reports indicating this to be the most difficult problem.
[2] Number of reports indicating this to be the second most difficult problem.

It appears that while the lack of sufficient budgetary provision is the major difficulty involved, the fact that there is a dearth of aids adequate in scope to be used throughout the school program is a serious handicap. A number of superintendents reported that they were unable to convince the school board and others in charge of fiscal policies of the merits of visual aids. This difficulty is classified in the table as a lack of understanding of the value of such aids. Suggested means of overcoming these difficulties reported by superintendents ranked according to need are shown in table 5.

By far the greatest interest was shown in the development of a plan whereby equipment could be purchased with the assistance of some Federal agency. This would do much to offset the prejudices mentioned.

Demonstration lessons by visual instruction experts are next in order of need; lesson plans to assist in the correlation of visual aids with the course of study; motion pictures produced for specific instructional purposes; and the establishment of visual instruction centers where courses for training teachers could be offered are other needs considered of importance.

TABLE 5.—RELATIVE NEED OF SERVICES TO SCHOOLS IN SECURING AND USING VISUAL AIDS

	Number and percent by rank					
	First		Second		Third	
	Number	Percent	Number	Percent	Number	Percent
1	2	3	4	5	6	7
Some plan that might be developed by Federal agencies for purchase of equipment at cost or on a deferred payment plan	[1] 1,929	40.2	[2] 641	17.6	637	20.6
Demonstration lessons in school by visual instruction experts	1,201	25.0	614	16.9	466	15.1
Lesson plans to help in correlation	464	9.7	792	21.7	749	24.6
Additional motion pictures for instructional purposes	465	9.7	613	16.8	475	15.3
Courses in visual instruction given at various centers	429	8.9	520	14.3	380	12.3
Expert evaluation of educational films and other visual aids	312	6.5	464	12.7	389	12.5
Total	4,800	100.0	3,644	100.0	3,096	100.0

[1] 1,929 respondents indicated this to be the most-needed service.
[2] 641 respondents indicated this to be the second most-needed service.

SOURCES OF AIDS FOR SCHOOL USE[4]

Securing information concerned with sources of visual aids is a problem of major importance whether concerned with mechanical aids or with the location of suitable films for instructional purposes. There are a number of agencies that distribute visual aids suitable for school use, including more than 200 commercial dealers. (See table 6.)

While more than 7,000 films are available for school use as shown in the survey, not all of them are suitable for the purpose for which they were prepared. Many are in bad condition. Relatively little information is apparently available evaluating these films and giving descriptions sufficiently adequate to guide teachers in selecting intelligently for the special purpose they have in mind.

[4] Koon, Cline M. Sources of visual aids and equipment for instructional use in schools. United States Department of the Interior, Office of Education, Pamphlet No. 80. 44 p.
Cook, Dorothy E., and Rahbek-Smith, Eva C. Educational film catalog. New York, The H. W. Wilson Co., 1936. With semiannual supplements.

SELECTING MATERIAL

Among the important ends to be achieved through the use of audio and visual aids in the classroom dependent upon intelligent selection are the development of ability to select from and see relationships among the variety of facts and general information which children now gather from listening to the radio, attending picture shows, and the like; and the cultivation of ability to discriminate among the variety of offerings available especially through the radio and motion pictures. Dramatic productions and musical selections in radio programs are examples of possibilities for the development of æsthetic appreciations provided a discriminating taste in selection has been cultivated. Children as well as adults need to develop an intelligent and æsthetic basis for selection among the varied offerings available—an objective which can be accomplished only by good teaching as well as careful selection of materials for classroom use.

TABLE 6.—NUMBER OF TYPES OF AGENCIES THAT HAVE VISUAL AIDS FOR DISTRIBUTION TO SCHOOLS

Agencies	Objects, specimens, models	Pictures	Maps	Charts and graphs	Posters and cartoons	Three-dimension pictures	Lantern slides	Film strips	Motion pictures
1	2	3	4	5	6	7	8	9	10
Federal Government agencies	2	21	11	16	13	0	18	9	19
State departments	9	23	13	4	8	6	10	7	10
Colleges and universities	16	39	19	21	8	9	47	31	52
Libraries	1	23	8	3	6	4	6	1	2
Museums	20	35	6	7	8	1	25	2	10
Voluntary associations	7	12	3	5	13	1	12	5	21
Select commercial dealers	25	49	14	19	0	3	29	23	60
Total	80	202	74	75	56	24	147	78	174

GENERAL REFERENCES

(1) DENT, ELLSWORTH C. Audio-visual handbook. Chicago, The Society for visual education, 1937. 150 p.

A concise explanation of the types, sources, and production of various types of audio-visual aids.

(2) DORRIS, ANNA V. Visual instruction in the public schools. Boston, Ginn and company. 1928. 477 p.

A basic textbook on visual education.

(3) DUNN, FANNIE W., *et al.* Materials of instruction. Eighth yearbook of the department of supervisors and directors of instruction of the National education association. New York, Bureau of publications, Teachers college, Columbia university. 1935. 242 p.

Chapter II: The environment as a primary source of materials of instruction, and chapter IV, Modern aids for experiences in learning contain practical suggestions for teachers interested in visual instruction.

(4) ——— *and* SCHNEIDER, ETTA. Activities of State visual education agencies in the United States. Educational screen, 14: 99–100; 126–27, 147, April–May 1935.

States that the service of visual education departments is neither universal nor standardized; some form of State provision has been reported from 26 States, the agency most often reporting is the State university extension division, or the State college of agriculture, gives a list of these; describes the nature and extent of the service; compares industrial and educational classroom films; the annotations in catalogs are aids to selection.

(5) GILBERT, A. E. Handbook of visual instruction for the schools of Schenectady. Schenectady, N. Y. Board of education. 1927. 23 p.

A brief consideration of various visual aids, and the program in Schenectady.

(6) GREGORY, W. M. Modern aids for experiences in learning, in Materials of instruction, Eighth yearbook, Department of supervisors and directors of instruction. Washington, National education association, 1201 16th Street. 1935. pp. 85–108.

Considers the use of various types of visual aids.

(7) HAWORTH, Harry H. Visual aids in education. Pasadena, Board of Education, Visual education department, 1501 E. Walnut Street. 1932. 120 p.

A handbook for teachers.

(8) HOBAN, CHARLES F., HOBAN, CHARLES F., *Jr.*, *and* ZISMAN, SAMUEL B. Visualizing the curriculum. New York, the Cordon company, 225 Lafayette Street, 1937. 300 p.

A comprehensive study of the subject. Suitable as a text and a source book.

(9) JENKINS, JOHN J., *et al.* Visual aids in the schools. A report of present uses and suggestions for improvement. Utica, N. Y., Rollin W. Thompson, Roscoe Conkling School. 1935. 160 p.

A report of the committee on educational progress, visual aids division of the New York State association of elementary principals. Contains much practical information and examples of the use of various types of visual aids in instruction.

(10) KLINE, AARON, *et al.* Aids to teaching in the elementary school. Thirteenth yearbook of the Department of elementary school principals. Washington, National education association. 1934.

A compilation of articles by well-known writers in the field on the use of radio and visual aids in the elementary school.

(11) KOON, CLINE M., *and* NOBLE, ALLEN W. National visual education directory. Washington, American council on education. 1936. 272 p.

A directory of 9,000 local leaders in visual education in elementary and secondary schools of the United States and an inventory of the audio-and visual equipment owned by each local school system listed.

(12) NEWKIRK, LOUIS V. The craft techniques. Chicago, Board of education. 1936. 73 p.

A teacher's manual including examples of craft techniques, references, and sources. The Chicago board of education has published also several other manuals by Mr. Newkirk including Paper making, Hand loom and basket weaving, Dioramas and table problems, and Marionettes and puppets, giving detailed instructions for the construction and integration of handwork in the learning process.

(13) NORMAN, HUGH W. Visual education. Bloomington, Indiana university, Extension division. vol. X, No. 8, 1925. 30 p.

A concise explanation of visual aids and equipment, intended to encourage the use of visual aids in schools.

(14) UNZICKER, S. P., *et al.* Visual education. Madison, Wis., The Wisconsin education association, 1935. 28 p.

The report of the visual education committee appointed to make a study of visual instruction and prepare recommendations for Wisconsin teachers. The study includes a consideration of various types of visual aids with special emphasis on motion pictures and the cost, care, and availability of projection equipment.

(15) WOODRING, M. N., OAKES, M. E., *and* BROWN, H. E. Enriched teaching of science in the high school. New York, Teachers college, Columbia University, 1928. 374 p.

A source book for teachers, listing chiefly free and low-cost illustrative and supplementary materials.

CHAPTER II: OBJECTS, SPECIMENS, AND MODELS

SPHERE OF USEFULNESS

A fundamental aim of education is to acquaint the child with his environment. Some of the information needed is obtained from books, some from the teacher and from class discussions. But unless information is supplemented by contact with things, impressions are likely to be vague and lacking in realistic aspects. Children need to see and examine objects in order to acquire clear, accurate concepts. This may be accomplished by bringing objects (things themselves), specimens (sample parts of objects), and models (replica of objects) into the classroom for study; or by taking the pupils to visit museums, factories, zoological parks, and on field trips to study things in their natural settings.

For centuries teachers have been using objects, such as live animals, insects, tools, clothing, and vegetables, and specimens, such as samples of wood, coal, hides, bits of cloth, and oil, that can be brought to school for classroom study. Models or reproductions of public buildings, houses, machines, busts, parks, mountain ranges, bodily organs, and scenes in real life are either constructed or purchased by the school. Such aids have been found indispensable in many subjects as materials of instruction.

In geography, for example, globes are used extensively to illustrate areas, meridians, and parallels, in their correct relations. It is difficult to imagine how pupils could ever form clear conceptions of such relations without the use of globes. Since geographic conditions play such an important part in the lives of people, teachers of history, civics, sociology, and economics find globes useful to stimulate interest and to make instruction clear.

In the study of the natural sciences, such as botany and zoology, plants, flowers, small animals, insects, as well as specimens and models of them, are generally recognized as

aids to instruction. In the physical sciences such as geology and physics, specimens of rock, models of geological formations, machines, and physical structures are used extensively in instruction. In fact, considerable laboratory work is required in most science courses so that the students may learn by examining and testing objects, specimens, and models, as well as by reading and discussion.

Even in the study of language and literature, objects, specimens, and models are used extensively. Reproductions of the homes and environments of authors are made in literature classes, and objects of the type used by the authors or the characters portrayed by them, are stimulating and vivifying aids in teaching. In the study of foreign languages, reproductions of the costumes, buildings, and settings discussed in the text are used to create atmosphere and clarify points with which the students are not familiar. Selected objects, specimens, and models are suitable for instruction in practically every subject in the curriculum. However, their spheres of greatest usefulness seem to be in the fields of science, art, and the social studies.

Such media are also used extensively in school exhibits to acquaint the public with the work of the schools, to familiarize the student body with the work being done in specific departments, and to inform the entire school of important civic and social activities. Well-planned, instructional exhibits are stimulating both to the pupils preparing them, and to others who observe. Objects, specimens, and models included in exhibits, should be arranged, labeled, and described in a manner to serve some definite purpose. Pictures, posters, charts, and graphs may be used to explain and supplement the things exhibited. In addition to the exhibits constructed in school, others may be obtained from manufacturers, museums, national voluntary associations, and other agencies, at very little or no expense.

In schools having no provisions for the exhibition of permanent collections, an exhibit of one subject at a time, such as Indian implements, samples of wood, bird houses and the like may be arranged. The exhibits can be changed at intervals, stimulating fresh interest on the part of pupils. Exhibits should be properly lighted, well-labeled, and placed in positions which are easily accessible.

EXTENT OF USE

Objects, specimens, and models needed to illustrate instruction are now available to schools, or may be constructed by the pupils at little cost. Since these aids have a wide variety of uses, it would seem safe to assume their extensive use in the classroom. However, the results of the survey indicate that this is not the case.

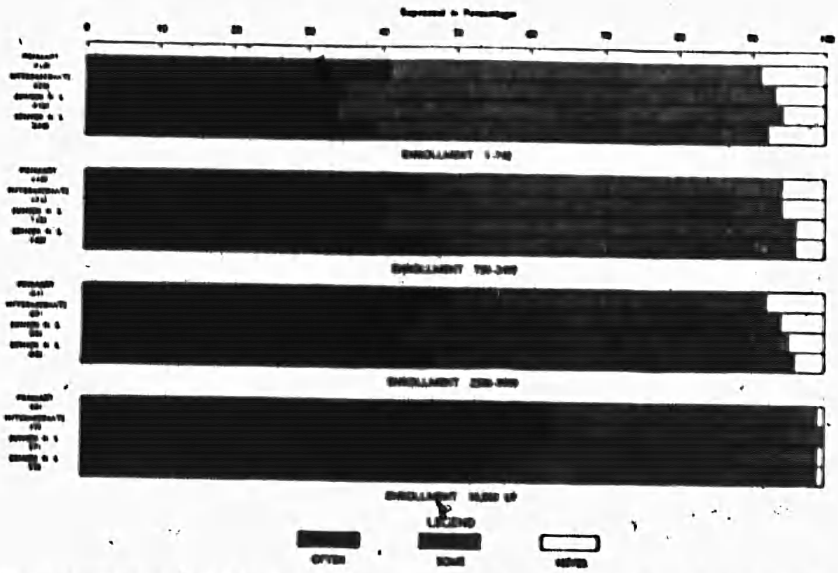


FIGURE 2.—Extent to which objects, specimens, and models are used in primary, intermediate, junior, and senior high school grades, according to size of school systems based on enrollment. The numbers in the margin refer to the number of children in the grades reported

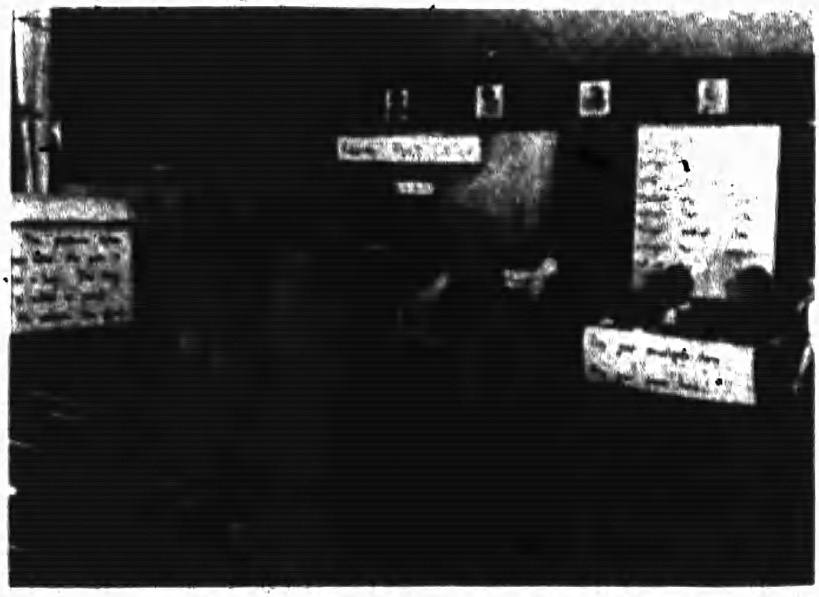
An examination of the data in table 3 indicates that objects, specimens, and models rank fifth in extent of use of the various types of audio and visual aids in elementary and secondary schools—being used often in instructing 52 percent of the pupils included in the survey, sometimes in instructing 45 percent, and never in the instruction of 3 percent. The table indicates little variation in the extent of use according to grade levels. Large school systems make more extensive use of objects, specimens, and models than small school systems. (See table 2.) Thirty-seven percent of school systems with enrollments of fewer than 750 each report the use of such aids often, compared with 59 percent of school systems with enrollments of more than 10,000 pupils each.

EXAMPLES OF USE

Among the type lessons collected by the Pennsylvania State Department of Visual Instruction as illustrative of the use of objects, specimens, and models in instruction were the following:

Observation lessons:

A sixth-grade art class visited the Persian room of the Fogg Museum at the University of Pennsylvania to study the fabrics and to become familiar with Persian field patterns, as a means of stimulating creative imagination and expression in design.



A unit in transportation and communication—the mail.

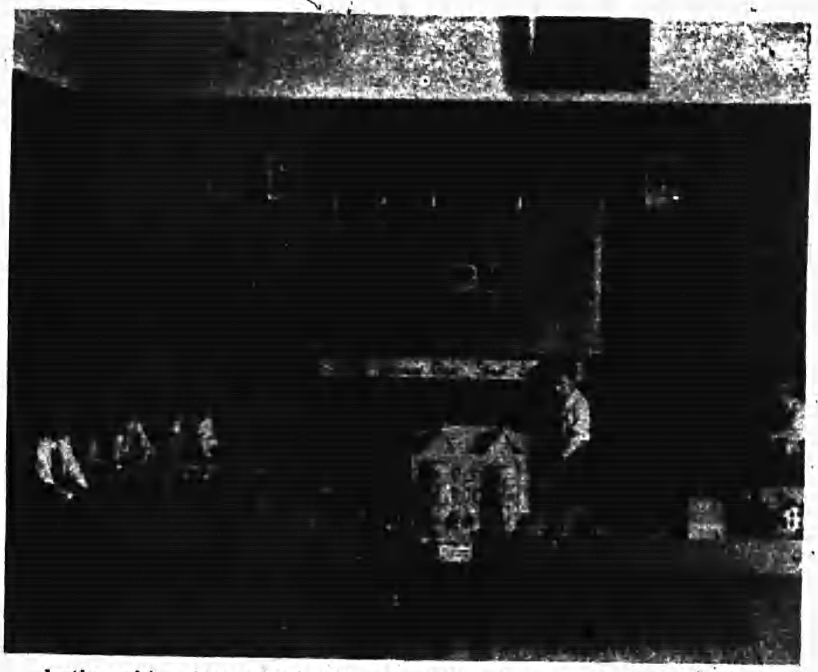
A ninth-grade general science class examined with hand lens various parts of different types of flowers, to allow the pupils to discover the functions of such parts in the reproductive process.

A lesson on the rubber industry for fifth-grade pupils was arranged at the Philadelphia Commercial Museum. The visiting pupils can be seated in front of the model representing a section of the Amazon jungle. Several rubber trees are among the other native trees. One life-sized model of an Indian was shown collecting latex from the little cups on the trunk of the tree, and another shown drying the rubber. The teacher exhibits a jar of real rubber milk and then pours the contents on a board and allows it to dry. Then the pupils can experiment with different ways of getting rubber from the latex, and examine various specimens of rubber, as a means of understanding the manufacture and characteristics of rubber (3).

60283°—38— —4

Field trips, excursions, and school journeys:

While studying the production of milk, a second-grade class visited a dairy, saw the cattle, learned the breeds, saw the foods which the cows eat, and learned about Government regulations concerning weights, inspection, and sanitation. The class observed pasteurization, and the processes from the milking of the cows until the milk was bottled. This visit stimulated the class discussions and also the making of various dairy products and a model dairy farm. The project presents innumerable opportunities for learning through the use of the five senses (8).



In the early grades models built by the children have real educational value.

Teachers take their pupils to a railroad station in order to give them first-hand experience about trains. They inspect a sleeper, a diner, a parlor car, a coach, and a locomotive. They observe how the engine operates, how the beds are made, and how food is prepared.

High-school classes go on hikes to examine and collect wild flowers and geology specimens.

Classes visit the National Capital or places of historical interest. For example, a junior high school history class made a trip to the bank of the Monongahela River at California, Pa. The purpose was to give the pupils some idea of George Rogers Clark's expeditions which helped establish the Mississippi River as the western boundary of the United States at the close of the Revolutionary War. The teacher told about Clark building a raft at Brownsville, and passing California on the journey down the river, and some of the experiences encountered. The purpose of Clark's journey was discussed and considerable reading followed.

COLLECTING, MAKING, AND STORING OBJECTS, SPECIMENS, AND MODELS

Visual materials are abundant in most rural communities but teachers frequently fail to avail themselves of local resources or the pupils' aid in the collection of objective materials. In the actual collection and handling of animals and materials pupils gain an understanding of their characteristics and uses.

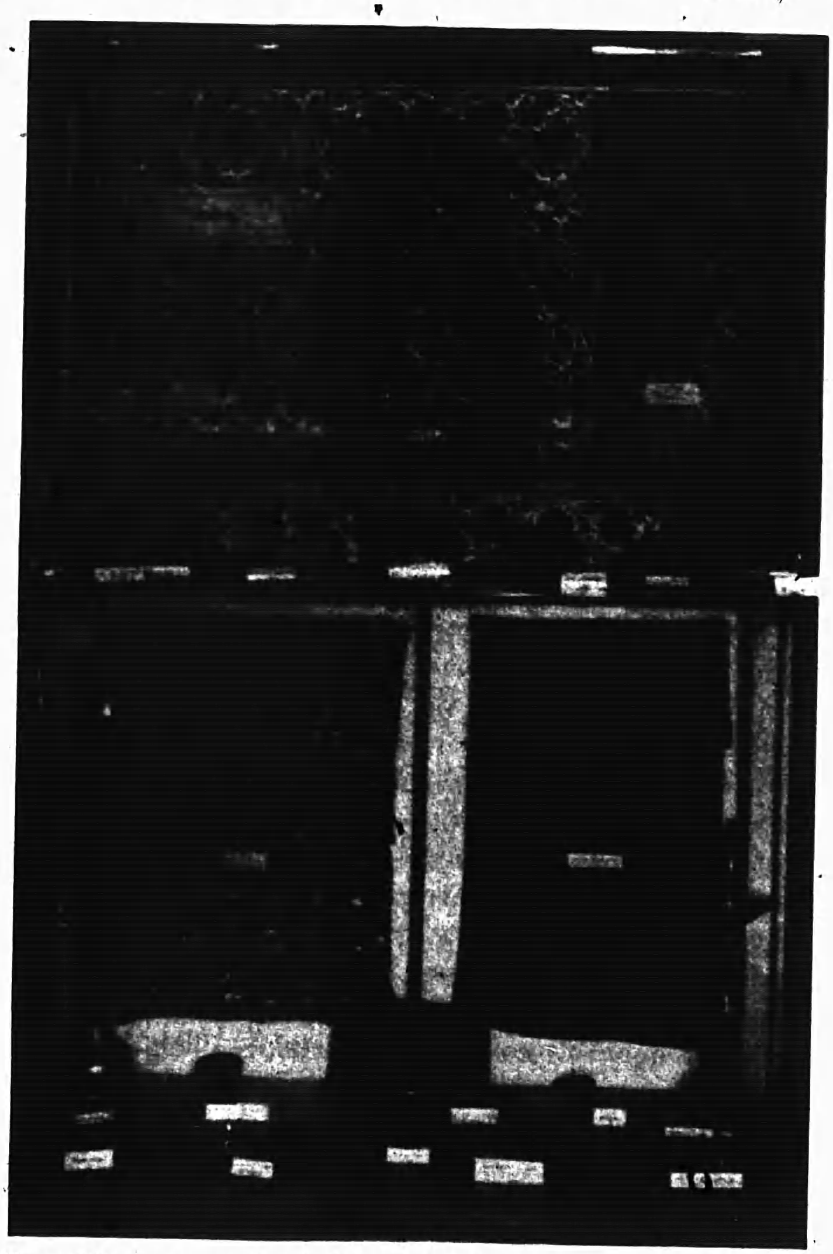
City schools, too, can draw from the supply of visual materials available in rural areas, and upon local industrial plants for materials in various stages of manufacture. Rural schools also may draw to a limited extent from visual materials available from industrial plants. If the seacoast is accessible, both can get interesting specimens from the shore.

Teachers need not hesitate to start a collection of objects, specimens, and models because school funds are not available for the purpose. Not only simple collections, but school museums, have been started by individual teachers with little financial aid from the board of education. Indeed, one way to get the financial support of the board is to demonstrate the value of visual aids by their use. Pupils are willing helpers in the collection and classification of objects and specimens, and in the construction of models.

School museums can be begun with the collection of objects, specimens, and models of permanent value. One teacher reports that when her group was discussing activities of the previous summer, a fourth-grade pupil told about the collection of shells, stones, bugs, and animals which he had started at home. The other pupils were so interested that he brought his collection to school. This led to the beginning of a collection which soon included a small black snake, a ground mole, a tree toad, a frog, a lizard, a field mouse, various kinds of worms, snails, butterflies, grasshoppers, crickets, moths, stones, shells, flowers, and ferns. The children took turns caring for the live animals and became very interested in finding out about the objects which they had collected.

Schools can collect a wide assortment of visual materials in their immediate environments However, it takes far

more than materials to make a good school museum. The items should be carefully selected, labeled, and stored where they will be accessible when needed. Dr. Charles R.



When museums cooperate the schools have an inexhaustible source of material for study.

Toothaker, curator of the Philadelphia Commercial Museum, makes a number of practical suggestions for getting a school museum started. The school museum should not be a collection of curios, but a series of objects and specimens

carefully selected to illustrate the lessons in the course of study. Teachers should guard against the tendency to include things only because they are beautiful or interest-

A fifth-grade class studies weaving at first hand in the museum.

ing (35). After a suitable collection is made, provision for classification, cataloging, storing, and continual care is necessary.

Fresh-water aquariums are used extensively in schools to keep small fish, such as catfish, sticklebacks, minnows, and shiners available for class use and observation. Snails, clams, tadpoles, water-scavenger beetles, and dragonflies may be included also, as well as water plants like vallisneria (eelgrass), elodea (waterweed), and other little plants from ponds and streams. Such aquariums involve little expense beside the cost of the tank.

Making, collecting, and arranging objects, specimens, and models may have a place in an activity curriculum for elementary pupils. Mrs. Grace F. Ramsey of the American Museum of Natural History points out that it is not difficult for a general science class to construct an accurate model of a scene in real life, or of a habitat group, using real objects

such as insects and plants. Miniature human figures, means of transportation, and simple types of shelter can be made for use in the social studies (5).

In large city systems delivery of visual aids to schools requires a business organization.

MUSEUMS SERVE SCHOOLS

Schools located in areas where public museums are accessible are fortunate, for museums assist schools in at least three different ways. First, they lend exhibits of objects, specimens, and models for instructional use. Some museums also supply schools with other visual aids, such as motion pictures, slides, and charts, or pictures which illustrate museum objects. Second, they encourage classes to study objects, specimens, models, and exhibits in the museum itself. Third, the museum officials give instruction regarding the use of museums and the collection, preservation, and use of objects, specimens, and models in school.

Among museums which supply the schools of their respective cities with circulating visual materials to illustrate school work are: Cleveland Educational Museum, Birmingham School Museum, Los Angeles Public School Nature Exhibit, Hamtramck Educational Museum, St. Louis Edu-

cational Museum, Schenectady School Museum, Oklahoma City Museum for Children, Easton, Pa., School Museum.

In Chicago and St. Louis, the museum does not maintain display space at its headquarters. Exhibition materials are sent to the schools.

In the survey previously referred to, 1,376 (23 percent) respondents reported the use of a museum or museums for instructional purposes. Large school systems make nearly three times as much use of museums as small ones, as the following graph indicates.

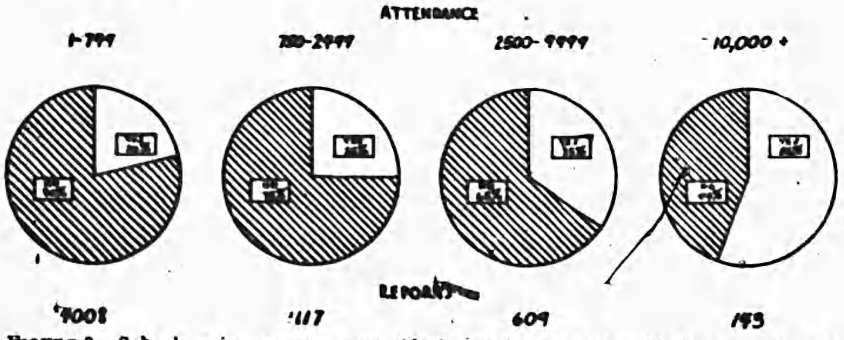


FIGURE 3.—Schools using museums as aids in teaching replied "Yes", percentage as indicated.

Ever since it was established in 1893, the Field Museum in Chicago has aimed definitely to provide education for school children. During the first 20 years of its existence the educational service of the museum was limited to explanations and lectures given to groups of children who visited the museum. A school extension service was established in 1913, and a public-school lecture division in 1922, to meet the ever-growing demands.

At the present time the museum has more than 100,000 portable exhibits on economic subjects and natural history, which are loaned regularly to 386 schools. Besides objects, specimens, and models, the lecture division uses motion pictures and lantern slides in regular series of lectures for children, both in school assemblies and in the museum. The fact that 1,006 lectures, reaching 265,649 children, were given in 1 year, indicates the extent of the work of this division.

The American Museum of Natural History in New York City is a pioneer in such activities. In 1880 Prof. Albert S. Bickmore inaugurated his illustrated lectures for teachers.

With the introduction of nature study in the New York City school curriculum in 1904, close cooperation between the museum and the schools began. Among the services performed at the museum at the present time are lecture courses, instruction for the blind, guidance for visiting groups, a junior astronomy club, special courses for teachers, and it cooperates with teachers colleges. Among the services of the museum to schools are circulation of nature study collections, lending of motion pictures and lantern slides to schools and branch libraries, and cooperation in nature study work. More than 12,000,000 pupils viewed the museum's motion pictures and lantern slides or used the nature study collections in 1929 (34) (29).

The Philadelphia Commercial Museum circulates among schools 250 collections of raw commercial materials. The Cleveland Educational Museum in 1931 circulated more than 120,000 sets of materials among schools. The Indianapolis Children's Museum lent cabinets of materials 1,394 times during 1934.

The Detroit Children's Museum is a storehouse upon which teachers draw to enrich their teaching. Their use of illustrative material is wide and varied. For example, if a fourth-grade class is studying the natural resources of Michigan, the pupils are helped by specimens of iron ore, copper, lumber, and salt. When the general arts class is studying clothing and shelter, specimens of textiles and examples of architecture are borrowed from the museum. Collections of birds and animals also are brought from the museum when the nature study teachers request them.

Another way in which museums assist schools is by encouraging class visits, and special instruction for pupils at the museum. Museum visits should be planned, directed, and integrated with the course of study. Three teachers are assigned to the Philadelphia Commercial Museum to direct the study of exhibits by visiting classes. Daily lectures are given also. The Brooklyn Children's Museum provides a laboratory where children can study minerals, and in addition holds lectures daily for visiting classes. Other museums in various parts of the country carry out similar instructional services.

The third way in which museums assist schools is by giving information and aid in the use of visual materials. Members of the museum staff lecture before groups of teachers on the use of visual aids and recommend visual materials for the course of study. They assist in planning and sometimes offer courses for teachers in visual education, and recommend books and articles on the subject. In many ways the museum service is publicized throughout the school. For example, series of broadcasts dealing with historical and geographical subjects on display are conducted by one museum staff.

SCHOOL JOURNEYS, EXCURSIONS, AND FIELD TRIPS

The terms "school journey," "excursion," and "field trip" are sometimes used interchangeably to describe class trips away from school for the purpose of studying objective material, located in its natural setting. However, common usage is gradually distinguishing among these terms. A school journey usually means a long trip lasting several days, and involving the consideration of many real things of class interest. It may be to the city, or to the country, or both. An excursion may be defined as a visit to some metropolitan area; while an exploration of natural phenomena or simple activities within a short distance of the school is called a field trip.

Unquestionably many advantages accrue from well directed school journeys, excursions, and field trips. They enable pupils to examine things in their natural settings and relationships. Trips stimulate interest in environmental conditions and help pupils to make appropriate associations. Out-of-school activities are very worth while if they are carefully planned and synchronized with the regular instructional work of the school.

Teachers report a variety of types of trips. Visits to farms to study the cultivation, harvesting, and storing of farm crops, types and care of live stock and farm machinery; visits to woods and fields to study wild animals, birds, trees, insects, flowers, or astronomy, constitute the most common field trips. Excursions are made to museums, art galleries, zoos, harbors, radio stations, or a public building, such as the court house, post office, or to some historic structure.

60283°—38——5

Industrial plants, printing shops, hardware stores, and airports are other centers of interest for such visits. School journeys usually combine a consideration of several of the places mentioned previously, but they may be undertaken to learn about a single objective, such as a battlefield or a National Park.

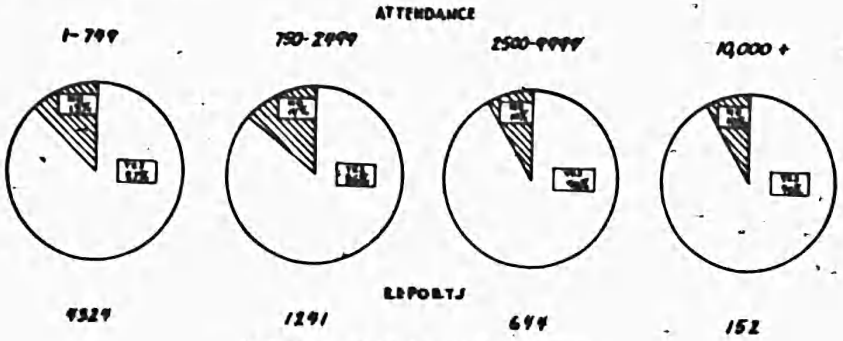


FIGURE 4.—Schools making field trips.

Regardless of the nature of the excursion, advance preparation, the proper attitude during the trip, and carefully prepared reports are important essentials. The safety of the children must be given consideration. The pupils should have clearly in mind the purpose of the trip, the general plan to be followed, their individual responsibilities for the success of the trip, and should make such preparation as is necessary to guide their observation. Details should be so planned that the focal point of every pupil's attention will be on the thing to be learned during the specific parts of the trip where learning should take place. Even a short trip involves considerable preparation, since outdoor conditions are not always conducive to learning, and children may consider a field trip solely a pleasure jaunt rather than an educational means.

At suitable periods during the trip, or as soon afterward as convenient, the high points of the excursion should be discussed. The pupils should be helped to clarify facts not thoroughly understood, to correct wrong impressions, and to make the proper associations with their regular school work. Opportunities should be provided for notations of interest and creative expression through sketches at the scene of observation. It is well to have the children in a more or less compact body near enough the teacher to ask questions,

respond to directions, and to follow the discussions as the various observations are made.

The longer trip away from school offers a wide variety of possibilities for learning, but involves problems not encountered in shorter trips. Since some school journeys last only 2 or 3 days and others extend over the entire vacation season, such problems as financing, food, clothing, housing, health, and safety, differ in importance and arrangements involved. Creation of the proper mental attitude for study under conditions which often stimulate a recreational rather than a learning attitude must be considered also. Teachers planning school journeys should have a definite purpose in mind, an understanding of the difficulties involved, and a clear insight into the environmental conditions under which learning is to take place.

While student tours covering a long period of time are more common in Europe than in the United States, a number are reported, including the following: The University of Illinois sponsors a summer motor journey through the Rocky Mountains to study history and science. The South High School (Denver) Rebel Rangers have made trips to the Rose Bowl at Hollywood, the Carlsbad Caverns, El Paso, Juarez, Albuquerque, Santo Domingo, the old Indian Pueblo, and to Santa Fe.

REFERENCES AND SOURCES

The following references deal specifically with objects, specimens, models, field trips, excursions, and school journeys:

OBJECTS, SPECIMENS, AND MODELS

(1) BERGREN, LESLIE. Special methods for biology teachers. Chicago, the University high school. 18 p. Unpublished manuscript.

Simple directions for the utilization of laboratory aids.

(2) EMMERT, WILBER. What realia (objects-specimens-models) may be assembled without cost or at very little cost to school districts in junior-senior high school sciences? *In* National education association. Addresses and proceedings. 1933. p. 785–86. Washington, D. C., The Association, 1933.

Considers this type of visual aid one of the essentials of successful teaching of science subjects. Describes four widely accepted specific objectives of science teaching in which this method contributes. A brief article showing many possibilities for obtaining material.

(3) HOBAN, CHARLES F. The object-specimen-model as a visual and other sensory aid. Harrisburg, Pa., Department of public instruction, 1929. 78 p.

A compilation of information submitted by various teachers of visual instruction on the use of objects, specimens, and models, in instruction; and a description of the school work of the Philadelphia Commercial Museum.

(4) RAMSEY, *Mrs.* GRACE FISHER. Object-specimen-model material that may be assembled without cost or at very little cost in the field of elementary science. *In* National education association. Addresses and proceedings, 1933. p. 781. Washington, D. C., The Association, 1933.

A brief article containing suggestions for teaching science to young children with inexpensive or free materials such as bottles, old window shades, cord, newspaper, tin cans, etc.

(5) ——— Project method in elementary science. New York, American museum of natural history, 1934. 25 p.

Practical directions from an expert on the mounting of specimens and the construction of models.

FIELD TRIPS, EXCURSIONS, AND SCHOOL JOURNEYS

(6) BORGESON, F. C. Trips and excursions. *In* Elementary school life activities. Vol. 2. p. 4–25. New York, A. S. Barnes and Co., 1931.

A chapter on the values gained from this type of school activity; discusses briefly the difficulties in conducting excursions, the procedure, current practice; gives some sample trips and the students' comments on them, and a list of excursions and trips that can be made.

(7) BRUMBAUGH, FLORENCE M. How to conduct an excursion. Instructor, 44: 28, 83, September 1935. illus.

Gives selected procedures for teachers lacking experience in conducting large groups. Also a short list of references for further reading.

(8) BRYAN, H. ELOISE. Out of the classroom into life. *In* National education association. Department of elementary school principals. Thirteenth yearbook: Aids to teaching in the elementary school. p. 278–83. Washington, D. C., 1934.

A description of the practice in one school.

(9) CHAMBERS, ELSIE J. The field trip as a part of visual education activities. Los Angeles school journal, 14: 27–28, 45, June 27, 1931. (Reprint.)

CHAPTER III: STILL PICTURES AND GRAPHIC PRESENTATIONS

The term "still pictures" is used here to include pictorial representations such as photographs and prints. "Graphic presentations" include maps, charts, graphs, posters, and cartoons. Unprojected pictorial and graphic representations are considered in the first part of the chapter, and projected representations, in the form of stereographs, lantern slides, and film strips, in the second part.

Pictures are used so extensively to illustrate textbooks and supplementary publications that they are regarded as necessary adjuncts to practically all types of instruction. They are used in the development of æsthetic appreciations, in the formation of accurate and new impressions, and in a variety of other ways. As with other forms of instructional materials, pupils' interpretations of pictures are influenced by their experiences. If the experience is inaccurate or incomplete, the interpretation will be, unless skillful instruction accompanies the introduction and use of the picture.

Graphic presentations are effective means of showing trends of prices, for example, or relationship among objects or among ideas. Like pictures, they must be carefully selected, introduced at the proper time, and explained so that pupils can interpret them accurately.

If pictures are used as adjuncts to the presentation of a unit of instruction, they should be selected to illustrate the specific point considered. The number used should be limited to those needed to illustrate the text. In making a pictorial or graphic presentation to a class, care should be exercised to insure that pupils do not form wrong impressions. Short discussions and thought-provoking questions are means to insure proper interpretations and associations. Still pictures and graphic presentations are most valuable when the impressions gained are integrated with the printed and oral presentation to facilitate understanding.

UNPROJECTED PICTURES AND GRAPHIC PRESENTATIONS

Mechanical devices are now available to show projected pictures such as stereographs, lantern slides, film strips, and motion pictures, either with or without sound. Such aids do not replace unprojected still pictures and graphic presentations. The latter are more readily available and easier to use. Sometimes they are large enough to be displayed on

Films and slides are of real value in teaching this first-grade group.

classroom walls and bulletin boards. At other times they are assembled in loose-leaf booklets or albums for individual examination. They may be separately mounted and passed around in class either prior to or contemporaneously with the lesson or placed on reference tables.

Maps.—A map is a graphic record of information which would require many pages if recorded in words. Political, physical, climatic, and economic maps are used widely in instruction, particularly in the social studies. They assist pupils in the understanding of relative and exact locations, in describing the general direction of one political unit from another, or one land mass from another. Areas, distances, topography, shape, transportation lines, and the distribution of peoples, animal life, vegetation, and resources are portrayed on maps. Because of the symbolic nature of the

lines, colors, and shadings, and for other reasons, pupils need training in map reading. Maps are a useful introduction to new locations and a means of orientation. They assist on long or short journeys since they help one to know just where he is at a given moment. In the study of a given place or region a map will enable the pupil to understand its location in relation to the rest of the world.

Wall maps centralize the attention of the class and accurately reveal physical details, such as coast lines, lakes, rivers, mountains, and elevations. They are used more

A variety of visual aids are among the equipment of this sixth-grade room.

extensively in the schools of the United States than other types of visual or auditory aids (table 3). Teachers of primary pupils make less use of maps than those of higher grades; and large school systems slightly more than small school systems.

Charts and graphs.—Charts are drawings intended to show the relationship of various items to each other and their functions or positions in a larger organization or grouping of which the items are a part. Time tables, drawings of constellations of stars, and organization charts are examples. Graphs are accurate pictorial representations of data. The most common types of graphs are the line, bar (used in this bulletin), circle, and pictorial. Statistics presented in graphic form are more interesting and easier

to comprehend than if mere numbers are used. Pictorial graphs are gaining in school use at the present time. Both charts and graphs are aids in instruction which involves the comparison of statistical data.

According to the results of the National Visual Instruction Survey, charts and graphs are the second most extensively used type of visual aid in schools. They are used often in

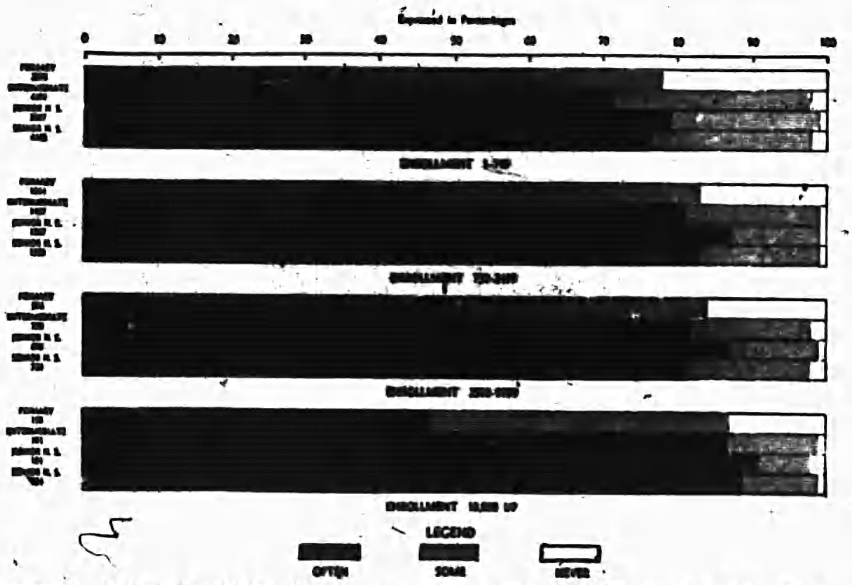


FIGURE 5.—Extent to which wall maps are used, according to grade levels and enrollment of school systems.

the instruction of approximately three-fifths of the pupils (59 percent) and used sometimes in the instruction of an additional 36 percent of the pupils enrolled (table 3). More than two-thirds of the junior and senior high school pupils reported often make use of charts; 1 percent never use them. Less than half (48 percent) of the primary pupils often make use of charts and graphs. In the intermediate grades the percentage of regular users is somewhat larger (55 percent) (table 3). Large school systems use charts and graphs more than small school systems (table 2).

Posters and cartoons.—Posters and cartoons differ from charts and graphs in that they are intended to attract attention instantly and convey a single central idea at a glance, while charts or graphs are to be studied and analyzed. Posters treat the idea more seriously than cartoons. Generally they are designed to be seen at a distance.

More than half (56 percent) of the pupils reported in the survey use posters and cartoons often; and an additional two-fifths (41 percent) sometimes use them. In contrast

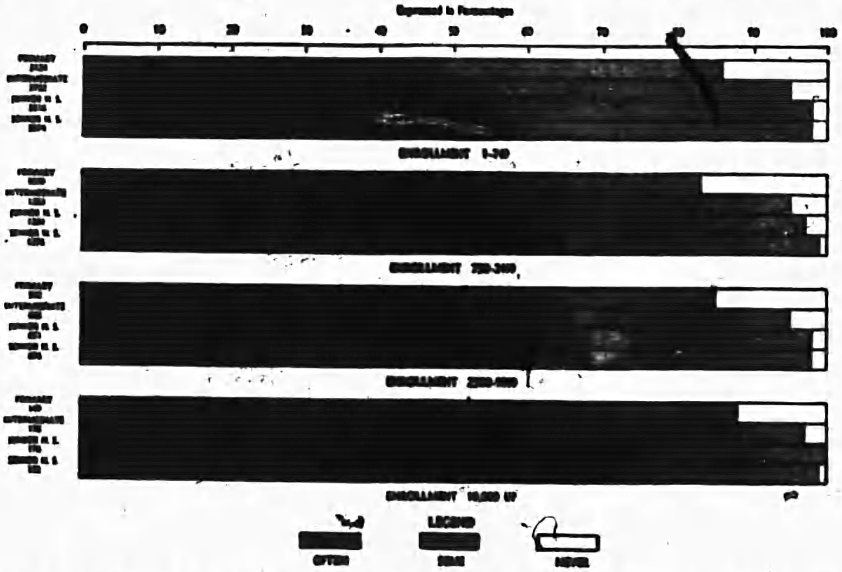


FIGURE 6.—Extent to which charts and graphs are used in schools, according to grade levels and enrollment of school systems.

with the use of charts and graphs, primary and intermediate pupils make more systematic use of posters and cartoons than junior and senior high school grades (table 3). This might be expected, since posters and cartoons are intended to give

FIGURE 7.—Extent to which posters and cartoons are used, according to grade levels and enrollment of school systems.

general impressions rather than exact information. Quite naturally large school systems make more use of posters and cartoons than small ones (table 2).

Mounted pictures.—Mounted pictures are the fourth most extensively used type of audio-visual aids reported. Fifty-four percent of the pupils use them often, and an additional

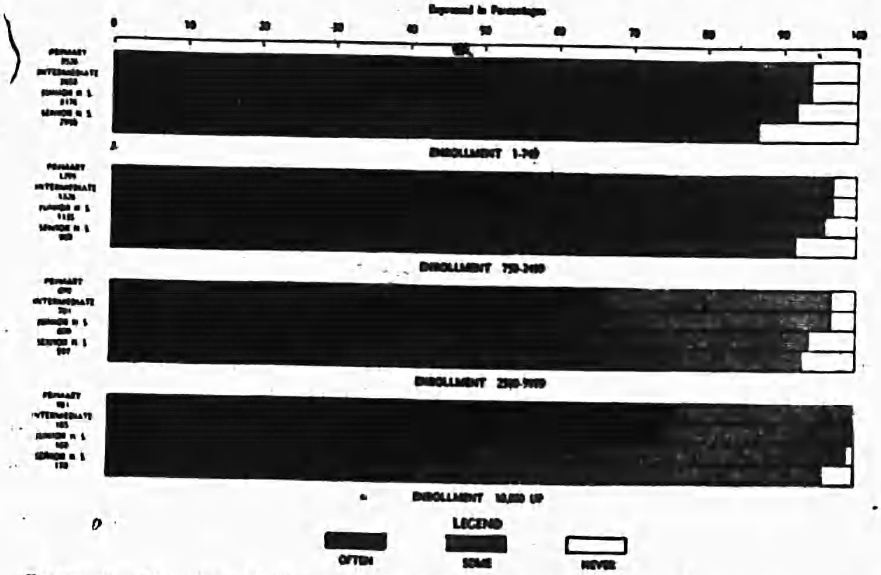


FIGURE 8.—Extent to which mounted pictures are used in schools, according to grade levels and size of system.

43 percent sometimes; 3 percent do not use pictures. The percent of pupils reported as using mounted pictures steadily decreases from the primary through the senior high school grades—dropping from 69 percent in the primary grades to 38 percent in the senior high school grades (table 3). Systems with total enrollments of fewer than 750 pupils each make about two-thirds as much use of mounted pictures as systems with more than 10,000 pupils enrolled (table 2).

EXAMPLES OF THE USE OF PICTORIAL MATERIAL

Pictures are appropriate for many kinds of classroom use. In English they illustrate the classics, poetry, and fairy tales, and encourage reading and oral and written composition. In the social studies, illustrations foster reading concerning historical, economic, political, religious, and social events; and can be used in connection with programs dealing with holidays and special occasions; and in studying about historical characters, industries, occupations, and commerce.

In geography, scenes at home and abroad arouse an interest in land and water formations and in the effects of natural conditions upon the life of man. Pictures used in nature study encourage an interest in animals, birds, reptiles, insects, fish, trees, plants, and flowers. In arithmetic, problems may be made clearer if models and graphs are used in connection with the explanations (3).

Pictures are used widely in teaching health, safety, current events, and the like. In music, pictures of composers, illustrations of instruments, and of the arrangement of members of an orchestra are used extensively. Reproductions of famous paintings and pictures of statues are used for instruction in drawing and the appreciation of art.

A few examples of the school use of still pictures and graphic materials follow (3):

When a fourth-grade class was beginning a study of the Congo region as a type region of the world, seven or eight scenes were hung at eye level for them to study. They were then given the following directions to guide their observations:

"As you look carefully at these scenes in the Congo region, list at least eight ways in which you find that people of this land are living differently from people living in Arabia. As you study the pictures try to find in the landscape reasons for each difference you note."

As a means of testing pupils' understanding of the effect of rainfall on vegetation at the close of the study of a unit on the subject, the following directions were given to a fourth-grade geography class:

"The landscapes shown in scenes one to five differ from one another in the amount of annual rainfall each receives. Beginning with the scene where little or no rain falls, arrange these views in order of amount of moisture each landscape receives. Use scene numbers to indicate the order in which you place the pictures" (6).

In the study of Kipling's "Rolling Down to Rio," the pupils of one class brought in photos of the harbor at Rio, pictures of the animals mentioned, and of an ocean liner, Kipling's photo, and so forth. They included them in their pictorial booklets, and referred to them while studying the poem.

In making a class booklet of Syracuse, the pupils collected illustrations portraying various phases of the development of the city from newspapers, magazines, old prints, and other sources. These were mounted at the top of pages which included stories of the city's development.

In another city mimeographed graphs are used in teaching history and civics to present comparable data such as the growth

in area of the United States, the growth in population of specific cities or states, the growth in manufacturing, increase in imports and exports, speed of transportation, and the extension of railroads.

COLLECTING, ARRANGING, AND FILING PICTORIAL MATERIALS

Many of the picture collections in public schools at the present time originated and are maintained through the efforts of teachers. More frequently they are, as they should be, financed through the regular channels. However obtained, pictures should be selected for their truth and authenticity; their relevancy to the subject matter they are to illustrate; and technical quality. Good composition and color are important, and simplicity of the idea presented. The following are median ratings given qualities desirable in still pictures: [1]

1. Technical quality—40 points:
   - Artistic 11
   - Clear and definite 11
   - Of practical size 7
   - Properly colored 6
   - Free from blemishes 5
2. Instructional quality—60 points:
   - Truthful 15
   - Relevant 11
   - Stimulative 11
   - Significant 9
   - Authentic 8
   - Suggestive of size 6

In addition to collecting pictures from many sources, some school systems make pictorial records of units of good work, and of school activities worth recording. Long Beach, for example, pays a professional photographer by the hour to take school pictures. In some schools a principal or science teacher who makes a hobby of photography takes pictures to illustrate school work. As a rule it is best for the teacher to secure the cooperation of a professional photographer in making school pictures. The teacher decides what to photograph and the photographer works with her to get suggested activity, animation, and other interest-holding qualities, and to make the picture tell the desired story (13).

Selected home-made maps, charts, graphs, and posters may

[1] Rated under direction of Bureau of Visual Instruction, University of Colorado.

be added to the school collection. Since posters are intended to attract attention instantly when seen at a distance, and convey a single idea in a clear and forceful manner, the caption, color contrasts, and other artistic qualities are important considerations in selecting or making them (18).

The durability of the picture and the nature of its subject are factors which determine whether it should be carefully mounted and filed for permanent use, placed in a temporary file, or discarded after being used in one unit of instruction. Obviously, good reproductions of works of art would fall into the first group, most current illustrations from newspapers and magazines in the second or third group (1).

Pictorial materials of temporary value may be placed in folders or large Manila envelopes and filed under appropriate headings arranged alphabetically behind guide cards; those of permanent value mounted on uniform sized cards, and filed under suitable headings. Simple descriptive titles may be used and two or more index cards made for each picture. The number needed depends upon the variety of uses for the illustration. Charts and maps too large for filing in cabinets can be kept in drawers of appropriate size (1).

Adele M. Outcalt stresses the importance of children's collections of pictorial materials in the following statement:

> While the use of pictures in the class is of great value, a still greater service may be rendered to children by encouraging and helping them to collect and mount pictures themselves. Such an individual project may become a lifetime hobby and what is more important than to lead children to discover hobbies: A boy may begin by collecting ship pictures; another may be interested in architectural representations; another in landscapes. A collection of all kinds of subjects may be made and later classified as to subjects or under countries according to the nationality of the artist. An extensive collection may even encourage the making of booklets with the pictures mounted in them; care must be exercised to see that the pictures are well trimmed and carefully mounted; here is excellent opportunity for training in judgment as to placement and choice of mount, etc. (8).

LIBRARIES AS SOURCES OF PICTORIAL MATERIALS

With the growing demands of schools for pictorial materials, both school and public libraries are extending their activities to include the circulation of pictorial materials. The degree to which libraries should be prepared to furnish

materials other than books is indicated by Margaret Greer, librarian of the board of education, Minneapolis, Minn.:

> If one were to list all of the materials of instruction used in schoolrooms today, he would no doubt head the list with textbooks, then other books used for information and pleasure, magazines and newspapers, pamphlets from preprimers to reprints of radio talks by university professors, pictures (mounted and unmounted), maps, globes, and charts, and continue with lantern slides, film strips, stereographs, pictures adapted to opaque projection, moving-picture films (both sound and silent)—also phonograph records and radio programs. The selection and care of some of

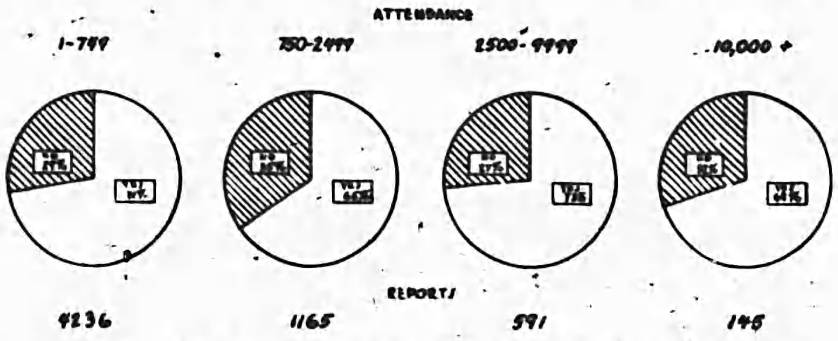


FIGURE 9.—Schools using a library as a source of visual-instructional material.

> these materials have been readily absorbed in times past by the school library, but if the library is to keep abreast of the times in adequately supplying the school with materials of instruction, it must concern itself with these and others as soon as modern invention makes their use possible (3).

The larger public libraries assemble and classify reproductions of masterpieces of art, chiefly in color, as well as other pictures useful in supplementing information in books and other printed materials, to lend to schools. As requests for pictures for instructional purposes increase, public libraries enlarge such collections. The California county libraries, located in 46 of the 58 counties of the State, lend pictures, posters, lantern slides, and other pictorial material to schools.

Certain State libraries, especially through extension agencies and State departments of education, encourage visual instruction and supply materials. The New York State Department of Education maintains a visual instruction division. The State Education Department of Pennsylvania prepares and distributes publications on visual and other sensory aids for teachers and lends slides and other pictorial materials.

The extent to which schools use visual aids available from libraries is indicated by the results of two surveys, the one previously referred to in this bulletin and one made by the Research Division of the National Education Association. Results of the former are shown in figure 9. In the latter survey, 64, or 33 percent, of 196 superintendents of schools in cities of more than 30,000 population reported the circulation of visual aids to schools by local libraries.

MATERIALS REQUIRING EQUIPMENT

This group of projected stereographs, lantern slides, film strips, and still films requires equipment if used for instruction. Lantern slides and film strips can be shown to an entire class at one time, enabling the teacher to make explanations and stimulate discussion. Stereographs and lantern slides may be obtained separately or in sets designed to illustrate definite units of instruction. Sometimes a single slide is adequate to illustrate a point. At other times a series is needed.

As indicated in table 1, visual aids that require equipment are used often, only about two-fifths as much as pictorial materials, though probably most teachers realize that projected pictures vivify instruction more than unprojected ones, and that some have the additional advantages of third dimension, motion, and sound. Reasons for the limited use of visual aids that require equipment are chiefly the initial cost plus the cost of operation and servicing of equipment and supply of pictures, the lack of availability of suitable materials, and the lack of electricity in buildings. Approximately half (41,928 out of 82,297) of the school buildings in the districts reporting in the National Visual Instruction Survey were equipped with electricity.

Projected still pictures.—Stereographs are double photographs made by a special camera which takes two pictures at a time from slightly different points of view. The prints are mounted side by side on heavy cardboard. When seen through the lenses of the stereoscope they are enlarged and merged into one view which appears to have three dimensions. A person looking at such a picture receives an illusion of depth and space relationship approximately as he would if looking at the scene or object (26).

Stereographs are useful to portray space relationships, shapes, and color values; the viewer gets an impression of reality impossible with flat pictures. They are suited especially for individual use during study periods, with later class discussions centered around the views. Stereographs can be used effectively to acquaint pupils with new subject matter and to recreate impressions that have become vague. Though the stereoscope is the simplest in construction of any of the common mechanical visual aids and can be used in connection with nearly any subject, stereographs rank tenth in extent of use among the aids considered in the survey on which this report is based. (See table 3.)

A recent development somewhat similar to the stereograph in possible service is the tru-vue third-dimension picture. By means of a small device somewhat like opera glasses in appearance, various frames of a film are passed before the eyes of the onlooker. Another means of getting a third-dimension effect is by the use of red and green lenses to view two similar prints superimposed on each other.

Incomplete figures collected in the survey indicate that 1,051,813 stereographs are owned by school systems. They are used often about two and one-half times as much in school systems with enrollments of more than 10,000 as they are in school systems with enrollments of fewer than 750. (Table 2, fig. 10.)

Lantern slides.—The ordinary, commercial lantern slide is 3¼ by 4 inches in size and is usually made of glass upon which the picture has been printed, a frame mat to keep the picture within the size possible for projection, and a cover glass to protect the picture—bound together with binding tape. Some slides are made in smaller dimensions. Several methods are used for making slides in school. Sometimes the rough surface of etched glass is used for pencil outlines, crayon work, or special lantern-slide ink drawings. Ceramic pencils or India ink may be used to sketch illustrations on ordinary glass. Sometimes the illustration is placed on a piece of cellophane, a paper cut-out, a piece of lumarith, a piece of thin paper, or a photographic positive, and then inserted between two pieces of glass (23).

The lantern slide projector (stereopticon, delineascope, balopticon, or magic lantern) is used to project slides. It is

one of the simplest and most satisfactory aids, easy to operate, and can be used with attachments for film strips, still films, and microscopic slides. The lantern-slide projector consists of a brilliant light placed in such a position that a mirror reflects the light rays through condensing lenses which distribute them evenly through a transparent picture slide,

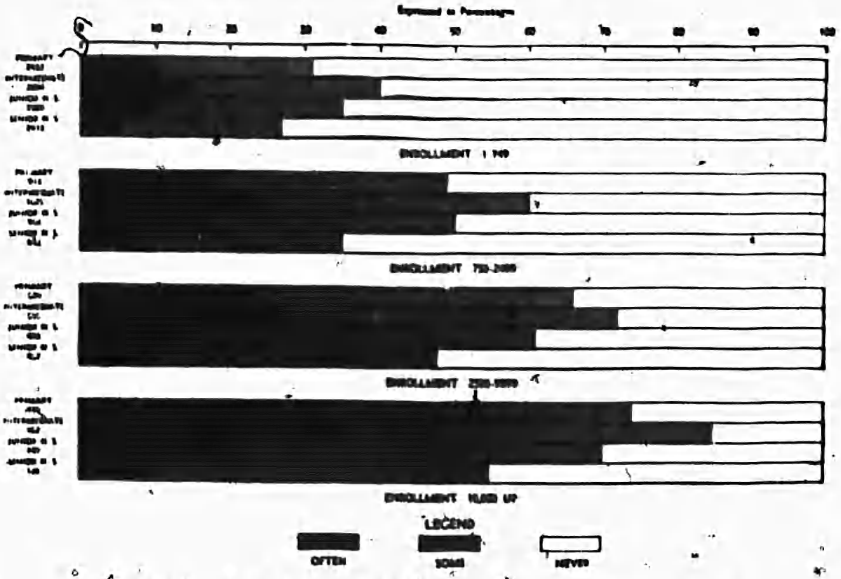


FIGURE 10.—Extent to which stereographs are used in schools.

and then through double objective lenses which can be focused to project the picture on a screen, placed so that the entire class or group of pupils can see the illustration.

In response to the needs of teachers, the lantern-slide projector has been simplified and greatly improved during the past quarter of a century. A late form of classroom lantern makes it possible for the teacher to stand back of the desk and operate the lantern under daylight conditions, while explaining the slides to the class.

In the selection and use of lantern slides for instructional purposes, the same standards should be maintained as for the selection and use of enlarged pictures, namely high quality, suitability to the purposes to be served, advance preparation, and a good learning atmosphere. A pupil may operate the projector, while the teacher stands at the screen to make comments and to point out features to be observed.

High-standard projection conditions must be maintained. With older types of projectors best results are obtained by

having the room dark. Satisfactory results may be obtained with modern projectors, however, by subduing the light. The projector should be placed on a high stand that may be moved easily. Electrical outlets or floor plugs should be reached readily from the position. An opaque, white-coated screen should be used. If it is mounted on a roller, it can be

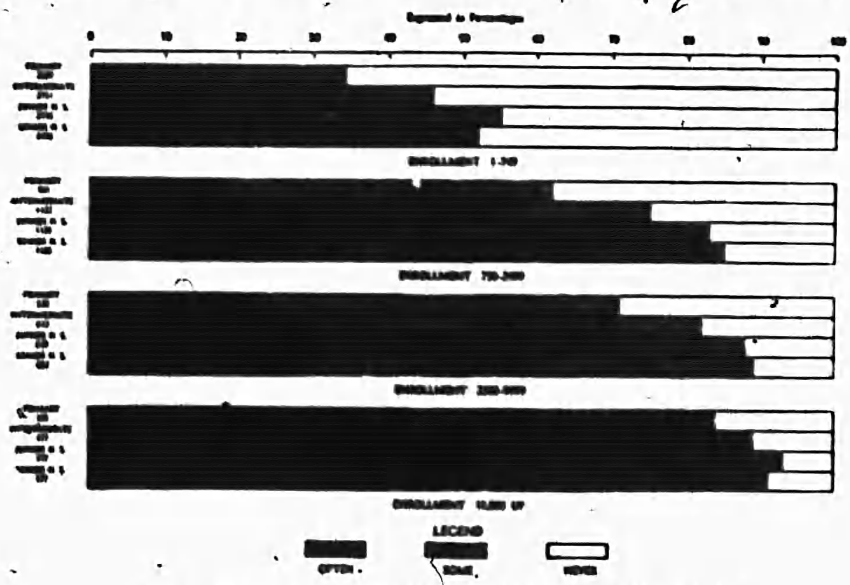


FIGURE 11.—Extent to which lantern slides are used in schools.

removed quickly when not in use, and kept free from dust. Vivid images cannot be formed in the child's mind from blurred, smudgy, vague projections caused by the inferior quality of the slide or by poor projection conditions.

According to the survey reports, 3,431,605 lantern slides are owned by school systems. In addition many slides are borrowed from commercial companies, extension divisions of universities, libraries, and museums. (See table 3 for data.) The Chicago Public Library, for example, has more than 80,000 for circulation; the Detroit public schools, approximately 15,000. The visual aids committee of the New York State Association of Elementary Principals, found that lantern slides were used more extensively in New York schools than any other type of visual aid requiring equipment.

Film strips and still films.—Film strips (sometimes called film slides or slide films) have been developed to be used in much the same way as lantern slides are used in teaching.

The pictures are placed on rolls of 35-millimeter film and projected. Still films are essentially the same as film strips, except that a wider film is used and run horizontally instead of vertically through the projector. Film-strip and still-film attachments can be obtained for use with regular lantern projectors. Except, perhaps, in the case of very small schools, it will be found better to buy separate projectors. They are

Motion pictures are useful aids in the elementary grades, especially when integrated into curricular content.

less cumbersome to handle, cost little more, and may be used in one part of the building while the lantern-slide projector is being used in another.

Film strips are less expensive and easier to handle though less flexible for use than slides. Teaching techniques in their use are essentially the same as with lantern slides. Instruction with either has one advantage over that with a motion picture; one picture or section may be projected and left on the screen as long as desired.

Film strips and still films are newer than other types of visual aids considered in the survey, and were reported as being used less than other types of visual and auditory aids. As was anticipated, more use of them was made in senior high schools than in elementary schools. School systems with more than 10,000 enrolled reported using them about

four and a half times as often as school systems with fewer than 750 enrolled. (Tables 2 and 3 and fig. 12.)

EXTENT AND MANNER OF USE

A number of school systems reported ownership of film strips and projectors. The Philadelphia school system distributes approximately 16,000 reels annually, loaning the

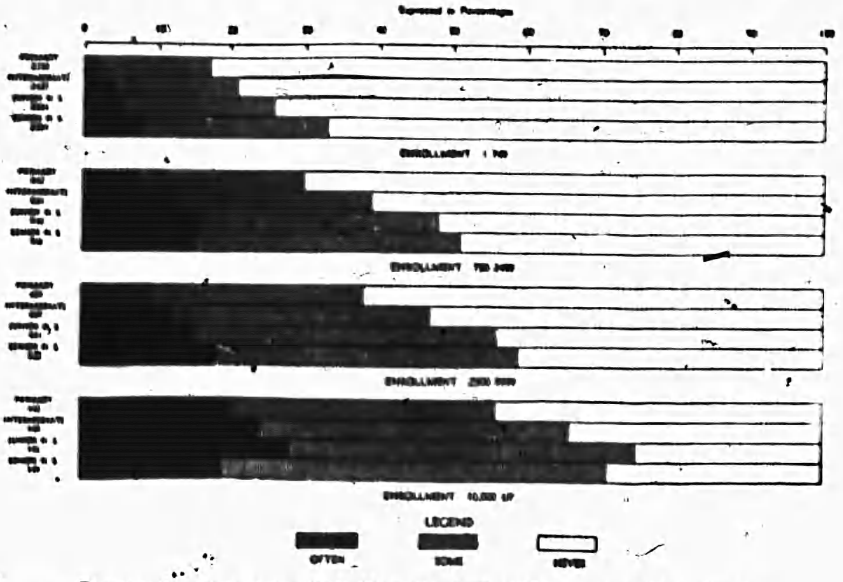


FIGURE 12.—Extent to which filmstrips and stillfilms are used in schools.

same reel over and over to different schools; the Los Angeles schools distribute about 20,000 reels; the New York City schools, 18,000 reels; San Diego, 16,000 reels; and Boston, Pittsburgh, Buffalo, San Francisco, and Oakland, 5 to 10 thousand reels each.

According to survey reports, 2,073 micro-slide projectors and 2,720 opaque projectors are owned by school systems. Micro-attachments may be used on the ordinary lantern also to give screen-sized representations of microscopic organisms. The opaque projector is used for the projection in color of pictures having opaque backgrounds, such as photographs, postcards, pictures, pages from books, manuscripts, or surfaces of materials like wood, minerals, and cloth. Series of pictures may be pasted on long strips of kraft paper and run through the projector. Organized sets of pictures on many subjects, carefully edited and providing an orderly series which shows every stage of a process, industry, or

journey, are available for schools which desire to purchase such materials for opaque projection. The initial cost of the opaque projector is somewhat higher than that of the lantern projector, but this is soon offset by the abundance of material available for projection. The director of visual education of the Buffalo Public Schools states that opaque projectors are used extensively in Buffalo to teach reading to beginners by projecting words and sentences for the entire class to see.

EXAMPLES

Projected still pictures and graphic presentations are useful to focus the attention of the entire class upon a picture which ordinarily would be too small for group or class analysis, and to show relationships and provoke socialized class discussions. They are serviceable in history, literature, geography, science, nature study, and art, where projected pictures can be used to clarify specific points, stimulate interest, or give general impressions. The following examples will suggest the wide variety of ways in which projected pictures may be used.

A second-grade class gathered 103 pictures to be used with an opaque projector to illustrate a project on the school community (30).

In connection with a study of children's pets, a stereoscope and a picture of farmyard animals were placed on a table to which children were accustomed to go. The children who looked at it before class time wanted to tell others, thereby opening up a discussion of the subject.

One teacher used lantern slides to give pupils a bird's-eye view of the far north. The slides showed the contrast between life in the far north and the desert life which they had studied previously. The children stated facts from their observation and study of the slides and developed an outline to assist them in their later study of Eskimo land.

For a lesson on Peru, individual still-film pictures can be used to show a map of South America, palaces of the ancient Peruvian kings, activities of the people of Peru, such as weaving, and other views of llamas, sugarcane, cotton, and lumber. Each illustration must be presented at the proper point in the development of the story.

Both lantern slides and stereographs are useful to show pictures illustrating poems. Consider the imagery needed by children to understand Longfellow's "The Children's Hour." Such expressions as castle wall, turret, mouse tower, Rhine, fortress, and dungeon, need pictures to prevent the children from making false and meaningless interpretations.

HOW SLIDES ARE MADE

Making lantern slides develops skill and stimulates self-expression. Pupils may be encouraged to make slides and use them in school. The educational value of this experience (beyond the knowledge of the processes used in making slides) will depend on the directions given by the instructor and the skill developed by the pupils. If the finished product is worth presenting to the entire class, the effort is probably worth while. The best procedure is to give all the pupils a little experience, and then restrict the making of slides for class use to those who show unusual interest and aptitude.

Following are a few suggestions for making lantern slides:

1. Place a photographic positive of appropriate size between two pieces of 3¼ by 4 inch cover glass and bind with ½-inch tape.

2. A cellophane slide may be made by placing a piece of cellophane 3¼ by 4 inches over the illustration to be reproduced, and drawing the outline in India ink with a fine pointed pen, leaving a half-inch margin around the slide. When the ink is dry, transparent water colors are applied with a small, soft, damp brush. The cellophane slides need not be mounted; but may be inserted between two pieces of glass, bound like a book on one side, when they are to be projected.

3. Silhouette slides are made by cutting designs out of black construction or any other opaque paper, and pasting them on pieces of cellophane. They are inserted in a glass booklet when they are to be projected.

4. Typed cellophane slides are made by placing a 3¼ by 4 inch piece of cellophane in a folded piece of carbon paper and typing, without the ribbon, the words to be projected.

5. Frosted glass slides may be made by placing the slide over the picture to be reproduced and drawing the outline with a hard pencil, and then coloring the slide with transparent, indelible pencils. They may be used with or without a cover glass. If not covered, a thin piece of cellophane should be placed over the slide surface and bound to keep it clean and safe from damage.

6. Plastacele slides are made in the same way as frosted glass slides, from a material which may be obtained from the Du Pont Viscoloid Co., Arlington, N. J.

7. Gelatin-coated slides are made by applying a thin coat of gelatin to a glass slide and then drawing the outline of the illustration with India ink. They are colored with transparent water colors, and covered with an outer cover glass.

8. Clear glass slides may be made by using Keystone colored inks or Deltex transparent colors on clear glass and mounting. Colored cellophane, also, may be cut and pasted on slides (32).

A few schools make film strip records of outstanding activities. Production of such film strips should probably be limited to teachers and advanced students, who have developed considerable skill in photography and the development of prints. In almost every school system of 5,000 or more pupils, there is at least one teacher whose hobby is photography able to make useful film strips dealing with subjects of special local interest. Mere local interest, however, is valueless if the films produced are poor in quality or limited in educational content. Although it is expensive, more satisfactory results are attained if the film strips are professionally produced.

The mechanical equipment needed for showing lantern slides, film strips, and stereographs is rather simply constructed and is easy to operate and keep in good condition. The projectors will give many years of service with a minimum of repairs, if the directions supplied with them are followed. While still pictures are used extensively in schools at the present time, and in many diverse ways, evidence indicates that teachers need considerable skill to choose and integrate pictorial materials into regular classroom work. In the use of projected pictures, training in the operation, care, and servicing of the projection equipment is of value.

REFERENCES

The following general references and sources deal specifically with unprojected pictorial materials:

PICTURES

(1) ALEXANDER, MARIE E. Preparing and filing mounted materials. *In* National education association. Department of elementary school principals. Thirteenth yearbook: Aids to teaching in the elementary school. p. 194–98. Washington, D. C., The National education association, 1934.

Specific suggestions for classifying, mounting and storing pictorial materials.

(2) DUNN, FANNIE W. The reading problem in rural schools. *In* Rural school libraries. Bulletin of the department of rural education. The National education association, February 1936. p. 9, 18.

Emphasizes need for libraries to serve rural schools with visual aids

(3) GREER, MARGARET R. Visual aids and the school library. Wilson Bulletin, 10: 573–75, May 1936.

Describes the nature of the visual service rendered by libraries to schools.

(4) HOLLIS, A. P. Motion pictures for instruction. New York, the Century company, 1926. 450 p.

Includes a discussion of the use of the motion picture as a teaching instrument, and a comprehensive list of educational films.

(5) How to make good pictures. Eastman Kodak Company, Rochester, N. Y.

(6) KAASA, ELIZABETH J. Teaching geography through pictures. *In* National education association. Department of elemenary school principals. Thirteenth yearbook: Aids to teaching in the elementary school. p. 204–208. Washington, D. C., The National education association, 1934.

A discussion of principles and procedures.

(7) LATHROP, EDITH A. Governmental agencies supplying visual aids. *In* Aids to teaching in the elementary school: Thirteenth yearbook, Department of elementary school principals, National education association, 1934. p. 460–69.

Lists many sources of visual aids.

(8) OUTCALT, ADELE M. Mounted pictures as aids in teaching. Educational screen, January 1935.

A presentation of the possibilities of the "flat picture" and its importance in teaching procedure. Gives sources of pictures, how to mount and file them, how to use them in the classroom, children's collections, and the influence of pictures on the child.

(9) TROLINGER, LELIA. Characteristics in still pictures for instructional use in the classroom. Educational screen, 217–19, October 1935.

The report on a project to develop a scale for the evaluation of flat pictures.

(10) THRALLS, ZOE A. The selection and use of pictures. Journal of the National education association, 21: 247–48, November 1932.

A discussion of the importance of the selection and use of pictures in the better teaching of geography. Indicates the basis on which selection should be made, and emphasizes the contribution the picture makes to the understanding of the unit, and the quality and use of the picture. Gives an illustrative test exercise by Gladys Hoppes.

(11) WOODRING, MAXIE N., *and others, eds.* The enriched teaching series. New York, Teachers college, Columbia university, 1928–1934.

These volumes contain material for enriching the curriculum in the various subject fields. The six volumes include pictures, maps, books, and pamphlets in teaching Latin, physical education, science, English, commercial subjects, and mathematics.

PHOTOGRAPHY

(12) HANSON, C. H. Notes on the taking of pictures. Ames, Iowa state college, Visual instruction service, 1934. 4 p. mimeographed.

Specific directions to be followed in taking pictures.

(13) JOHNSON, LAURENCE B. What makes a good picture. Educational screen, 13: 152-53, June 1934.

Advice to teachers on making school pictures.

(14) KOOSER, H. L. Making interior photographs. Ames, Iowa state college, Visual instruction service, 1933. 9 p. mimeographed.

Detailed instruction for teachers.

(15) MILLER, E. A., *and* HUNTER, W. L. Photography offers a challenge. Industrial arts and vocational education, 26: 4-7.

Suggests the advantages of adding a course in photography to the shop curriculum, and gives a list of topics to be considered.

(16) NEBLETTE, C. F., FREDERICK, W. B., *and* EVERETT, L. P. Elementary photography. New York, Macmillan company, 1936.

Discusses the theory and practice of making photographs.

MAPS, CHARTS, ETC.

(17) ABRAMS, ALFRED W. Some standards for selecting wall maps. New York state education, 19:780-83, May 1932.

Deals with the importance of critical selection of wall maps, and presents standards of selection.

(18) EMMERT, WILBER. Visual-sensory aids in education. Education, 55: 75-82, October 1934.

Discusses visual education courses for teachers, and the making of posters and booklets. (*See* Educational screen, November and December 1934.)

(19) GRASSMUCH, ERNA. Selection and evaluation of maps, globes, and charts. *In* National education association. Department of elementary school principals. Thirteenth yearbook: Aids to teaching in elementary school. p. 209-213. Washington, D. C., The National education association, 1934.

Presents the matter of selection and acquiring maps and other equipment, and also making and handling same.

(20) REAM, GLEN O. The use of cartoons and the chalk talk in the classroom. Visual education news, 1: 4-6, October 1935.

A well-illustrated discussion by a practical school man.

(21) SCHWARZMAN, MARGUERITE E. The Neurath pictorial statistics. Progressive education, 11: 211-13, March 1934. illus.

Interpretation of statistical data is "of fundamental importance in determining business (and educational) policies . . . and by making charts and graphs it is possible to get an unemotional overview and make a rapid comparison." Describes the pictorial statistics of Dr. Otto Neurath, of Vienna.

LANTERN SLIDES AND STEREOGRAPHS

(22) BONWELL, WILLIAM A. Effective slides made by teacher and pupil. *In* National education association. Department of elementary school principals. Thirteenth yearbook: Aids to teaching in the elementary school. p. 319–324. Washington, D. C., The National education association, 1934.

Discusses the educational value to those making slides.

(23) DENT, ELLSWORTH C. (Lantern slides, film slides, etc.) *In his* Handbook of visual instruction. p. 13–59. Provo, Utah, Brigham Young university, 1934.

A section of the handbook is devoted to slides of all types, etched slides, India ink, cellophane, photographic, film slides, as well as glass slides. Also deals with stereographs and stereoscopes, maps, photographs, school museums, school journeys, etc.

(24) ——— Teaching by means of stereographs and slides. Nation's schools, 13: 60–61, June 1934.

Treats the effectiveness of both these aids in class instruction and in individual instruction. Emphasizes ways of accomplishing results and suggests that materials must be carefully selected and wisely adapted to the teaching plans in use. See also the April and May issues of this periodical for articles by the author, dealing with glass slides, film slides, projectors, etc.

(25) ENGEL, ERMA L. The opaque projector in the schoolroom. *In* National education association. Department of elementary school principals. Thirteenth yearbook: Aids to teaching in the elementary school. p. 330–35. Washington, D. C., The National education association, 1934.

Explains the variety of uses of the opaque projector.

(26) HAMILTON, GEORGE E. The stereograph and lantern slide in education. Meadville, Pa., Keystone View Company, 1936. 24 p. mimeographed.

Describes and explains the use and care of stereographs and lantern slides.

(27) HART, GARDNER L. The stereopticon and its use. *In* National education association. Department of elementary school principals. Thirteenth yearbook: Aids to teaching in the elementary school. p. 313–318. Washington, D. C., The National education association, 1934.

Detailed suggestions as to the use of lantern slides in teaching geography, drawing, reading, and other subjects.

(28) HICKS, HELEN E. Stereograph as a visual aid. Sierra educational news, 28: 45–46. October, 1932.

Includes illustrations of the ways stereographs may be incorporated in the study of various subjects on different grade levels.

(29) How to make Keystone hand-made lantern slides. Meadville, Keystone View Company, 1934. 14 p.

Outlines possible uses of home-made slides, and explains how to make them.

(30) LARSON, INEZ C. The opaque projector demonstrates its worth. Educational screen, 14: 155–57, June 1935.

Describes the production and nature of a series of opaque film pictures made by second-grade pupils in a Denver school.

(31) MORGAN, WILLARD D., *and others*. Leica handbook. E. Leitz, incorporated, 60 East 10th St., New York, N. Y., 1935. 502 p.

A discussion of the application of the miniature camera to the solution of photographic problems, with some discussion of the production of film strips for educational use. Contains useful suggestions for those interested in preparing illustrative materials, including photographing, printing, enlarging, copying, and the like.

(32) NEWKIRK, LOUIS V. Construction of lantern slides and maps. Chicago, Board of education, 1936. 14 p.

Includes detailed instructions and illustrations on the making of slides and maps. Excellent.

(33) PRICE, W. T. R. Pupil-made lantern slides. *In* National education association. Department of elementary school principals. Thirteenth yearbook: Aids to teaching in the elementary school. p. 325–29. Washington, D. C., The National education association, 1934.

Gives detailed instructions for making slides.

(34) PROBST, ELLA M. The lantern and slide as a teaching device. Educational method, 15: 264–69, February 1936.

Describes the uses of the 11 lantern slide projectors in the Calhoun school in Minneapolis.

CHAPTER IV: MOTION PICTURES

THE EDUCATIONAL VALUE OF MOTION PICTURES

There is general agreement that the motion picture, while not extensively used in schools at the present time, has great potential educational value. In nearly every subject-matter area it has a contribution to make toward enrichment of experiences; in the coordination of subject matter with actual experiences; and in cultivating appreciations in certain subjects, music, for example, not otherwise obtainable in the school program.

Professional opinion as well as results of experimental research has established the value of the motion picture as a means of contributing to learning in a number of special fields. Among the authors who have expressed confidence in the educational value of motion pictures with excerpts from statements they have made, the following are of interest:

J. J. Tigert, president of the University of Florida, formerly Commissioner of Education, says, "Within the celluloid film lies the most powerful weapon for the attack on ignorance that the world has ever known."

George F. Zook, American Council on Education, says, "Potentially, the motion picture is one of the chief contributions of science to education—if not the chief—but it is not being fully utilized."

Glenn Frank, past president of the University of Wisconsin, says, "The time is ripe for the effective educational use and profitable commercial exploitation of the talking film as a teaching medium."

Alice V. Keliher of the Progressive Education Association says, "As the school more nearly approaches society and merges itself with the cultural resources of society, the recognition of the cinema by the school as a potent force and consequent consideration of it in the school program will be increasingly important."

Careful research and experimentation concerned with the value of motion pictures for instructional purposes have been carried on by different agencies. The following are summaries of a few of the results of studies:

1. Joseph J. Weber found that the use of films increased the efficiency of learning geography from 25 percent to 50 percent.[1]

2. Freeman and Wood conducted an experiment with the use of films in teaching geography and general science to 11,000 children in 12 cities. They concluded that there is:

> An increased interest in school work and a sustained interest in the topics studied.
>
> A quickened originality and a larger participation in project work and other self-activities.
>
> A greater desire and ability to discuss subjects and to write about them.
>
> An increase in the quantity and an improvement in the quality of the material which they read.
>
> A clearer appreciation of the richness, accuracy, and meaningfulness of personal experience.
>
> A greater facility in correlating features of these lessons with community conditions.
>
> A contribution to life experiences difficult to secure by any other method.
>
> A marked improvement in range and accuracy of vocabulary.
>
> Ability to concentrate, to think more accurately, and to reason more soundly.

3. Knowlton and Tilton found that pupils studying with Chronicles of American Photoplays learned 19 percent more than others and learned more quickly; remembered 12 percent better; participated in class discussion 10 percent more often; and, outside of their classroom work, voluntarily read 40 percent more supplementary material in the field of American history.[2]

4. Rulon found that general science pupils on the ninth-grade level learned 20.5 percent more with sound films than similar control groups which did not have sound films.[3]

---

[1] Joseph J. Weber, Visual aids in education. Valparaiso, Ind., Valparaiso University, 1929. 240 p.

[2] Koon, Cline M. *and others*. Motion pictures in education in the United States. Chicago, The University of Chicago Press, 1934. 114 p.

[3] Devereaux, F. L. The Educational talking picture. Chicago, The University of Chicago Press, 1933. 222 p.

5. Arnspiger concluded that the talking pictures used in his experiment made marked and lasting contributions to learning, both in the natural science units and in the music units.[4]

EXTENT OF USE OF MOTION PICTURES

Approximately a third (32 percent) of the school systems reporting in the survey used motion pictures often for instructional purposes, a little less than half (46 percent) sometimes, while less than a fourth (22 percent) did not use them. Motion pictures ranked eighth in frequency of use among the 11 types of visual and auditory aids considered in the survey (table 3). Further analysis of the data

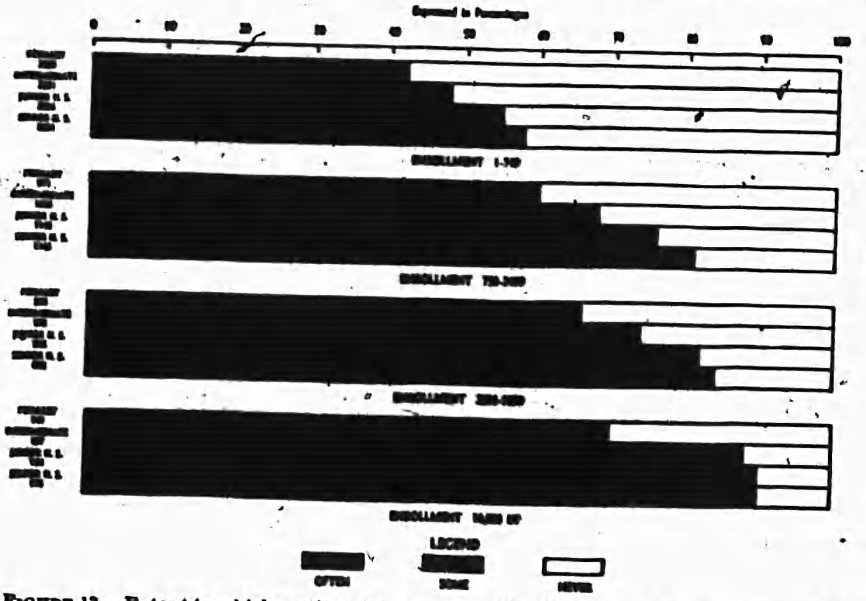


FIGURE 13.—Extent to which motion pictures are used in elementary and secondary schools.

shows an increasing rate of use of motion pictures as the grade levels advance until the senior high school is reached. High schools make 50 percent more use of films than elementary schools. Large school systems (group IV) make nearly three times as much use of educational films as small school systems (group I). Los Angeles, Pittsburgh, Cleveland, Detroit, Newark, New York, Providence, and San Francisco are among the outstanding cities in the country in the school use of motion pictures.

[4] Arnspiger, V. C. Measuring the effectiveness of sound pictures as teaching aids. New York, Teachers College, Columbia University, 1933. 156 p.

The superintendents responding to the survey questionnaire were asked to specify the subjects in which motion pictures are used most frequently. Seventeen thousand two hundred and twenty-eight listings were made by the re-

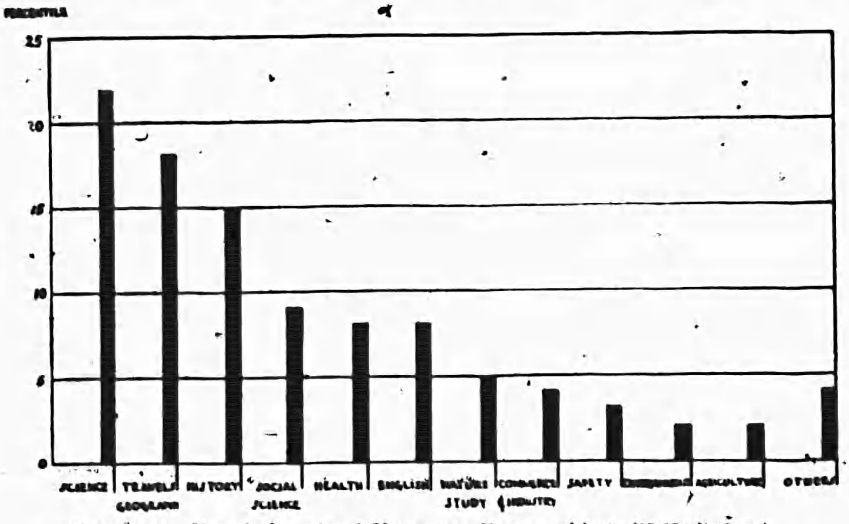


FIGURE 14.—Use of educational films, according to subjects (17,238 listings).

spondents. Figure 14 shows the extent to which films are used in each of the 12 subject-matter fields, indicating that they are used most, and consequently, considered of greatest value in teaching geography, science, and history.

The number of motion-picture projectors and films owned by school systems is reported as follows:

Motion-picture projectors

16 mm silent	5,979
16 mm sound	455
35 mm silent	3,133
35 mm sound	298

Reels of film

16 mm silent	32,650
16 mm sound	944
35 mm silent	6,266
35 mm sound	104

The total number of schools responding to the survey inquiry was 81,440 of which 9,865 reported ownership of projectors, silent and sound. This means an average of one school in nine owning a picture projector if the proportion holds good for all schools throughout the country. Even

allowing for the well-known fact that many schools use borrowed projectors, the obvious inference is that so far motion pictures are not used extensively in schools despite the undoubted appeal of commercial moving pictures shown by the fact that more than 90 million persons a week attend motion-picture theaters.

The 16-mm projector, while a comparatively recent development, is owned by a number of schools and its use is apparently increasing. Of the 9,865 projectors reported in the survey, 6,434, or nearly two-thirds, were 16 mm, and the remaining slightly more than one-third, 35 mm projectors.

Both sound and silent films are used in schools, the former to a comparatively limited degree, however. Of 39,964 reels of films reported owned by school systems 38,916 were silent; approximately 1 of 40 films owned was a sound film. These figures, while not complete, for there are many rented or borrowed films used in schools, indicate a decided tendency to use silent rather than sound films. This tendency is doubtless due in large part to the additional cost of the latter. Motion-picture projectors have in a few cases sound producing equipment, however only about 7.4 percent of those reported in the survey were so equipped.

MAKING MOTION PICTURES IN SCHOOL

The first 16-mm motion-picture cameras were made in the United States in 1923. For several years thereafter the principal production in homemade motion pictures was by amateur photographers. More recently schools throughout the United States have shown interest in making pictures.

The survey reported 575 motion-picture cameras owned by the 8,806 school systems, or 1 of every 14 of the systems included. Again, one must remember that in many instances motion-picture cameras are borrowed by schools for producing films.

One of the first, if not the first, film produced by a high school in the United States was in 1923. At that time, the Dramatic Club of the Montclair, (N.J.) High School produced a humorous sketch entitled, She Stoops to Crank 'er. More recently, the photoplay appreciation class of the Doylestown (Pa.) High School wrote a burlesque wild west story, which was then filmed by the students. A kindergarten

movie entitled, Dramatic Play in the Kindergarten, was made from a real unit developed in the Clifford School, Los Angeles, Calif.

Films on health and safety have been made by students and teachers in several schools throughout the country. The health committee of the Roosevelt High School, in Seattle, for example, made a motion picture which presented vividly safety problems encountered by students during their summer vacations. A rural school in Muskegon, Mich., and the Tulsa, Okla., schools produced films dealing with safety and traffic.

Regular school activities have been the subject of several films made recently. In 1936, for example, the Saginaw (Mich.) High School made a motion picture of school life and activities from the first day of school in the fall until commencement the following spring. More than 1,500 students and teachers were photographed in classroom work, athletic events, school parties, student organization meetings, and so forth.

A graduate student at Rose Polytechnic Institute in Terre Haute, Ind., filmed high-school activities in agriculture and home economics, and student council discussions during the year.

The Photoplay Club of the Greenwich (Conn.) High School produced a news reel film of school activities. The necessary funds were raised by showing a rented film in the school auditorium and charging admission. The production committee decided that the usual activities of the school would be of much interest to the student body.

Homemade motion pictures of school activities are useful in promoting home and school relations. Several reels of motion pictures illustrating the activities carried on in the Central Needle Trades School in New York City, for example, were used instead of a regular commencement address in the graduation exercises of the school.

Detailed studies of instructional processes have been filmed by high-school teachers and students in different parts of the country. Even microscopic photography has been undertaken in a few instances.

The motion picture which may be taken at fast speed and projected at standard speed is admirably adapted to

analyze skills. For example, a film in typing was produced in 1936 at the John Hay High School in Cleveland, Ohio. It was intended to analyze fundamental skills and to raise the speed in typing and shorthand by eliminating unnecessary movements. The Boys' Technical High School in Milwaukee, Wis., produced a color film entitled "From Drawing to Drilling," which brought out the operations carried on in the shops of the mechanics division of the school. Athletic skills and other school activities involving muscular control also may be developed by motion studies.

The production of a motion picture may involve the cooperation of several school departments. For example, the English department may prepare the continuity or script; the dramatic department train the actors; the art department design and paint the scenes, and attend to the make-up. Lettering for the titles and construction of sets may be done in the manual training department.

The production of good films is not simple or easy. Many factors are involved and considerable ingenuity and skill are necessary. Suitable equipment and a good photographer, proper exposure and focusing, appropriate lighting, and clean lenses are among the essentials to effective production. The mastery of lighting is a subject of vital significance. The processes of developing, splicing, and printing require considerable skill. In fact, so much specialized training is needed in the actual physical production of a film, that it would be a decided advantage in the field if a sound film concerned with production were available to amateurs.

Script writers and producers need considerable specialized knowledge also. If a poor subject for the film is selected, or if improper emphasis is placed on parts of the film, the results will not be satisfactory. The omission of close-ups or enlarged sections of the areas to be emphasized will result in monotony and loss of emphasis. Weak titles and poor editing spoil many amateur films.

In addition to the actual production of the film there are many considerations upon which success depends. General production plans, including the development of the idea into a script, arrangement of proper sequences, acting, editing, titling, and so forth, are subjects that must be

carefully treated. In the absence of previous experience, amateurs should study still photography and theatrical films before undertaking actual production even of a short simple subject. In the preparation of the school film, the language of the title should be checked for clarity. Titles should be relatively short, pointed, and challenging.

Recent inventions are increasing the variety of possible applications of amateur cinematography and reducing the expense as well. This is resulting in an increase in the production of films by schools. Already school film producers have begun to exchange films and experiences. The Amateur Cinema League has been stimulating the movement. Four-fifths of all the articles on school-made motion pictures have been written during the past 4 years. The first State conference on school-made films was held at Ohio State University in February 1937.

TEACHING MOTION-PICTURE APPRECIATION

Appreciation may be defined as the art of determining what constitutes a good motion picture and of enhancing enjoyment of it. Appreciation develops as an outcome of many experiences. It is heightened by an understanding of the way motion pictures are produced and the practical application of interesting points learned from worth-while films.

The theatrical film constantly is carrying to the youth ideas and information in a vivid and impressive manner. Even a superficial study of such films will convince the teacher that some of them will have a wholesome effect upon the minds of the children and others will not. It is her responsibility to develop discrimination in the choice of the motion pictures her pupils see.

The results of the survey suggest that teachers have been encouraging their pupils to choose wholesome films in much the same way they have been encouraging them to read wholesome literature. In guiding the theatrical attendance of their pupils, teachers have gradually come to realize that selected films contain much material which can be used in school to enrich and vitalize classroom instruction. School use of information gained from films encourages pupils to choose other similar ones. The extent

of school activities in encouraging selection of films to attend as gathered in the survey are shown graphically in figure 15.

Frequently instruction in film selection is a regular part of the English work. The method in some classes is to have a few introductory periods of discussion toward the first of the term, followed by one period a week thereafter. In others 2 weeks of intensive study definitely directs the students'

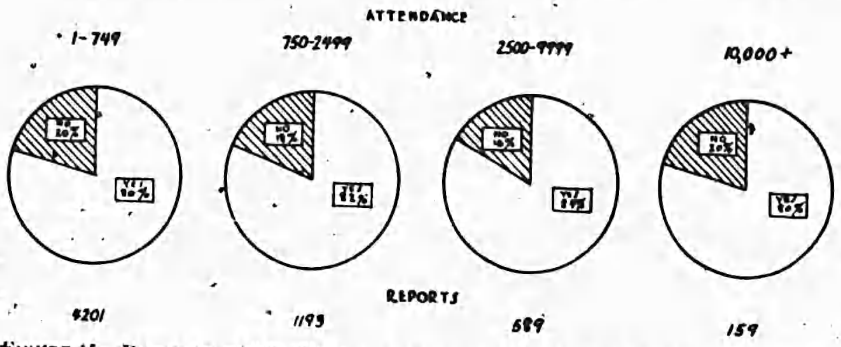


FIGURE 15.—Degree to which schools encourage attendance at selected motion pictures, as indicated by "Yes."

attention to the difference in the quality, type, and purposes of various films. In order to discern differences classes are encouraged to compare and contrast. To establish standards and improve tastes, pupils are asked to describe the motion pictures which they attend and give their opinions of them. Eventually they are led to realize that if a motion picture is good, its merits can be pointed out; if poor, its faults and weaknesses can be.

In the Hamden (Conn.) High School, for example, the class began by preparing a questionnaire to discover the entertainment experience and tastes of the pupils. Such a questionnaire acquaints the teacher with conditions as they are and makes possible an individual evaluation.

Throughout the course, the pupils attended motion-picture theaters, viewed films in school, and discussed them informally. The teacher sought honesty of expression of points of view and tastes. The pupils attempted to classify motion pictures as to types, and to break down the types into their elements. The results were worked into a score card for judging pictures. The aim of the course was to develop pupil rather than teacher evaluation, and to assist pupils to find substantial, defendable reasons for their judgments.

In teaching photoplay appreciation there should be much discussion, the pupils being given opportunity to express their opinions and required to defend their judgments. By group analysis and criticism, standards will be set up and some basis for judging films evolved. The teacher's part is that of skillful direction and questioning. Topics for oral and written discussion include the following: Need for selection of films; kinds of information acquired from films; use of English in films; the difference between stage and screen presentation of drama; historical characters in films. Many activities will grow out of these discussions, among them the definite selection of films of value in school work and an increased interest in how films are produced. Teachers can encourage the pupils to extend the discussion of films to their parents and other adults in the community, leading to additional class discussions, and the establishment of tentative standards for the evaluation of films.

Numerous photoplay appreciation clubs have been formed in high schools throughout the country. In these clubs the pupils not only investigate the nature of forthcoming films and discuss the merits of the ones they attend, but read extensively about motion pictures and sometimes correspond with motion-picture stars and producers.

It is not the responsibility of the teacher to censor or curb the motion-picture industry, but rather to help her students to select the motion pictures they patronize more wisely, and to evaluate them more critically.

Among important needs in the development and extension of the use of visual aids in education is better cooperation and understanding between motion-picture and other visual-aid producers and manufacturers, on the one hand, and educators and socially minded groups, on the other. The following suggestions are made for the further development of the field of visual education.

1. Further improvements in the 16 mm projector to make it easier for amateurs to operate.
2. More uniformly good reduction from 35 to 16 mm prints.
3. Minimum performance standards for 16 mm projectors intended to show either silent or sound films in semidark rooms, probably to be worked out by the Society of Motion Picture Engineers.

4. The further development of deferred payment plans for major units of visual equipment.
5. Conditioned or reduced prices due to mass production of equipment.
6. An efficient Nation-wide distribution system for educational films and equipment.
7. Closer cooperation between industry and educators in determining the content and treatment of subjects in new films and other forms of visual aids.
8. Training courses in the technic of teaching with motion pictures and other visual aids, as well as courses in photoplay appreciation.
9. Production of high-grade educational films comparatively free of advertising, for free distribution to schools.

REFERENCES

INSTRUCTIONAL USE OF MOTION PICTURES

(1) BRUNSTETTER, M. R. How to use the educational sound film. Chicago, The University of Chicago press, 1937. 174 p.

A textbook on the utilization of sound motion pictures in instruction by a well-known authority in the field.

(2) CONSITT, FRANCIS. The value of films in history teaching. London, G. Bell and Sons, Ltd., 1931. 431 p.

Investigates the value of films as compared with other methods in which illustrative and nonillustrative material was used. Two types of experiments are described, the formal and informal type; results are set forth as to the general effect of the historical teaching film, and the value for audiences of various kinds and ages. A bibliography of the "experimental studies evaluated in the investigation," and one termed "Research studies in visual aids not evaluated," are given.

(3) COOK, DOROTHY E. *and* RAHBEK-SMITH, EVA COTTER. Educational film catalog. New York, the H. W. Wilson company, 950 University avenue, 1936. 134 p. Also semiannual supplements.

A classified list of about 1,800 carefully selected educational films with descriptions of their contents, sources, etc.

(4) DALE, EDGAR *and* RAMSEYER, LLOYD. Teaching with motion pictures. American Council on Education Studies, series II, vol. I, No. 2, April 1937. Washington, D. C., American Council on Education.

A handbook of administrative practice answering specific questions regarding sources of motion-picture equipment and the utilization of films in a local school system.

(5) ———; DUNN, FANNIE; HOBAN, C. F. *Jr.*; SCHNEIDER, ETTA. Motion pictures in education: a summary. New York, H. W. Wilson company, 950 University avenue, 1937.

A digest of literature on various phases of visual education.

(6) DENT, ELLSWORTH C. The motion picture. *In his* A handbook of audio-visual instruction. Chicago, Society for visual education, 1937.

Contains practical information and an up-to-date list of sources for classroom teachers' use. Presents the advantages and disadvantages connected with their use, how to use them, types and sizes of films, with other useful hints.

(7) DEVEREUX, FREDERICK L. *and others.* The educational talking picture. Chicago, Ill., University of Chicago press, 1933. 222 p.

This study is a collaboration with N. L. Engelhardt, P. R. Mort, A. J. Stoddard, V. C. Arnspiger, H. G. Stokes, M. R. Brunstetter, and Laura K. Fads. All the phases of educational talking-picture production are analyzed, from the selection of materials through the definition of the unit in instruction, and the refinement of standards on the mechanical as well as on the educational side.

(8) DORRIS, ANNA V. [The motion picture . . . Technique in teaching . . . Value] *In* Visual instruction in the public schools. p. 180–211. Boston, New York [etc.] Ginn and company, 1928.

Thinks the teacher finds in visual instruction one of the strongest methods of promoting natural learning, and in visual aids effective instruments for bringing vividness and concreteness to pupils in the learning process. The section on motion pictures is supplemented by other sections on different phases of motion pictures.

(9) HOBAN, CHARLES F., HOBAN, CHARLES F. *Jr.*, *and* ZISMAN, SAMUEL B. The motion picture. *In* Visualizing the curriculum. p. 93–143. New York, Cordon company, 1937. 320 p.

A study of the value of films in instruction, including methods used in teacher-made motion pictures and motion-picture appreciation.

(10) KOON, CLINE M. Motion pictures. *In* Sources of visual aids suitable for instructional use in schools. Washington, Government printing office, 1937.

A source list including both commercial and other distributing agencies.

(11) ——— *and* NOBLE, ALLEN W. National visual education directory. Washington, D. C., American Council on Education, 1936. 269 p.

Contains a list of nearly 9,000 of the most interested persons in visual education, and of visual and auditory equipment owned by 8,806 school systems in the United States.

(12) ——— *and others.* Motion pictures in education in the United States. A report compiled for the International congress of educational and instructional cinematography. Chicago, The University of Chicago press, 1934. 106 p.

Presents: Educational influence of motion pictures; service to health and social hygiene in the Government service; in vocational education; in international understanding; motion-picture legislation; technique of making and displaying motion pictures; systematic introduction of motion pictures in teaching; educational problems resulting; bibliography and exhibits added.

(13) NATIONAL EDUCATION ASSOCIATION. Department of elementary school principals. Silent and sound motion pictures. *In* Thirteenth yearbook: Aids to teaching in the elementary school. p. 338–364. (Bulletin of the Department of elementary school principals, vol. xiii, no. 5, June 1934.)

Chapter VII of the yearbook is taken up with short sections by several specialists in this field, offering information as follows: (1) B. A. Aughinbaugh: The motion picture as a basic teaching tool; (2) Edgar Dale: Standards for the selection of classroom motion pictures; (3) J. A. Hollinger: An effective learning technic using motion pictures; (4) V. C. Arnspiger: Using the sound film in the elementary schools; and (5) O. B. Hayward: Motion pictures in the Assembly.

(14) POTTER, GLADYS L. Motion picture appreciation in the elementary school. Sacramento, Calif., State department of education, 1934. 37 p. (Bulletin No. 9, May 1, 1934)

A handbook for elementary teachers; includes a discussion of the relation of the motion picture to education and practical suggestions to teachers.

(15) The motion picture in education: its status and needs. Washington, D. C., American Council on Education, 1937.

Report of the development of the educational motion-picture project by the committee on motion pictures in education.

(16) WOOD, BEN D. *and* FREEMAN, FRANK N. Motion pictures in the classroom. Boston, Mass., Houghton Mifflin company, 1929. 392 p. illus. diagrs.

A research study of the effectiveness of the Eastman teaching films in classroom instruction. Twenty teaching films were used and comprehensive experiments conducted in the subject-field of geography and general science, grades 4-9, inclusive.

MAKING MOTION PICTURES

(17) BUCHANAN, ANDREW. Art of film production. London, Isaac Pitman and Sons, Ltd., 1936. 111 p.

A British author's compilation of articles on the production of motion pictures.

(18) GALE, ARTHUR L. *and* HOLSLAG, R. C. Making better movies. New York, Amateur cinema league, inc., 1932. 205 p.

A practical book of instructions to aid amateur moving-picture makers.

(19) LANE, TAMAR. The new technique of screen writing. New York, McGraw-Hill Book company, inc., 330 W. 42nd St., 1937. 342 p.

A practical guide to the writing and marketing of photoplays.

(20) NOBLE, LORRAINE. Four-star scripts. Garden City, N. Y., Doubleday, Doran and company, 1936.

Explains the fine art of writing motion-picture scripts, and illustrates the points made by including four complete scripts.

(21) PUDOVKIN, VSEVOLOD ILLARIONOVICH. On film technique. Translated and annotated by Ivor Montagu. London, Victor Gollancz, ltd., 1929. 204 p.

Three important essays and an address on the art of writing, editing, and directing silent films, with considerable emphasis on the technique of montage.

(22) SEWELL, GEORGE H. Film-play production for amateurs. New York, Isaac Pitman & sons, ltd., 1932. 164 p. illus.

A practical discussion of movie-making for beginners, with a prediction that amateur talkies will soon be possible. A glossary of terms is appended.

(23) STRASSER, ALEX. Amateur movies and how to make them. (How to do it series, vol. 14) London, Studio publications, 1937. 80 p.

This book gives points which must be known before a successful film can be made.

MOTION-PICTURE APPRECIATION

(24) BARNES, WALTER. The photoplay as literary art. Newark, Educational and recreational guides, inc., 1936. 40 p.

An analysis of the esthetic principles of the photoplay, including the factors which condition it and steps toward its improvement.

(25) CHARTERS, W. W. Motion pictures and youth. A summary. New York, the Macmillan company, 1933. 66 p. (Payne fund studies)

Describes an investigation that dealt with: Developing attitudes, stimulating emotions, influencing conduct; teaching discrimination to children; concludes that the motion picture is a potent medium of education; that the content of current pictures has too much sex, crime, and love, for children; and that they are a potent influence in moulding experience and character.

(26) DALE, EDGAR. How to appreciate motion pictures. A manual of motion-picture criticism prepared for high-school students. New York, The Macmillan company, 1933. 248 p., illus. (Payne fund studies)

Suggested standards for the evaluation of motion pictures from the point of view of their social and artistic contributions are presented in this volume prepared for use in high-school and adult-education classes.

(27) KIESLING, BARRETT C. Motion pictures: how they are made, and how to appreciate them. Richmond, Johnson publishing company, 1937. 322 p.

Written by an outstanding authority in the field. Suitable for high-school students.

(28) LEWIN, WILLIAM. Photoplay appreciation in American high schools. New York, D. Appleton-Century company, 1934. 122 p. (National council of teachers of English: English monograph no. 2)

Gives outlines of units of instruction in photoplay appreciation for junior and senior high-school students, and stenographic reports of classroom discussions. Bibliography.

(29) ——— *ed.* Educational study guides to theatrical films. Newark, Educational and recreational guides, inc., 125 Lincoln Ave.

A series of booklets intended to aid in the study of current films.

(30) MULLEN, SARAH MACLEAN. How to judge motion pictures . . . and how to organize a photoplay club. New York, Pittsburgh [etc.], Scholastic, 1934. 60 p.

A pamphlet for high-school students, with a foreword for teachers by William Lewin. Gives the background of the photoplay appreciation movement, standards, and score card for reports of pictures. The points emphasized are plot, story, acting, sounds, stage set, directors, forming judgments, etc.

(31) POLLARD, ELIZABETH (WATSON). Motion-picture study groups. Columbus, Ohio State University, 1934. 55 p.

A handbook for discussion group leaders.

(32) ——— Teaching motion-picture appreciation; a manual for teachers of high-school classes . . . Columbus, Bureau of educational research, Ohio State university, 1933. 60 p.

Deals with moving pictures in general, talking moving pictures, moving-picture plays, studying and teaching the drama, and how to appreciate moving pictures.

(33) Scholastic, vol. XXIX, No. 10. November 21, 1936.

Motion-picture edition. Excellent treatment of production and the influence of motion pictures.

(34) SHUTTLEWORTH, FRANK K., *and* MAY, MARK A. The social conduct and attitudes of movie fans. New York, the Macmillan company, 1933. 142 p. (Payne fund studies.)

Published in the same volume with Peterson and Thurstone: "Motion pictures and the social attitudes of children." Groups of movie and nonmovie children were studied, their attitudes and forms of conduct compared, deportment records kept, significant differences noted, etc.

(35) STERNER, ALICE P., *and* BOWDEN, W. PAUL. A course of study in motion-picture appreciation. Newark, Educational and recreational guides, inc., 125 Lincoln ave., 1935. 63 p.

A teachers' syllabus to be used in instructing pupils in the development of discrimination in the selection of motion pictures.

EDUCATIONAL PERIODICALS

(36) Cinema progress. Los Angeles, 3551 University avenue, The Cinema appreciation league.

A monthly magazine of appreciation of motion pictures.

(37) DALE, EDGAR, *and* TYLER, I. KEITH, *eds.* The news letter. Columbus, Ohio, Bureau of educational research, Ohio State university.

A monthly review of the educational applications of the motion picture and the radio.

(38) Educational Screen. Chicago, Ill., 64 East Lake Street. Monthly, except in July and August, since January 1932.

The official journal of the Department of Visual Instruction of the National Education Association. Contains many articles and reports on the use of motion pictures in instruction.

(39) GOLDEN, NATHAN D. Motion pictures abroad. Washington, Motion picture division, U. S. Department of Commerce.

A monthly review of film activities abroad.

(40) Intercene. Rome, International educational cinematographic institute, 1A, Via Lazzaro Spallanzani. Monthly since July 1929.

An international review of educational cinematography.

(41) Movie Makers. New York, Amateur cinema league, inc., 105 West 40th Street. A monthly magazine for amateurs.

(42) Radio and screen. *In* School life. Washington, Superintendent of Documents, Government Printing office.

A monthly (September to June) column reporting latest developments and publications.

(43) Sight and Sound. London, British Film institute, 4 Great Russell Street. Quarterly since spring, 1932.

An attractive motion-picture magazine emphasizing the use of films in education.

(44) The Motion Picture and the Family. New York, Motion-picture producers and distributors of America, 28 West 44th Street.

Contains much interesting information on current theatrical films of interest to family groups, and about the activities of local motion-picture councils.

APPENDIX[1]

DEPARTMENT OF THE INTERIOR,
OFFICE OF EDUCATION,
Washington, D. C., January 30, 1936.

To the SUPERINTENDENT:

The United States Office of Education is cooperating with the American Council on Education and other agencies in an effort to determine the present status of visual instruction in elementary and secondary schools, and ways in which national agencies can facilitate the use of visual aids for instructional purposes. The pertinent data collected will be compiled and published and made available to schools and other groups interested in extending and improving the use of visual aids for instructional purposes.

Please fill in all blanks that apply to your school system and return in the enclosed envelope which requires no postage. Copies of articles, reports, and mimeographed material explaining your visual work will be appreciated. Will you cooperate in making a 100-percent return on this survey?

Cordially,

J. W. STUDEBAKER,
Commissioner.

Name of person filling in this report.....
Official position.....
Address.....
(Street) (City) (State)
Name of school system..... Total enrollment.....
Number of school buildings..... How many have electricity?.....
Do you have an official director of visual instruction?.....
If so, please write his or her name and address below.
If you do not have such an official, please write the name and address of the person in your system who is most interested in visual work:
Name..... Official position.....
Address.....
(Street) (City) (State)

1. NATURE AND USE OF AUDIO-VISUAL AIDS

1. Please indicate by placing an X in the proper squares below the extent to which the following types of audio-visual aids are used (whether borrowed or owned) in your schools:

[1] Questionnaire form used in connection with the survey.

Types of aids	School	Extent of use		
		Used often	Some-times	Never used
Objects, specimens and models	(1) Primary			
	(2) Intermediate			
	(3) Junior H. S.			
	(4) Senior H. S.			
Mounted pictures	(1) Primary			
	(2) Intermediate			
	(3) Junior H. S.			
	(4) Senior H. S.			
Wall maps	(1) Primary			
	(2) Intermediate			
	(3) Junior H. S.			
	(4) Senior H. S.			
Charts, graphs	(1) Primary			
	(2) Intermediate			
	(3) Junior H. S.			
	(4) Senior H. S.			
Posters, cartoons	(1) Primary			
	(2) Intermediate			
	(3) Junior H. S.			
	(4) Senior H. S.			
Stereographs	(1) Primary			
	(2) Intermediate			
	(3) Junior H. S.			
	(4) Senior H. S.			
Lantern slides	(1) Primary			
	(2) Intermediate			
	(3) Junior H. S.			
	(4) Senior H. S.			
Film strips, still films	(1) Primary			
	(2) Intermediate			
	(3) Junior H. S.			
	(4) Senior H. S.			
Motion pictures	(1) Primary			
	(2) Intermediate			
	(3) Junior H. S.			
	(4) Senior H. S.			
Radio programs	(1) Primary			
	(2) Intermediate			
	(3) Junior H. S.			
	(4) Senior H. S.			
Phonograph records	(1) Primary			
	(2) Intermediate			
	(3) Junior H. S.			
	(4) Senior H. S.			

2. Indicate by figures on the proper lines below the approximate number of each type of equipment owned by your school system:

Type of equipment	Location of equipment				
	Central depository	Elementary schools	Junior high schools	Senior high schools	Total
Lantern slide projectors					
Stillfilm attachments					
Filmstrip projectors					
Microscopic slide projectors					
Opaque projectors					
Lantern slides					
Rolls of still films and film strips					
Stereographs					
Motion picture cameras					
Motion picture projectors:					
16 mm silent					
16 mm sound					
35 mm silent					
35 mm sound					
Reels of film:					
16 mm silent					
16 mm sound					
35 mm silent					
35 mm sound					
Radio receiving sets					
Centralized radio-sound systems					
Phonographs					
Phonograph records					

3. Specify subjects in which motion pictures are used most frequently:
   Primary _____
   Intermediate _____
   Junior H. S. _____
   Senior H. S. _____
4. Does your course of study specify the use of visual aids? Yes ☐ No ☐
5. Are pupils encouraged to see selected motion pictures in local theaters and use the information thus acquired in school? Yes ☐ No ☐
6. Do you use a museum or museums? Yes ☐ No ☐
7. Do you make field trips or school journeys? Yes ☐ No ☐
8. Do you use a library as a source of visual instruction material? Yes ☐ No ☐

2. PRESENT NEEDS

1. Indicate by placing a (1) in the parentheses before the most difficult, a (2) for the second most difficult, and a (3) for the third most difficult of your present problems:
   - ( ) Insufficient budgetary provision for visual aids.
   - ( ) Lack of available aids in classroom when most needed.
   - ( ) Available visual aids fail adequately to cover the course of study.
   - ( ) Teachers insufficiently trained in the use of visual aids.
   - ( ) Lack of understanding of the values of visual aids in instruction.
   - ( ) Lack of information on sources of desirable films and other audio-visual aids.
   - ( ) Other.....
2. Indicate by placing a (1) in the parentheses before the suggested service below that would be the most helpful to you, a (2) before the second most helpful, and a (3) before the third most helpful:
   - ( ) Demonstration lessons in your school by visual instruction specialists.
   - ( ) Courses in visual instruction given at conveniently located centers.
   - ( ) Supervisory conferences with groups of teachers.
   - ( ) Expert evaluation of educational films and other audio-visual aids.
   - ( ) Lesson plans showing how audio-visual aids can be correlated with the course of study.
   - ( ) Increased attention to visual instruction at local, State, and national teachers' meetings.
   - ( ) Assistance in organizing and planning the administration of your visual instruction work.
   - ( ) Additional motion pictures produced to fit instructional needs.
   - ( ) Some plan that might be developed by Federal agencies whereby equipment might be purchased at reduced costs and/or on a deferred payment plan.
   - ( ) Expert information on minimum requirements for audio-visual equipment.
   - ( ) Other.....

NOTE.—We should appreciate a brief description of the program of visual instruction as conducted in your school system. (Enclose reports, articles, pictures, etc.)

O