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An Evaluation of Instructional Materials for Use in Teaching Electronics

H. Allen Shockley
Central Washington University

AN EVALUATION OF INSTRUCTIONAL MATERIALS FOR USE IN TEACHING ELECTRONICS

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H. Allen Shockley

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George S. Sogge, COMMITTEE CHAIRMAN

_____

Charles W. Vlcek

_____

Arley Vancil

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CHAPTER I

INTRODUCTION

This is an age of electronics and automation, yet the emphasis in most industrial arts programs is in the area of woodworking. It has been said ". . . Present practices in industrial arts seem to be more like industry of one hundred years ago rather than education in the age of automation . . . (22:18). Industrial arts is only one area of public education that is lagging behind this highly automated society of today. Public education in general is lagging far behind the needs of our society.

The shortage of teachers has been pointed out by many as one of the reasons for this pressing problem. This situation is not likely to be alleviated by a sudden rush of good prospects from industry into the educational field. Therefore, the problem becomes one of teacher utilization and efficiency.

The present teachers must be helped by every means known to produce more. They must be released by machines, aids, and clerical help so they can work uniquely at doing those things that only well-trained and qualified teachers can do. They must be helped to produce more teaching.

I. THE PROBLEM

Statement of the problem. Through this study the writer will attempt to: (1) evaluate selected instructional materials for teaching electronics that are available through the facilities of Central Washington State College, University of Washington, and Washington State University; (2) develop a list of those materials worthy of use in teaching electronics in grades seven through twelve; and (3) make recommendations for improvements in this area.

Importance of the study. There are four factors that have precipitated the need for this study: (1) we are at present in the middle of an ever-expanding world of mechanization and automation; (2) in order to keep pace with the world, a better understanding of electronics--its main stem--is needed; (3) electronics deals constantly with abstract theories which are very difficult to visualize; (4) since the prime purpose of instructional materials, more commonly "audio-visual materials," is to help make abstract ideas more life-like or concrete, it seems logical that their use in electronics is beyond doubt a necessity.

Therefore, the writer has undertaken this study to evaluate the usefulness of those instructional materials available in the state of Washington to teach electronics and to determine in what areas improvement must be made.

Limitations of the study. This study shall be limited to the instructional materials available in the libraries of the following educational institutions: Central Washington State College, University of Washington, and Washington State University. It shall also be limited to those materials that can be used, or adapted for use, in teaching electronics in grades seven through twelve. Library materials, such as reference books, pamphlets, brochures, textbooks, etc., are very numerous. It is impossible to evaluate this type of material within the scope of this study. This would be an ideal study in itself; therefore, these materials shall not be evaluated in this study.

In this study the writer will attempt to evaluate the following types of instructional materials: materials for use on the overhead and opaque projectors, 16mm films, 8mm single concept films, filmstrips and slides, models, pictorial materials, programs in electronics for use in electronic and non-electronic teaching machines and the accompanying machines, and scrambled-texts.

Realizing that the libraries may be limited in some areas of projected materials, an attempt will be made to obtain an equal sampling of new materials available commercially in the state of Washington.

It is the belief of the writer that in order to obtain an adequate evaluation of any programmed material,

it is necessary to evaluate the device in which the program is to be used. If the device has several faults or limitations, these will in turn be detrimental to the use of the program. Therefore, the device effects the efficiency of the materials used in it.

Since teaching machines are relatively new to education, few programs have been developed for use in each machine. This is definitely true in the subject area of electronics. Consequently the writer will evaluate all teaching machines, including those for which programs in electronics are not available, at the three educational institutions included in the study, in hopes that such programs will soon be made available.

II. DEFINITIONS OF TERMS USED

Electricity. This term refers to the effect of electrons moving from one point to another or the effect of too many or too few electrons in a material (62:1-8).

Electronics. Throughout this study, Archer E. Knowlton's definition of electronics shall be used:

> Electronics is that branch of science and technology which relates to the conduction of electricity through gases or in vacuo. . . . Specifically, electronics deals with the motion of free electrons and with the interaction of these free electrons with other particles . . . (35:2082).

Electronic teaching machines. An electronic teaching machine is any self-teaching machine that is dependent upon some type of electronic apparatus in order to present the programmed materials it uses. The electronic teaching machines covered in this study are the AutoTutor Mark II and the Mast Teaching Machine.

The AutoTutor is a portable device requiring a source of 110v electricity. It can be used in a fully lighted room, since the image of the program is cast on an 8½" x 11" frosted glass screen. This machine uses the branching method of programming. The programs for this machine are on coded microfilm and the student selects his response by pressing one of nine buttons which cause the film to run through the machine and stop at the proper spot.

The Mast Teaching Machine is quite similar to, but simpler than, the AutoTutor. It is of the linear type, uses a smaller frosted screen, and has only three controls: (1) forward lever, (2) answer lever, and (3) scanning lever. As the names indicate, number one is for moving forward; number two is for revealing the answer; number three is for viewing the question followed by the answer in quick succession. This machine also uses microfilm but unlike the AutoTutor the programs are loaded into the machine by simply dropping in a cartridge containing the film.

Instructional materials. An instructional material is any device or material by means of which the learning process may be encouraged or carried on. For the purposes of this study, instructional materials have been divided into three groups: projected materials, non-projected materials, and self-instructional materials.

Non-electronic teaching machine. This term applies to all mechanical teaching machines that do not fall under the category of electronic teaching machines. These machines consist of a place to write a response, a means of viewing the question and moving it into view. The non-electronic teaching machines included in this study are: the Min/Max II and Answer Mate, the Foringer 2002, and the Didak 501.

Non-projected materials. A non-projected material is complete in itself. It does not require a projector of any kind or other equipment for its utilization. Non-projected materials included in this study are: models and pictorial materials (pictures, charts, graphs, and posters).

Projected materials. A projected material is one that requires a projector for its utilization. Projected materials included in this study are: filmstrips, 16mm films and 8mm single concept films, transparencies for the over-head projector and pictorial materials for use in the opaque projector.

Program. For the purpose of this study, program is defined as:

> Subject matter arranged in a carefully planned series of sequential items and involving (a) controlled presentation of material, (b) active response of learner, (c) use of clues (props) to ellicit correct responses, (d) immediate confirmation of successes or failures (feedback), and (e) reinforcement of correct responses in such a way as to enable student learners to move ahead, independently and at their own pace, from familiar background to new and previously determined terminal behavior . . . (28:15).

Scrambled-text. Throughout this study the term shall be interpreted as a special type of programmed book in which the program items are not presented to the student on subsequent pages of the book (28:15). Usually, either in terms of alternate choices of successes or failures, students are directed to pages which are not necessarily in consecutive order until the program is completed.

Self-instructional materials. This is a comprehensive term denoting an instructional material that usually involves carefully planned materials and or devices designed to produce learning without necessarily requiring additional human instructional assistance. Self-instructional materials included in this study are: programs in electronics and their accompanying electronic and non-electronic teaching machines and scrambled-texts.

Teaching machine. The term teaching machine refers to:

> A mechanical device by which a program is displayed to a learner. It usually presents one frame (item) at a time, provides some method for the student to indicate an overt response, shows whether a response is correct or not, prevents cheating by student, maintains a record of student responses; enables use of non-verbal programs, that is programs which are either totally or in part presented in audio and or visual form (28:15).

III. ORGANIZATION OF THE REMAINDER OF THE THESIS

The remainder of this thesis will be divided into several chapters and sub-sections. Chapter II will present a resume of literature concerning: (1) electronics and industrial arts, (2) the use of instructional materials, and (3) new media in education, as discussed in various books and periodicals.

The third, fourth, and fifth chapters will present an evaluation of: (1) projected materials, (2) non-projected materials, and (3) self-instructional materials. The last sections of these chapters will be devoted to a list of materials recommended for use in that area for the teaching of electronics.

The sixth chapter will consist of a summary and recommendations developed from the study.

IV. METHODS AND MATERIALS USED IN THE STUDY

The evaluation forms used will appear in Appendices A, B, C, and D. Three basic forms will be used in the study.

The form to be used for evaluating 16mm films, 8mm single concept films, filmstrips, transparencies, and opaque projector materials will be two pages long. The first page of the form will be devoted to information about the material being evaluated and will also include several questions pertaining to desirable characteristics of the media. The second page of this form will be a series of questions on the technical quality and educational production of the material being evaluated. The second page will also include a blank for the average rating of all educational and technical characteristics evaluated. The last line on page two of the form is an over-all evaluation or rating of the media. Since the items covered on page one of the form are just as important as those on page two, the over-all rating may not agree with the average educational-technical rating. The average educational-technical rating is given for the purpose of comparison with the over-all rating and should not be confused with the over-all rating of the material.

For the purpose of organization and distinction, each media will be evaluated on a different color of paper.

16mm films will be done on yellow, 8mm single concept films on white, filmstrips on pink, and opaque projector materials will be done on lavender colored paper.

A separate form will be used for self-instructional materials. Two forms will be used in this area--one for the teaching device and one for the self=teaching material. In both cases, the form will be printed on blue paper. On the machine evaluation, yes and no questions will be asked. Generally speaking, a no answer results in a poor mark while yes is rated good. The over-all evaluation is determined by the number of yes and no answers checked.

The program or self-instructional material evaluation is set up similarly to the second page of the form used on the projector media. From the average educational production rating, over-all evaluation, and general information given, an accurate evaluation is possible.

In most cases, if the over-all rating falls on five or below the writer will not recommend that item for use in teaching electronics. The writer wishes to draw attention to the fact that all the answers given on the evaluation forms will be in terms of using the materials for teaching electronics.

CHAPTER II

REVIEW OF THE LITERATURE

Educators, laymen, researchers, and authors familiar and unfamiliar with the subjects discussed in this thesis have presented their views and summarized the findings and views of others in various professional books, magazines, pamphlets, and research studies. A wealth of information was found covering all phases of this study. The most recent and largest amount of material seemed to be focused in the area of "automatic instructional devices."

For clarity, the writer has divided this review into three sections. The first section will include literature related to electronics and how this subject is best taught in industrial arts. The second section shall be devoted to literature pertaining to the use of instructional materials and their application to teaching electronics. The last section shall be limited to literature presenting ideas on new media in education.

I. LITERATURE ON ELECTRONICS AND INDUSTRIAL ARTS

It isn't hard for any American to realize the importance of electronics in the society in which he lives. Most Americans, however, fail to think about how much their lives are dependent upon that tiny negatively charged particle

weighing only 9.107×10^{-28} grams and never visible to the naked eye called an electron. If it weren't for this little particle, several of the miracle products and machines of today would never have been invented. Agnes W. Mitchell stated a prime example of such a product:

> Goods and services not previously available are made possible by the use of automatic processes, and whole new industries are arising. For instance, polyethylene, common place in household squeeze-bottle packaging, is dependent almost entirely upon automatic processes. Because of the precision of timing and extremely high pressures necessary in its manufacture, it cannot otherwise be produced (41:208).

Electronics doesn't stop at controlling manufacturing processes. It does much more than this; for instance, the multiple uses of the computer as given by Leonard Engel in his article, "The Wonderful World of Electronics":

> By 1961, there were more than 10,000 giant electronic computers at work in the U.S., and they were not only taking over great areas of business paperwork, but running chemical and other factories, counting noses for the Census Bureaus, routing long-distant telephone calls, preparing indexes for scientific literature and doing too much more to be told (22:18).

Later in his article, Engel depicts a new application of electronics:

> But most remarkable of all, electronics had reached the point where medical researchers were giving serious consideration to artificial internal organs based on electronics--and one such is already in existance--the electronic pacemaker for aiding hearts (22:19).

Where will this new industry stop? As an European after a visit to RCA labatories admitted, "'When you talk

about electronics, the truth is more fantastic than any tall tale you could ever make up'" (50:14).

Just how fantastic is the truth about electronics? This industry began with the development of the telegraph and then the telephone. From this small beginning it has grown by leaps and bounds until it ranks fifth among all industries in the value of goods produced:

> . . . From sales of about $340-million in 1939, it has jumped to an output of over $4.5-billion in 1952. This year sales are expected to reach $5-billion, and the growth curve suggests sales of $20-billion in 1960.
>
> . . . . . .
>
> Electronics can claim to be the fastest-growing industry in the U.S. It can also take pride in the fact that it is a wholly U.S.-born industry; it has taken few if any leads from European scientists, and it is setting the development pace for the world (18:177).

In part, from comments stated by David Sarnoff:

> The Air Force relies on electronics to such an extent that roughly one-third the cost of a modern all weather jet fighter plane goes into electronic gear. The Navy's growing dependence is indicated by the fact that whereas a typical pre-World War II destroyer used about sixty vacuum tubes, today's destroyer uses some 3,200 such tubes.
>
> Some idea of the capabilities of our present computers may be gained from R.C.A.'s 'Bizmac,' the most comprehensive data-processing system marketed so far. It can 'remember' more than 100,000,000 facts and can 'read' and 'write' electronically at the rate of 2,000 words per second (50:14,38).

Many advancements have been made in this new field, "yet great as the accomplishment have been so far, we are still in the pioneering stage" . . . (49:38). The pace of electronic development has been so rapid that change invariably outruns our imagination.

How much imagination do you have? Can you imagine a machine that thinks almost like you or any other human? Fantastic as it may seem, research is now in the process of producing such a computer:

> Once it has been taught--as a living thing is taught--to recognize a particular object, its recognition of that object is direct and almost instantaneous. That is because its memory is in the form of altered 'pathways' through the 'nerve' system.
>
> The Mark I's nervous system is made up of association units and response units. The visual characters that the machine 'sees' are converted into a large number of electrical signals. Each source stimulated gets connected to association units, which subsequently are activated by the particular stimulation.
>
> Scientists have theorized that neurons--or nerve cells--in the human nervous system are tied into a similar, though vastly more complicated nerve network (18:177-178).

What are the educational implications of all this growth and technology? It is easy to see that such rapid growth is bound to call for more and more well-trained employees. "In 1956, electronics, the fourth largest industry in the United States, employed 1.7 million persons. Seventy-five per cent of these persons work at jobs which did not exist ten years ago (40:220).

This means an increase of about 1,275,000 new jobs in ten years. All of these jobs required some technical education, and many of them required a very high degree of educational background and training.

Are the public schools offering this type of education? Are they actually fulfilling their role? Are they preparing individuals for a place in an ever-growing electronic-centered society? Apparently they are not, for the writer found several authors that felt improvements in this area were needed. Troyce D. McGovern reported that:

> Rapid change must be made in the education of our youth in order better to meet the needs arising from the growth of electronics. This means that the public school must put greater emphasis on electricity and electronics (40:220).

This premise is also supported by Peter Buban:

> The history of industrial education in the junior and senior high school reveals that much too often our programs have lagged far behind the industrial progress of the nation. . . .
>
> An outstanding example of the inability or the unwillingness to narrow the gap between our offerings and industrial progress is the limited acceptance of the electricity-electronics area. We have failed to make the best use of an opportunity to enlarge our presentations to include a field which is vital to any phase of the national interest (13:32).

Other authors believe that present instruction is inadequate and misdirected. For instance, Hank Billings states:

> In working with these leaders of industry it was indicated that, in existing programs, too much time is spent in the study of rotating machinery. It was pointed out that the time may be more profitably spent in advanced study of vacuum tubes and transistory circuitry. . . (8:42).

Something must be done to reduce this giant gap between what is being taught in the school and what is being done in industry. According to most writers and educators, to develop an understanding of industry should be one of the main objectives of industrial arts. This is supported by the following statement:

> If we subscribe to the philosophy that one of the prime purposes of industrial arts is 'To develop in each student an insight and understanding of industry and its place in our culture,' (Schmitt, Marshall L., Conference on Industrial Arts, Office of Education, Washington D.C., 1960) then it is perhaps not only within our area of subject matter but our definite responsibility (32:20).

Industrial arts is an intricate part of modern education. It is a study of the dominant factor in our modern civilization--industry (46:2,3). Therefore, "school industrial laboratories should represent progressive industry if industrial arts is to serve its stated objectives in the modern educational system" (29:72).

One article took a very definite stand in the case for including electricity and electronics in industrial arts:

> . . . The application of the principles of electricity and electronics should be included in all shop programs since many activities are affected, if not controlled, by their use (6:20).

Although most educators and laymen agree that the problem of electronic instruction in the public schools must be improved, they are not in agreement on how this

instruction should be carried out. In reading literature on this subject, the writer has found three distinct methods of instruction in electronics: (1) the project method, (2) the kit method, and (3) the quick-connect method as prescribed by the Electronics Industries Association.

The literature and available research on a comparison of the effectiveness of these three methods was very limited. Arthur O. Berry, along with several other authors, believes the project method is the "core of industrial arts instruction." He states:

> To improve the value of this vehicle, here are nine questions on project selection as one key to closer achievement of our objectives:
>
> 1. How long will it take to construct the project?
>
> 2. How much will the material cost?
>
> 3. Are the materials available?
>
> 4. Are needed equipment and facilities available?
>
> 5. Does the project exemplify good design?
>
> 6. Does the student have the necessary skills for the project?
>
> 7. Does it provide new learning experiences?
>
> 8. Does it consider the pupil's interests and needs?
>
> 9. Will it achieve course objectives? (7:30).

However, the questions he asks are often held as being objectionable by others. Some writers feel (1) they often

take too much time, (2) they are usually very costly, (3) materials are very hard to store, and (4) equipment is usually very expensive. This is pointed out in a recent article in Industrial Arts and Vocational Education:

> The project method has the advantage of retaining the project as a vehicle for instruction and working well in the traditional shop. The limitations include: the high cost to the student, project was seldom useful, quality of workmanship was often poor, and part ordering and supply inventories created a real problem to the inexperienced teacher. Many teachers have abandoned this method, but this method will still be found as the name 'manual training' still appears above archways to old buildings (11:37).

Nevertheless, the project method is still used in many schools. In a typical textbook giving a number of projects normally used in teaching electronics, the writer found the following statements:

> These projects may be made from a variety of materials. It is possible to build most of them with inexpensive materials, such as spike nails, tin cans, a few small screws, a scrap of wood, and a few feet of insulated wire which may be salvaged from an old electric horn motor, generator, or spark coil. However, in most cases it will be better to use new magnet wire for the magnetic coils and soft strap iron or round bar iron for magnetic cores and brackets.
>
> . . . . . .
>
> While this list of equipment is advisable, it does not mean that this work cannot be carried on successfully with fewer tools. These projects may all be satisfactorily constructed and the fundamentals which they convey be adequately presented by the use of a soldering copper and a pair of tin snips in addition to the equipment found in any wood shop (17:5).

Do educators really think that this is the correct way to develop an understanding of a multi-million dollar industry? Is the use of "nails, tin cans, and scrap wood" the way you would go about building an electronic computer? Is it really necessary to teach electricity and electronics in a wood shop or does it deserve its own room--one that is completely equipped and might even cost less.

Many instructors have attempted to get away from the use of projects in teaching electronics. One of the methods tried as a substitute is the use of commercially prepared kits. However, this has been found to be even more expensive and usually the student learns very little. Paul B. Zbar, while discussing the need for effective laboratory programs in electronics, criticized this method:

> . . . Much of the electronic lab work which was being done was 'busy' work on construction projects. The students spent hours soldering and developing little devices. All too often built from wiring layout diagrams rather than schematics. And, when the project was completed he had little more basic understanding of electronics than he had at the start (67:9).

What then, is the alternative? According to Larry E. Hiller, an effective and efficient program can be carried out through a program developed in part by the Electronic Industries Association. A method is employed that makes the "bread-board" from which it evolved obsolete and cumbersome. This method can utilize parts over and over again with very little replacement, it is less time consuming, and

presents a more realistic atmosphere to this experimental experience:

> This laboratory is designed to allow the use of manuals already approved by the electronics industry, so that the instructor does not have to spend many laborious hours devising and proving out laboratory experiments, but can move into a good training program at once. This low-cost laboratory will allow the student to build up his experiments, test them with instruments such as he would find on the job, disassemble the parts without damage, and allow the following class to utilize the same parts kits in whatever phase of the program they happen to be engaged.
>
> . . . . . .
>
> The use of the foregoing materials and instruments has met the needs of this school in an admirable fashion, resulting in a course which was interesting and well received. The author has never found a situation which created more interest and resulted in more rapid assimilation of the fundamentals of electricity and electronics than has the E.I.A. course coupled with this laboratory setup. It has been more than satisfactory to the student as well as the instructor (2:36,37).

In another article this method of instruction was referred to as the "quick-connect" method:

> The quick-connect has the advantages of little cost to the student, few instructional elements other than electrical-electronic, and some use of electronic test equipment. The attractiveness of little cost to the student and electrical-electronic content as compared to the traditional project of wood and metal has caused many teachers to look with favor toward the quick-connect method. The quick-connect has the limitations of initial cost, checking for and reordering of faulty parts, limiting coverage to included manuals, commercialization at the expense of not being complete and educationally sound. The limitations for the quick-connect method could be overcome with a positive and aggressive teacher (11:37).

Even with the use of any one of the three methods of instruction described previously, most instructors find that the abstract concepts of electronics is very difficult to teach. Nathan Orpaz and Giora Amidan explained that these concepts can best be taught through the use of instructional materials:

> One of the fundamental difficulties in electronics demonstrations lies in bridging the gap of identification between sketch and circuit diagram, and the connected circuit itself. DC and AC are relatively simple and it is usually sufficient for the instructor to identify the components of the constructed circuit with the appropriate symbol of the sketch diagram on the blackboard. Electronic circuits, on the other hand, with their complexities of connections to anode, grid, and heater voltages, and of the lining up with different measuring instruments the small scale (if not miniature) components usually defy lucidity . . . (44:253).

The difficult concepts to be learned in electronics can hardly be communicated through the old-fashioned lecture method of instruction. The student will gain knowledge in electronics only through participating in laboratory situations supplemented by careful instruction and demonstration in the classroom.

James L. Boone clearly illustrates the trend for turning to instructional materials in teaching electronics:

> The abstract, 'I-can't-see-it' nature of electricity makes it a difficult subject to teach successfully. Experienced instructors have turned to a wide variety of teaching devices to aid them in creating concrete, visual pictures of electrical theory in the student's minds (9:39).

II. LITERATURE ON THE USE OF INSTRUCTIONAL MATERIALS

Most writers are in agreement that instructional materials are definitely aids to the learning process. These materials help the teacher to obtain the best possible instruction in the least amount of time. Teacher efficiency is greatly improved by the use of instructional materials (36:25; 48:538).

Instructional materials are useful for giving reality to the subject being studied. In part, Dr. Simon points out:

> Properly organized instruction with visual materials being a supplemental, yet essential, part of that instruction will eliminate a great deal of the wasted time and effort of both the industrial education instructor and the pupil, through intensifying the interest of the child and increasing the efficiency of the instruction (55:25).

Learning is dependent upon what is perceived by the various senses of an individual. It is through these avenues of learning that instructional materials supplement the teaching process. The successful teacher will exploit these means to the fullest in order to obtain the best learning possible (37:39; 33:322).

Through instructional materials it is possible to illustrate ideas and principles that would be impossible to experience first hand such as the flow of electrons from cathode to anode in an electron tube, or the experience of living through a hurricane.

Richard Lawson states:

> 'Audio visual aids are used to increase understanding, to explain a principle or abstract idea, to illustrate relationships, to show order and sequence of procedure, to demonstrate standards of workmanship, and to show materials of construction.
>
> An effective aid is one that is designed to help clarify a teacher's verbal explanation of a complicated principle or theory. Therefore, it can be said that the most useful and effective audio-visual teaching aids are those conceived and created for a teacher's particular needs.
>
> . . . . . .
>
> In every area of industrial arts there are concepts that are difficult for the student to grasp. Mechanisms which are not easily explainable, principles which are hard to understand. These concepts, mechanical relationships and principles must be presented and re-presented by a variety of meaningful avenues. The teacher must decide the best ways of presentation and then select the means most readily adaptable to the specifics being taught (37:39,42).

In order to determine the worth of any instructional material certain guide lines must be set. First and foremost, the materials must be evaluated in terms of the entire learning situation (33:321). Joseph J. Devitt has established twelve questions that should be answered before purchasing audio-visual materials:

> Audio-visual materials should never be purchased sight unseen; they should only be ordered on approval only. They should then be previewed by the teacher who will use them and evaluated by criteria similar to the following:
>
> 1. Do the materials contribute to the realization of specific objectives of the teacher-learning situation in which they are to be used?

2. Do they present simply and clearly the desired concepts?

3. Are they well-organized and sequential?

4. Do they provide fresh insight into problems and relationships?

5. Are they sufficiently interesting to hold the absorbed attention of the students?

6. Are they technically well constructed? Motion pictures should have clear, sharply focused, vivid pictures and distinct, well modulated sound.

7. Are they free from error, factual or implied?

8. Are they durable?

9. Are they economical in terms of teacher and class time?

10. Is it expensive, are they suitable for frequent or recurring use by succeeding classes?

11. Are the materials appropriate to the age level of the pupils who will use them?

12. Are the cost of the materials and limits of the audio-visual budget considered so as to assure fair distribution of available funds among the various subject areas? (20:5).

Teaching and learning need never be dull. Through a rich variety of books, displays, pictures, films, tape recordings, and a growing quality of new devices made possible through an expanding technology, day-by-day experiences of students can be visualized.

The opaque projector is a relatively simple device which makes it possible to project an exact image of any written, printed, pictorial, or three-dimensional material in

almost any room (66:290; 25:601; 65:65; 4:110). This machine has several advantages and disadvantages as pointed out by Herbert Hackett who states:

Advantages:

1. It helps focus the attention of the class on specific problems in an actual paper written by a student;

2. Since the room need be only 60% dark, students can be asked to solve problems not only orally but on paper, and thus get an added written exercise;

3. It saves time usually spent writing material on the board, or eliminates the necessity for expensive and time consuming mimeographing;

4. It is extremely flexible, providing for the use of pictures, overlays, charts, diagrams, etc.

Disadvantages:

1. Shades or curtains are needed (but not blackout);

2. The teacher is at the back of the room, not, as in the use of the overhead projector, at the front;

3. The teacher cannot write on the paper while it is being shown (30:493).

Additional disadvantages were stated by William Baker:

> Although it is simple to operate after a trial session or two, there are drawbacks to using the projector that might as well be admitted at the beginning. The students are unable to take notes in the room darkened with special 'black out' shades, and they suffer the affects of heat and poor ventilation from the strong lights of the machine and the closed windows. Furthermore, some teachers have difficulty with the machine itself (4:110).

The overhead transparency projector is one relatively new device, widely used, in business, industry, and for military group training. As yet, it has not been widely adopted by teachers. The 'overhead,' however, offers substantial opportunities for the teacher with an imagination.

Probably no other machine is as versatile and flexible as the overhead projector. It can be operated by the teacher as he faces his students, maintaining face-to-face contact that is so desirable in teaching, measuring student reaction and pacing himself accordingly. The transparencies used can be in vivid color, clear, and life-like. They are easy to project, even in a well-lighted room, making it easy for note-taking by the students. Dramatic results and great variety in presentation techniques can be achieved with very little effort. A limited animated effect can be obtained by the use of simple "strip tease" or "flip on" method of progressive disclosure. A wax pencil or china marker and an acetate roll permits use of the projector as a chalkboard with unlimited space. The possibility of reviewing previously written material is unlimited. Pictures may be copied, original illustrations drawn, typed material produced, or photographs reproduced on emulsified slides. Pressure sensitive matter; bits of colored plastic; and even transparent instruments such as slide rules, real rulers, and triangles may also be used (64:242; 45:11; 65:60,67; 37:42; 49:52; 63:351).

No one agrees upon the most advantageous characteristics of this device. Viggo believes the most important advantage of the overhead projector is with the use of prepared transparencies (31:468). However, Joe W. Lemley states:

> Most promising of the projector's advantages, however, is probably its effectiveness in showing step-by-step procedures--accomplished by laying transparencies one on top of another in progressive order (38:36).

Whatever the primary advantage may be, it is easy to see that the overhead projector opens new opportunities for imagination and ingenuity in the search for more effective and more efficient teaching techniques. It has been well demonstrated by others that student learning can be improved and accelerated by its use.

A filmstrip is a series of still pictures on 35mm film which gives a visual version of a message, idea, or explanation. Its greatest advantages are the possibilities it offers for active participation by the students and its great flexibility. The majority of the literature written on filmstrips speaks highly of its possibilities as an instructional material, but few cases were cited where it had been widely accepted by educators.

Brown, Lewis, and Harcleroad support the opinions of many teachers:

> . . . Filmstrips <u>teach</u>, and the <u>combination</u> of filmstrips with other types of learning

> experiences (sound films, field trips, or recordings, among others) produce learning results superior to those obtained from one of the media alone (12:139).

The filmstrip is recognized as an excellent teaching tool with unique advantages. It can be tailored to the needs of the individual class. Since each picture can be shown as briefly or as long as desired, emphasis can be placed where needed. Individual frames may be pre-selected or eliminated entirely. Since there usually is no sound track, the teacher can stress, summarize, or interpret as dictated by the needs of the class (45:11; 39:576).

Seeing the actual thing provides much more realistic learning than the symbolic images in a book or written on a chalkboard. This is probably the most important purpose of the motion picture film. This is brought to life by the statement of Brown, Lewis, and Harcleroad:

> The film enables a teacher to re-create in the classroom events, actions, or processes occurring anywhere in the world at any time. Through the film, many 'real' experiences may be shared by every student, and the handicaps of time, size, and distance may be overcome. Integrated use of educational films with other instructional materials offers an efficient means for improved learning in a wide variety of classroom situations (12:157).

As with other media, the 16mm movie film has its advantages and disadvantages. The biggest advantage of 16mm films is movement. However, color, variety, pace changes, time control, sound and the ability to be viewed by hundreds should not be overlooked.

Along with its dynamic qualities, Cecil Starr also mentions:

> But film does have some disadvantages. It must be taken in one sitting. For practical reasons, it is usually limited to 10 or 20 minutes; but these are fluid minutes, and they cannot easily be stopped for discussion or repeated for emphasis. Here, then, is one defect that books, maps, posters, filmstrips, and slides do not share: film is a victim of the time machine. A good book may be worth its weight in gold, but one simple test of a film's educational value is to ask if it is worth its running time (59:41).

The most objectionable property of the 16mm film is its relatively high cost compared to other instructional materials. The 8mm single concept film, in color, promises to reduce this cost by about 50%. This is due to its light weight, inexpensive projector, film that can be stored and shipped easily and cheaply, and improved production methods.

Of the few articles written on the relatively new 8mm single concept film, the writer found them to be both critical and favorable. The following statements were taken from a leaflet printed to introduce educators to this new device:

> A new development in motion picture projection equipment promises to open another dimension in education.
>
> The technicolor cartridge projector utilizes a four-minute endless loop of silent 8mm film, enclosed in a plastic cartridge. The cartridge is the key to the utility and convenience of this machine. It is inserted into the projector as easily as a book into its place on a shelf. The film is instantly ready for projection, without threading. The endless loop is always ready for

> an immediate repeat without rewinding. The plastic cartridge protects the film from damage in handling.
>
> The projector is compact (9" x 5") and light (8 pounds). A zoom lens and dial elevation adjustment provide good flexibility in projection arrangements. The image brilliance with 8mm film, though inferior to 16mm, is quite sufficient for use in a darkened classroom of average size. . . .
>
> In the past, the inconvenience associated with the use of 8 or 16mm film projectors has precluded the practical use of short filmed demonstrations in the classroom. With the cartridge loops, the appropriate demonstration can be shown at just the right point in the discussion with a minimum of disturbance to the attention of the class, and the continuity of the subject material.
>
> . . . . . .
>
> These loops could be treated in much the same way as library books. The establishment of a library facility would require only the modest expenditure for several projectors. The plastic cartridges, stacked in racks like books, take a minimum of storage space. Thus, a student could view loops at his own pace . . . (21:1).

It should be noted that the projector and films discussed in this leaflet are not of the sound type. The writer feels that this will allow more flexibility of the 8mm film loop.

Mark Slade put forth his views on this subject in a recent issue of Educational Screen and Audio Visual Guide:

> Let the teacher be the one starting to ask questions about 8mm films; let them state the specifications. They can say, for example, we want a sound projector as portable as a typewriter, the price of which is to be under a hundred dollars; we want fool-proof carriage loading which will allow for individual operation, unaided by a five year old child; we

> want thousands of single concept films, silent and sound, in three to ten minute continuous loops, and we will personally supervise the visual treatment in accordance with our own professional experience and objectives, these clips to cost no less than cheaper textbooks, no more than the best reference books. Give us this and the imaginative moving image will begin to take on a dynamic intensitive in the learning and teaching continuum which underlies the living environment in every classroom. Give us a library of film in every class; at least one projector in every class; facilities for our own creative use of these innovations in communication. Above all, give us control mobility and illumination, whether classes are old or new, large or small, and we will readily cross the threshold of familiar knowledge to meet the new challenge of communication fallout (56:599).

The writer wishes to point out that the ideas put forth by Mr. Slade are good, but to put such demand upon the producer is quite unrealistic.

The literature reviewed to this point in this section has dealt with projected materials and devices. One can't overlook the possibilities of non-projected materials as is often done by the inefficient teacher. Very little writing was found in this area except for lists of free or inexpensive material that could be ordered. Very often the teacher overlooks the most common instructional material known--the chalkboard. Next to the textbook, the chalkboard is probably the most universally used visual aid. The possibilities of proper technique in using this media are innumerable and fantastic (37:41; 51:275).

Among other non-projected materials discussed very briefly in the literature reviewed were flannel boards, mock-ups, display boards, models, and pictorial materials.

III. LITERATURE ON NEW MEDIA IN EDUCATION

Even with the application of the instructional media discussed in the first two sections of the chapter, education is lagging far behind the mass communication system used in our society today. Today's school children spend a sizable amount of their waking hours engrossed in this world of powerful communications. Television, radio, phonograph records, and movies vie with the teachers for the attention of most children. Until recently, it was true that the American teacher was the only professional person who was still working with yesterday's tools. In order to stay up with society, educators must begin to use the tools of that society.

Kenneth Anderson and Allen Edwards point out some very interesting facts:

> What we learn from this is that the development of an industry from a zero point to a point of newer saturation covers a period of time smaller than that during which any youth is required to attend school. Thus, each individual emerges from school into a world whose technological development and political and social organization differs considerably from that of the world into which he was born . . . (1:21).

This problem is serious. The amount of knowledge that must be assimilated by our young people before they are

able to earn a livelihood is increasing on an exponential trend curve along with the curve representing the total accumulated knowledge of the human race. How can our present educational system cope with this situation? Must teachers spend more and more of their lives in school, or have they already reached the point where they must both study and work during their entire lives if they are to keep up with the advance of knowledge in their own fields?

A related problem is the growing recognition of individual differences, individual abilities, and individual needs of the students. Almost every educational journal today carries articles recommending that school curriculums be individualized.

A breakthrough in education is clearly necessary--is programmed learning that breakthrough? With programmed instruction can schools take the teacher shortage and the rapid advance of knowledge in their stride? What is more, will programmed learning provide the unique opportunity of giving each student a curriculum which is paced to him? Most authors agree that teaching machines and/or programmed learning is the solution to these two problems that have plagued education the last few years.

It seems reasonable to predict that the role of the teacher will change as more and more technological devices find acceptance in the classroom. As for the student, he can expect a larger measure of individual attention--some

of it from automatic instructional devices--but more importantly from the teacher who, being freed from the drudgery of endless imparting of facts and information, will have the time to devote himself more freely to the humanistic aspects of teaching (58:72; 43:441; 14:60; 10:170; 42:421; 3:204).

There are basically two types of programs used in automatic instructional devices--linear and branching. In one case material is arranged in a single-ordered sequence and every student must proceed from the first through the last item. This is known as "linear" programming. In the other case, more than one sequence or route through the material is arranged and the student follows the sequence determined by his answers. For example, a correct response to one question may lead down a route that skips several questions, while the incorrect reply produces a route on which all questions must be answered. This type of program is called "branching" or "intrinsic" (26:34).

The writer has found that there are proponents of both types of programming. Generally, B. F. Skinner and his followers advocate the linear method which supports his theory that learning can best be accomplished in very small steps which are constantly reinforced. Norman Crowder and others feel that the branching technique is the best and have developed a large series of programs of this type.

The first self-instructional device was developed by Sidney L. Pressey in 1920. This device was designed for testing, but after its use, Mr. Pressey discovered that learning had taken place. This device was supposedly developed from a self-recording device used by Pressey in 1915. After its first introduction, the teaching machine was forgotten about until interest was stimulated by the experiments of B. F. Skinner at Harvard in the mid 50's. Since this time, interest in programmed instruction has grown tremendously (57:35,64; 26:17; 61:15-18).

How can a simple machine or device help a person learn? This is explained in terms of the layman by Kenneth Komoski:

> These psychologists tell us that if students are to learn better, we must arrange subject matter in such small steps that any student can advance from the first to the last of these without hesitation or confusion. We are told also, that the student should proceed at his own pace and that we must guarantee his active participation by getting him to emit a response at each step along the way. One thing, merely implied by Laubach is, however, greatly emphasized by the psychologists. This is the idea that the student should know whether or not he is correct immediately after he makes each required response. It has been demonstrated that this practice of constantly feeding back to the student reports on how he is doing greatly 'reinforces' the learning which has taken place.
>
> A teaching machine then, in a sense, may be thought of as a 'feedback mechanism' or a reinforcement device which tells a student the right answer just as soon as he has composed or selected

> his answer. These devices may also be used to present the step by step arrangement of subject matter called a program . . . (34:10-11).

There are two basic parts to a self-instructional device: the mechanical device or teaching machine, and the programmed material used in the device. The question arises as to whether or not the teaching machine is necessary or could the program be used by itself.

The writer has drawn three conclusions from the literature read on this subject: (1) programmed learning can be accomplished without a machine; (2) the machine, however, is useless without the programmed material; and (3) without a machine there is less control over the learning and cheating could result (27:18; 26:7; 60:255-6).

There are basically two types of programmed materials on the market today. One is the teaching machine and its programs; the other is the programmed text. There are two types of programmed texts--the scrambled-text and the programmed text.

A programmed text is arranged in a sequential manner similar to the linear program with each sequential frame appearing on the next page.

A scrambled-text, on the other hand, is not printed sequentially. Instead, the frames are scattered throughout the book and a student is directed to the appropriate page

according to the answer he gives. This type is similar to the branching method of programming (26:7).

The opinions of educational writers are split between which method of programming to use. Helaine L. Shaw feels that the machine method is preferable and has stated the following:

> Although programmed learning does not have to be used and designed for a teaching machine, the advantages of presenting the materials in this manner are numerous.
>
> Machines keep a continuous score of a student's work and are designed to prevent him from cheating either intentionally or inadvertantly.
>
> The student also benefits from an organized presentation of the subject matter to be learned and the teacher is free for individual instruction.
>
> Programmed learning cannot replace an excellent teacher, but instruction in the average classroom could be improved by it (53:15).

Wilbur Schramm reports the findings of a study in which a comparison of learning achievement was made between the two methods:

> In studies with fourth, eighth, ninth, tenth, and eleventh grade students in three different locations, staff members of the Center for Programmed Instruction, Inc., found no significant differences between amount of learning from a teaching machine and from a similar program presented in a mimeographed programmed book, although it took longer to work through the program on the machine (52:52).

It has been pointed out in several articles that the cost of the book form is considerably less than the machine form of instruction. It was also noted that the present

emphasis in production is upon the book method rather than on machines (26:33; 47:158).

A few comparisons have been made of the effectiveness of the programmed method as compared to the standard method of instruction. The following passage is typical of the many articles written on this subject:

> A growing number of studies reported the results of field tests featuring global comparisons of programmed and conventional instruction. The results of these studies generally tended to favor the program. There is some indication, however, that the student in many of the conventional classes which had a fixed training interval may not have received the same material or may not have used their time as efficiently as they could, because comparisons of programmed lectures, programmed textbooks, and programmed machines yielded no significant differences. In studies comparing conventional and programmed instruction, the programmed groups usually took less training time . . . (54:185).

Most of the installation of teaching machines in the public schools are placed there on an experimental basis. Few schools have installed teaching machines upon their own. Therefore, the effectiveness of programmed instruction in a typical classroom situation has not been proven.

One example of extensive trials in programmed learning is underway in the schools of Weber County, Utah. Among other things, the Weber district has purchased twenty-four Mark II AutoTutors and is presenting 168 students with instruction on these machines. After the first semester's work, Terrel Howard Bell, Superintendent of Weber County

School District evaluates this program in electronics as follows:

> Based upon almost one semester of experience, it appears fairly safe to conclude that the Auto-Tutors have:
>
> (1) Successfully helped the attention and interest of 168 high school students during regular 50 minute periods of instruction;
>
> (2) Relieved the teacher of basic responsibility for being the focal point of instruction;
>
> (3) Provided for individual differences founded by 168 students through extensive branching in the program for the lower slower learners and direct steps of programs with limited branching for the fast learner;
>
> (4) Provided sufficient motivation for students to remain committed to the teaching machine for long periods of time when instructors were not in the room;
>
> (5) Taught basic concepts of electronics to 168 students in the systematic and sequential manner that has provided for steady progress that appears (at mid-point in the year) to show promise for completion of a full year's course;
>
> (6) Allowed talented students with unusual drive and committment to progress to such an extent as to show promist for completion of as much as four semesters of high school electronics subject matter at the conclusion of one year; and
>
> (7) Administered examinations on the machines and successfully moved those students back over material that was not mastered while advancing on to subsequent units those students who demonstrated mastery of the material taught in the various units.
>
> The supervisors and teachers are enthused about the great versatility of the AutoTutors as an instructional device. While conclusions concerning achievement results cannot be made at this time, it is safe to state that the AutoTutor

> has a definite place in the programmed learning movement and will, in all probability, be a most significant aid to teaching in the future of public education (5:109-10).

If results like this are typical of what can be expected in the future, then the writer is sure that programmed instruction is here to stay.

Nearly two hundred private companies are now producing, or planning to produce, teaching machines, programmed books, or both. Conservative estimates are that sales will surpass $100,000,000 before the end of this decade. The cost of most of these books is about $4 while the machines may sell from $20 to $7,000 (61:15-18).

Self-instructional devices offer no magic solution to the problem of learning. A student who has had difficulty learning electronics over the years in school won't suddenly be relieved of the problems that caused him to fall behind. Through these self-instructional devices he will, however, meet with some success and through reinforced learning accomplish much more than he did with the soon to be outmoded methods of instruction.

CHAPTER III

PROJECTED MATERIALS

This type of material is probably the most widely used group of all the instructional materials discussed in this study. Most projected materials possess the characteristic of focusing the attention of the class onto a large, well-lighted screen.

After a thorough search of the three libraries covered in the study, the writer found that no materials were available for the overhead projector, opaque projector, or 8mm projector. Realizing the importance of these machines in the instructional process, the writer decided that it would be necessary to include a sampling of those materials available from commercial distributors in the state of Washington.

Personal interviews were made with the following distributors: Inland Audio-Visual Company, Spokane; Rarigs Audio-Visual Company, Seattle; and Johnson Brothers Record Shop, Seattle. Letters were sent to: Encyclopedia Britannica Films, Inc., Wilmette, Illinois; International Communications Foundation, Monterey Park, California; Educational Services, Inc., Watertown, Massachusetts; and U.S. Industries, Inc., New York 17, New York. Copies of these letters can be found in Appendix E. As a result of these personal interviews and letters, several materials were obtained and

evaluated. The writer hopes that this study will point out the need for adoption of such materials by the libraries included in it.

I. MATERIALS FOR USE ON THE OVERHEAD PROJECTOR

The technique of the overhead projector is rapidly gaining recognition as one of the most flexible methods of visual communication. This is no less true in the teaching of the highly technical subject of electronics--a subject which relies heavily on a thorough understanding of abstract principles and the interrelationship of unseen quantities.

The use of the overhead projector must always function to supplement the teacher--never to replace him.

In this section the writer will present his findings on the evaluation of transparencies for use on the overhead projector obtained from the personal contact made with commercial distributors.

A series of transparency overlays were obtained and evaluated from the electricity section of Keuffel & Esser Company's Diazo Transparency Master Book for Physics and Charles Beseler Company's series of overlays and transparencies on "Basic Electricity."

It was found that the first five transparencies of the Keuffel & Esser Series did not pertain to electronics so these were not included in the study. Of the six

remaining transparencies in this series, none were rejected as not being acceptable.

The average over-all rating for this evaluation was found to be 8.83 or excellent on the rating scale. Only one transparency received a rating below eight.

Of the ten transparencies in the Beseler Series, five were found to pertain only to electricity and were not included in the study. Of the other five, one transparency was found to be unacceptable. The over-all average rating of those evaluated was 7.6 or good on the rating scale. The over-all ratings of this series ranged from ten to five.

A list of those transparencies recommended and not recommended can be found on page 46 of this chapter. The evaluation forms for all transparencies appear in Appendix A.

The R.C.A. Basic Electricity series of transparencies, which is probably the most complete series for teaching electronics, was not available for preview.

II. MATERIALS FOR USE ON THE OPAQUE PROJECTOR

This machine, which can project almost any printed, pictorial, or three dimensional material, is not quite as versatile as the overhead projector but can be used very advantageously in teaching electronics.

The writer found that the libraries were completely void of materials in electronics, other than textbooks, that could be used for projection on this machine. Recommendations for improvements in this area will be made in a later chapter.

III. 16 MILLIMETER FILMS

Through the use of animation, this media can add movement to the otherwise static lifeless illustrations of electron flow and other difficult concepts. The 16mm film is truly an asset to the teaching of electronics.

Of the forty-four films listed under electronics, and radio and television, eight were not applicable to electronics and five were not available for preview. Of the remaining thirty-one films, eight were considered unacceptable by the writer.

The average over-all rating was 7.06 or good on the rating scale. The range of over-all ratings was from ten to two.

It is interesting to note that only 16.13% of the films evaluated were produced after 1950 and that only 6.4% were in color.

A list of recommended and not recommended films can be found on pages 47-48 of this chapter. The evaluation forms on each film appear in Appendix C.

IV. 8 MILLIMETER SINGLE CONCEPT FILMS

This new field is just beginning to be accepted by educators. The libraries participating in this study have not obtained any 8mm single concept films.

The writer had hoped to evaluate at least one set of films on electronics but as yet they have not been made available for evaluation by the commercial distributors.

V. FILMSTRIPS

This very flexible and versatile media has long been used by educators as supplements to their normal instruction. Besides the filmstrips available at the libraries, the writer obtained and evaluated the Basic Electricity series produced by Long Filmslide Company. Three of the eight filmstrips did not pertain to electronics and were not evaluated. The other five strips received an over-all rating of nine or above and were considered acceptable. All of these filmstrips were black and white.

Of the nine filmstrips that were evaluated from the three participating libraries, three were considered unacceptable. One filmstrip received a low rating of two. Of these filmstrips only one had been published after 1950; it was also the only one in color. This means that only 11% of the current filmstrips dealing with electronics in the participating libraries are less than thirteen years

old and in color. The average over-all rating of the filmstrips evaluated was 6.66 or slightly good on the rating scale.

VI. SUMMARY EVALUATION OF PROJECTED MATERIALS

The following lists are the results of the writer's evaluation of projected materials. These lists are grouped by type of material evaluated and each type is then separated in two columns--recommended for use and not recommended for use. Those materials receiving five or less on the over-all evaluation were classed as not recommended; all others were placed in the recommended for use column:

Overhead transparencies.

Recommended	Not Recommended
Circuits (Beseler)	Generators (Beseler)
D.C. Generators and D.C. Motors (K. & E.)	
Electrical Symbols (Beseler)	
Electric Motors (Beseler)	
Electric Motors (K. & E.)	
Generators (K. & E.)	
Self-Induction (K. & E.)	
The Induction Coil (K. & E.)	
The Transformer (K. & E.)	
Transformers (Beseler)	

Opaque Materials. No opaque materials were available for evaluation.

16 millimeter films.

Recommended	Not Recommended
Audio Oscillator Operation	Basic Electricity
Basic Principles of Frequency Modulation	Basic Electronics
Bottle of Magic	Creation and Behavior of Radio Waves
Capacitance	Electrons
Cathode Ray Oscilloscope	Fundamentals of the Antenna
Cathode Ray Tube--How it works	How Television Works
Current and Electromotive Force	Principles of Radio Receivers
Effect of the Ionosphere on Radio Wave Propagation	Signal Generator Operation
Electrons at Work	
Electron Theory	
Inductance	
Periodic Functions	
Principles of Gas Filled Tubes	
Resistance Capacitance (RCL)	
Semi-Conductor I	
Semi-Conductor II	
The Diode: Principles and Applications	

Transistors

Triode Amplification

Vacuum Tubes

Vacuum Tubes: Electron Theory and Diode Tubes

Volt Ohmmeter Operation

8 millimeter single concept films. No 8mm single films were available for evaluation.

Filmstrips.

Recommended	Not Recommended
A.C. Meters (Commercial)	Loop and Trailing Wire Antennae
Audio Frequency Amplification	Radio and Electronic Symbols
Condensers (Commercial)	Tuning
D.C. Meters (Commercial)	
Detection	
Electric Meters	
How Color Television Works	
Reducers	
Resistance (Commercial)	
Transformers (Commercial)	

CHAPTER IV

NON-PROJECTED MATERIALS

I. MODELS

Models are scaled reproductions of an actual object. The libraries participating in the study did not have any models for use in teaching electronics.

II. PICTORIAL MATERIALS

Pictorial materials such as maps, charts, graphs, posters, and diagrams are picture representations of verbal concepts. Again, the libraries participating in the study did not have any of these materials except for those found in magazines and books.

III. SUMMARY EVALUATION OF NON-PROJECTED MATERIALS

Since the libraries did not have any models or pictorial materials, it was not possible to evaluate these items. Recommendations for improvement in this area will be given in a later chapter.

CHAPTER V

SELF-INSTRUCTIONAL MATERIALS

I. ELECTRONIC TEACHING MACHINES

Electronic teaching devices are those teaching machines that are based upon electronic apparatus for their operation and their accompanying programs. The electronic teaching machines evaluated in this study were: the Auto-Tutor and the Mast Teaching Machine. Both devices received an excellent rating of ten. Programs in electronics were not available for the Mast Teaching Machine; therefore, it was not possible to evaluate them. The Mast Teaching Machine has the unique advantage of being adaptable to locally designed programs. A sample form on which the information to be included in each single frame is presented in Appendix D directly following the evaluation of this machine. The manufacturer will develop a set of frames into a program for $20.

The AutoTutor, on the other hand, has a full course in electronics available for use on its machine. Although none of the libraries possessed these programs, the writer obtained them from Scientific Supply in answer to a letter sent to Western Design, the producers of the program. The library at Central Washington State College is planning on purchasing these programs in the near future.

The programs are divided into five volumes; all volumes except the last contain two reels while the last has just one. The writer has evaluated each reel separately and found all of them to be good. Four of the reels received a rating of ten (excellent), two received a rating of nine (low excellent), and only one reel received a rating of five (fair to good). It is the opinion of the writer that this is an excellent program. A list of those machines and programs recommended and not recommended will appear on pages 52-53 of this chapter. The evaluation of each machine appears in Appendix D.

II. NON-ELECTRONIC TEACHING MACHINES

Non-electronic teaching machines are those devices which are not dependent upon electronics in order to accomplish their set goals. In this study the writer has evaluated three non-electronic teaching devices: the Min/Max, the Didak 501, and the Foringer 2002. Except for the Didak all of these received an unacceptable over-all rating. The Min/Max received an over-all rating of three (fair) and the Foringer 2002 received a five (just above fair). It should be pointed out that no programs in electronics were available for the Foringer, and the one program available for the Min/Max received a very high rating of nine. This points out the fact that a machine is sometimes detrimental to the programs it uses. A list of recommended and not

recommended non-electronic devices and accompanying programs in electronics is given on page 53 of this chapter. The actual evaluations of these machines can be found in Appendix D.

III. SCRAMBLED-TEXTS

A scrambled-text is a branching program set in a binding. The only scrambled-text available in electronics was A Tutor Text--Introduction to Electronics by Robert J. Hughes and Peter Pipe. The book was found to be excellent and received a nine (low excellent). The actual evaluation of this text can be found in Appendix D.

A list of other producers of programmed learning devices and what they produce is given in Appendix F. None of these materials were available for evaluation.

IV. SUMMARY EVALUATION OF SELF-INSTRUCTIONAL MATERIALS

Electronic teaching machines.

Recommended	Not Recommended
AutoTutor Mark II	None
Mast Teaching Machine	

Accompanying electronic programs.

Recommended	Not Recommended
Tutorfilm Vol. I. Reels 1 & 2	None

First Year Electronics

Tutorfilm Vol. II. Reels 1 & 2
First Year Electronics

Tutorfilm Vol. III. Reels 1 & 2
First Year Electronics

Tutorfilm Vol. IV. Reels 1 & 2
First Year Electronics

Tutorfilm Vol. V. Reel 1
First Year Electronics

Non-electronic teaching machines.

Recommended	Not Recommended
Didak 501	Foringer 2002
	Min/Max and Answer Mate

Accompanying non-electronic programs.

Recommended	Not Recommended
Fundamentals of Electricity (For use on the Min/Max or as a programmed text)	None

Scrambled-Texts.

Recommended	Not Recommended
Introduction to Electronics	None

CHAPTER VI

SUMMARY AND RECOMMENDATIONS

I. THE SUMMARY

The purposes of this study were: (1) to evaluate those instructional materials for the use in teaching electronics that were available at the libraries of the following educational institutions: Central Washington State College, University of Washington, and Washington State University; (2) to develop a list of available materials that best meet the needs for teaching electronics in grades seven through twelve, and (3) to make note of areas in which adequate materials were not available and to recommend improvements in these areas.

The evaluations for the instructional materials can be found in Appendices A, B, C, and D. Lists of the recommended and not recommended instructional materials are located at the end of each chapter dealing with each type of material.

It was found that the materials available for teaching electronics were old; however, in most cases the information presented was accurate. Very few of the recent principles of color photography, controlled background sounds, etc. were used in the materials evaluated.

Most of the 16mm films that were available were armed services training films from World War II or before. In all the films evaluated, there was an abnormal use of sex affiliations common to most service films.

Some materials were available in most areas of projected materials. However, materials for the new devices--overhead projector, 8mm single concept films, and the opaque projector--were completely void.

The area of non-projected materials had been completely overlooked. The writer was unable to find even a single chart or poster that would exemplify any phase of electronics. Mock-ups and models were also impossible to find.

From the literature reviewed in this study it has been pointed out that it is the obligation of the educational institutions to provide a store of materials with which the teacher can become familiar. Apparently, in the area of electronics this obligation has been forgotten.

II. RECOMMENDATIONS

It is recommended that:

(1) At least one copy of all transparencies available commercially be purchased for use on the campus of each institution included in the study.

(2) At least three or four of each machine--opaque projector, overhead projector, and 8mm movie projector--be

made available for use in the preview section of each library.

(3) An adequate stock of new 8mm single concept films be made available on a rental basis, or at least on a preview basis, to the public schools.

(4) A rejuvenation of the electronics section of the 16mm film libraries be undertaken replacing old films with more recent material.

(5) The filmstrip libraries should be worked-over in such a way as to bring them more up to date.

(6) In the area of non-projected materials, a file should be started for the wealth of free and inexpensive materials available. This doesn't mean that the file should include alot of useless materials. A sizable sum should be budgeted yearly for this project.

(7) At least a few models, possibly built by college electronics students, should be made available in the libraries.

(8) More teaching machines and samples of programmed and scrambled-texts should also be purchased. This would, of course, include accompanying programs for each machine.

The writer realizes that the budgets of the libraries involved in this study are low and out of proportion to their needs. However, if education is expected to improve its means of teaching and increase teacher

efficiency, these recommendations must be accomplished--if not all at once, then one at a time.

BIBLIOGRAPHY

BIBLIOGRAPHY

1. Anderson, Kenneth E., and Edwards, Allen Jack. "The Educational Process and Programmed Instruction," Science Education, 47:21-27, February, 1963.

2. Arnold, W. M. "The N.D.E.A. and Electronics," Industrial Arts and Vocational Education, 50:32, January, 1961.

3. Astor, Martin E. "Machines and Learning," Clearing House, 36:203-5, December, 1961.

4. Baker, William. "Notes on the Opaque Projector, Mass Media, and Group Techniques," Education, 74:110-12, October, 1953.

5. Bell, Terrel Howard. "Teaching Machines and Programmed Learning in Weber County," Journal of Secondary Education, 37:108-11, February, 1962.

6. Bengtson, L. H. "Should Teaching Methods for Industrial Arts Change?" Industrial Arts and Vocational Education, 51:20-22, January, 1962.

7. Berry, Arthur O. "Nine Criteria for Project Selection," Industrial Arts and Vocational Education, 49:30-31, October, 1960.

8. Billings, Hank. "The Technical Electronics Program," Industrial Arts and Vocational Education, 49:38, February, 1960.

9. Boone, James L. "Electricity-Electronics," Industrial Arts and Vocational Education, 51:39-40, December, 1962.

10. Briggs, Leslie J. "Instructional Aids," The Journal of Higher Education, 36:168-70, March, 1963.

11. Brown, George L. "Ideas for a Superior Program in Electricity-Electronics," Industrial Arts and Vocational Education, 52:37-40, February, 1963.

12. Brown, James W., Lewis, Richard B., and Harcleroad, Fred F. AV Instructional Materials and Methods. New York: McGraw-Hill Book Company, Inc., 1959.

13. Buban, Peter. "The New Challenge--Improving Electricity-Electronics Instruction," Industrial Arts and Vocational Education, 52:32-34, February, 1963.

14. Cass, Games. "New Tools for Teaching," Saturday Review, 44:60-61,75, February 18, 1961.

15. Chiverton, William S. "Proper Use of Audio-Visual Materials Enable the Teacher to Save Time and Teach Better," NEA Journal, 48:28-9, March, 1959.

16. _____. "Save Time and Teach Better," NEA Journal, 48:28, March, 1959.

17. Collings, Merle D. Projects in Electricity. Bloomington, Illinois: McKnight and McKnight Publishing Co., 1941.

18. Cornell. "Machines Like Living Things," Business Week, October 8, 1960, pp. 177-78.

19. Dale, Edgar. Audio-Visual Methods in Teaching. New York: Henry Holt Company, Inc., 1959.

20. Devitt, Joseph J. "Getting Your Money's Worth out of Audio-Visual Equipment," Journal of Education, 37:4-6, December, 1954.

21. Educational Services, Inc. Elementary Science Study Film Loop Program. Watertown, Massachusetts: Educational Services, Inc., 1962.

22. Engel, Leonard. "The Wonderful World of Electronics," Science Digest, 51:13-19, January, 1962.

23. Engelbuttson, Sune. "The Search for Direction," The Industrial Arts Teacher, 22:15-18,22, January-February, 1962.

24. "Engineers See a Wave of Dream Products as Electronics State Out the Future," Business Week, April 4, 1953, pp. 27-28.

25. Fite, Robert F. and Wilson, Margaret. "An Opaque Demonstration!" Educational Screen and Audio-Visual Guide, 41:601, October, 1962.

26. Fry, Edward B. Teaching Machines in Programmed Instruction. New York: McGraw-Hill Book Company, Inc., 1953.

27. Galanter, Eugene. "Mechanization of Learning," NEA Journal, 50:16-19, November, 1961.

28. "Glossary--Teaching Machines and Programmed Learning," NEA Journal, 50:15, November, 1961.

29. Groneman, Chris H. Organization Management and Planning for Industrial Arts. Fond Du Loc, Wisconsin: Can-Pro Corporation, 1960.

30. Hackett, Herbert. "The Opaque Projector: Focus on Problems," Education, 76:493, April, 1956.

31. Hansen, Viggo P. "New Uses for the Overhead Projector," Mathematics Teacher, 53:467-69, October, 1960.

32. Harrison, O. S. "Automation and Industrial Arts," Industrial Arts and Vocational Education, 50:20-21, November, 1961.

33. Haynes, Merritt W. "Visual Aids as the Teacher Educator Sees Them," Industrial Arts and Vocational Education, 44:321-23, December, 1955.

34. Komoski, Kenneth. "Call it 'Programmed Instruction'--Not a Teaching Machine!" Mid-Hudson Channel, 10:9-13, January, 1961.

35. Knowlton, Archer E., (ed.). Standard Handbook of Electrical Engineers. New York: McGraw-Hill Book Company, Inc., 1949.

36. Kowitz, G. T. "Problems in Teacher Utilization," American School Board Journal, 138:24-26, February, 1959.

37. Lawson, Richard G. "Audio-Visuals in Industrial Education," Industrial Arts and Vocational Education, 50:39-42, February, 1961.

38. Lemley, Joe W. "Drafting," Industrial Arts and Vocational Education, 51:36-37, December, 1962.

39. Mainwearing, Mary. "Small Packages that Bring Big Results with Filmstrips," Educational Screen and Audio-Visual Guide, 36:576, December, 1957.

40. McGovern, Troyce D. "Development of Electronics," Industrial Arts and Vocational Education, 48:220, September, 1959.

41. Mitchell, Agnes W. "The Field of Electronics," Clearing House, 34:208-10, December, 1959.

42. Ohles, John F. "An Approach to Machine Teaching," School and Society, 88:440-41, November 19, 1960.

43. _____. "Machine Teaching," School and Society, 88:440-41, November 19, 1960.

44. Orpaz, Nathan and Omidan, Giora. "An Electronics Demonstration Board," School Science and Mathematics, 62:253-60, April, 1962.

45. Reeves, Dorothy. "Making Good Teaching Better Through Selected Teaching Aids," Business Education Forum, 14:10-13, February, 1960.

46. Richards, Maurice F. "Sputnik Education for Industrial Arts," Industrial Arts and Vocational Education, 47:213-14, September, 1958.

47. Ruslin, Harry N. "New Media as Aids to Learning," School and Society, 90:158, April 7, 1962.

48. Sanborn, William B. "Our Future Stake in Instructional Looks," Educational Screen and Audio-Visual Guide, 38:538-41, December, 1959.

49. Sands, Lester B. "The Overhead Projector," The Grade Teacher, 75:52-118, November, 1957.

50. Sarnoff, David. "Electronic Revolution, Present and Future," New York Times Magazine, September 30, 1956, p. 14.

51. Schramm, Howard R. "Chalkboard Techniques," Industrial Arts and Vocational Education, 43:275, October, 1953.

52. Schramm, Wilbur. Programmed Instruction. Library of Congress, the Fund for the Advancement of Education. Washington D.C.: Government Printing Office, November, 1961.

53. Shaw, Helaine L. "Programmed Learning and the Teaching Machine," School and Community, 49:14-15, December, 1962.

54. Silberman, Harry F. "Comparisons with Conventional Instruction," Review of Educational Research, 32:185-86, April, 1962.

55. Simons. "Industrial Educators and A-V Aids," Industrial Arts and Vocational Education, 53:25, April, 1962.

56. Slade, Mark. "8mm the Eight Lively Art," Educational Screen and Audio-Visual Guide, 40:598-99, October, 1962.

57. Smith, Wendell I., and Moore, J. William. Programmed Learning. Princeton, New Jersey: D. Van Nostrand Company, Inc., 1962.

58. Snider, Robert C. "Teaching Machines," Nation's Schools, 67:70-73.

59. Starr, Cecile. "The Protean Canvas," Saturday Review, 37:40-42.

60. Stolurow, Lawrence M. "Let's Be Informed on Programmed Instruction," Phi Delta Kappan, 44:255-57, March, 1963.

61. "The Truth About Teaching Machines," Changing Times, 16:15-18, February, 1962.

62. Valkenburgh, Van, Nooger and Neville, Inc. Basic Electricity, Volume I. New York: John F. Rider Publishers, Inc., 1954.

63. Warner, N. W. "Overhead Projectors for Teaching Drafting," Industrial Arts and Vocational Education, 42:350-53, December, 1953.

64. Washcoe, W. C. "The Versatile Overhead Projector," Educational Screen and Audio-Visual Guide, 37:242-44, May, 1959.

65. White, Don. "Tools for Learning," Nation's Schools, 67:65-67, February, 1961.

66. White, F. A. "The Opaque Projector--A Real Aid," Education, 77:290-92, January, 1957.

67. Zbar, Paul B. "Training Electronic Technicians," School Shop, 21:10-12,18, November, 1961.

APPENDIX A

EVALUATIONS OF OVERHEAD PROJECTOR TRANSPARENCIES

RECOMMENDED

COMMERCIAL

PROJECTED MATERIALS APPRAISAL

Exact Title AC GENERATOR (K & E Physics Series)

Material Type Transparency Producer Keuffel & Esser

Length ___ Minutes 7 Frames Source Inland Audio-Visual Co.

B/W___ Color X Production Date 1962 Rental Cost For purchase only

Type of Sound:

Background_____ Dialogue_____

Narration _____ Silent XX

Learning outcomes which help student achievement:

Specific facts retained X Interest increased X

Basic ideas understood _____ Attitudes clarified_____

Generalizations formed _____ Others_____

Unit for which the use is recommended AC Generator

Recommended Vocabulary Level . . . K___P___I___J___S___C None

Recommended Conceptual Level . . . K___P___I___J X S X C X

Recommended Interest Level . . . . K___P___I___J X S X C___

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . (YES) NO

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	(8)	9 10

Wrong color selection

Use of animation and illustrations:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Sound:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 10

None

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Organization:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Thought provoking:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Complete with review:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

AVERAGE TECHNICAL AND EDUCATIONAL RATING 9.5

OVER-ALL EVALUATION:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

COMMERCIAL

PROJECTED MATERIALS APPRAISAL

Exact Title CIRCUITS

Material Type Transparency Producer Charles Beseler Co.

Length ___ Minutes 3 Frames Source Inland Audio-Visual Co.

B/W ___ Color X Production Date 1960 Rental Cost For purchase only

Type of Sound:

Background _____ Dialogue _____

Narration _____ Silent X

Learning outcomes which help student achievement:

Specific facts retained X Interest increased X

Basic ideas understood _____ Attitudes clarified _____

Generalizations formed _____ Others _____

Unit for which the use is recommended Series and Parallel Circuits

Recommended Vocabulary Level . . . K___P___I___J___S___C None

Recommended Conceptual Level . . . K___P___I___J X S X C___

Recommended Interest Level . . . . K___P___I___J X S X C___

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . (YES) NO

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	9 (10)

Use of animation and illustrations:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	(9) 10

Sound:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	9 10

None

Educationally Well Produced:

Continuity:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	9 (10)

Organization:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	9 (0)

Thought provoking:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	(9) 10

Complete with review:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	9 (10)

AVERAGE TECHNICAL AND EDUCATIONAL RATING 9.67

OVER-ALL EVALUATION:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	9 (10)

COMMERCIAL

PROJECTED MATERIALS APPRAISAL

Exact Title DC GENERATOR & DC MOTOR (K & E Physics Series)

Material Type Transparency Producer Keuffel & Esser

Length ___ Minutes 7 Frames Source Inland Audio-Visual Co.

B/W___ Color X Production Date 1962 Rental Cost For purchase only.

Type of Sound:

Background_____ Dialogue_____

Narration _____ Silent _____X_____

Learning outcomes which help student achievement:

Specific facts retained X Interest increased X

Basic ideas understood _____ Attitudes clarified_____

Generalizations formed _____ Others_____

Unit for which the use is recommended DC Generators and Motors

Recommended Vocabulary Level . . . K___P___I___J___S___C None

Recommended Conceptual Level . . . K___P___I___J X S X C X

Recommended Interest Level . . . . K___P___I___J X S X C___

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . (YES) NO

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	9 (10)

Use of animation and illustrations:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	9 (10)

Sound:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	9 10

None

Educationally Well Produced:

Continuity:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	(9) 10

Organization:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	9 (10)

Thought provoking:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	9 (10)

Complete with review:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	(9) 10

AVERAGE TECHNICAL AND EDUCATIONAL RATING 9.83

OVER-ALL EVALUATION:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	9 (10)

COMMERCIAL

PROJECTED MATERIALS APPRAISAL

Exact Title **ELECTRIC METERS**

Material Type **Transparency** Producer **Charles Beseler Co.**

Length ___ Minutes **1** Frames Source **Inland Audio-Visual Co.**

B/W___ Color **X** Production Date **1960** Rental Cost **For purchase only**

Type of Sound:

Background_____ Dialogue_____

Narration _____ Silent **X**

Learning outcomes which help student achievement:

Specific facts retained____ Interest increased **X**

Basic ideas understood ____ Attitudes clarified____

Generalizations formed **X** Others_____

Unit for which the use is recommended **Watt hour meters**

Recommended Vocabulary Level . . . K___P___I___J___S___C **None**

Recommended Conceptual Level . . . K___P___I___J **X** S **X** C___

Recommended Interest Level . . . . K___P___I___J **X** S **X** C___

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . (YES) NO

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good		Excellent		
0	1	2	3	4	5	6	(7)	8	9	10

Use of animation and illustrations:

Poor			Fair			Good		Excellent		
0	1	2	3	4	5	(6)	7	8	9	10

Sound:

Poor			Fair			Good		Excellent		
0 None	1	2	3	4	5	6	7	8	9	10

Educationally Well Produced:

Continuity:

Poor			Fair			Good		Excellent		
0	1	2	3	4	5	6	7	(8)	9	10

Organization:

Poor			Fair			Good		Excellent		
0	1	2	3	4	5	6	7	8	(9)	10

Thought provoking:

Poor			Fair			Good		Excellent		
0	1	2	3	4	5	6	7	8	(9)	10

Complete with review:

Poor			Fair			Good		Excellent		
0	1	2	3	4	5	6	7	8	9	(10)

AVERAGE TECHNICAL AND EDUCATIONAL RATING 8.5

OVER-ALL EVALUATION:

Poor			Fair			Good		Excellent		
0	1	2	3	4	5	6	7	(8)	9	10

COMMERCIAL

PROJECTED MATERIALS APPRAISAL

Exact Title ELECTRIC METERS (K & E Physics Series)

Material Type Transparency Producer Keuffel & Esser

Length ___ Minutes 4 Frames Source Inland Audio-Visual Co.

B/W ___ Color X Production Date 1962 Rental Cost For purchase only

Type of Sound:

Background _____ Dialogue _____

Narration _____ Silent X

Learning outcomes which help student achievement:

Specific facts retained X Interest increased X

Basic ideas understood X Attitudes clarified _____

Generalizations formed _____ Others _____

Unit for which the use is recommended AC & DC Meters

Recommended Vocabulary Level . . . K P I J S C None

Recommended Conceptual Level . . . K P I J X S X C X

Recommended Interest Level . . . . K P I J X S X C

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . (YES) NO

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Use of animation and illustrations:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Sound:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 10
None									

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Organization:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Thought provoking:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Complete with review:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

AVERAGE TECHNICAL AND EDUCATIONAL RATING 9.67

OVER-ALL EVALUATION:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

COMMERCIAL

PROJECTED MATERIALS APPRAISAL

Exact Title ELECTRICAL SYMBOLS

Material Type Transparency Producer Charles Beseler Co.

Length ___ Minutes 2 Frames Source Inland Audio-Visual Co.

B/W___ Color X Production Date 1960 Rental Cost For purchase only.

Type of Sound:

Background_____ Dialogue_____

Narration _____ Silent X

Learning outcomes which help student achievement:

Specific facts retained X Interest increased X

Basic ideas understood _____ Attitudes clarified_____

Generalizations formed _____ Others_____

Unit for which the use is recommended Symbols

Recommended Vocabulary Level . . . K___P___I___J X S X C___

Recommended Conceptual Level . . . K___P___I___J X S X C___

Recommended Interest Level . . . . K___P___I___J X S X C___

Is the content presented truthfully, accurately, and up to date? . . . . . YES (NO)

Letters not given for meters.

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . (YES) NO

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor		Fair			Good		Excellent	
0 1	2	3 4		5	6 7	(8)	9	10

Use of animation and illustrations:

Poor		Fair			Good		Excellent	
0 1	2	3 4		5	6 7	8	(9)	10

Sound:

Poor		Fair			Good		Excellent	
0 1	2	3 4		5	6 7	8	9	10

None

Educationally Well Produced:

Continuity:

Poor		Fair			Good		Excellent	
0 1	2	3 4		5	6 7	8	9	(10)

Organization:

Poor		Fair			Good		Excellent	
0 1	2	3 4		5	6	(7)	8 9	10

Symbols should be numbered

Thought provoking:

Poor		Fair			Good		Excellent	
0 1	2	3 4		5	6 7	8	9	(10)

Complete with review:

Poor		Fair			Good		Excellent	
0 1	2	3 4		5	6 7	8	9	(10)

AVERAGE TECHNICAL AND EDUCATIONAL RATING 9.0

OVER-ALL EVALUATION:

Poor		Fair			Good		Excellent	
0 1	2	3 4		5	(6)	7	8 9	10

COMMERCIAL

PROJECTED MATERIALS APPRAISAL

Exact Title SELF INDUCTION (K & E Physics Series)

Material Type Transparency Producer Keuffel & Esser

Length ___ Minutes 4 Frames Source Inland Audio-Visual Co.

B/W ___ Color X Production Date 1962 Rental Cost For purchase only

Type of Sound:

Background _____ Dialogue _____

Narration _____ Silent X

Learning outcomes which help student achievement:

Specific facts retained X Interest increased X

Basic ideas understood _____ Attitudes clarified _____

Generalizations formed _____ Others _____

Unit for which the use is recommended Induction

Recommended Vocabulary Level . . . K___P___I___J___S___C None

Recommended Conceptual Level . . . K___P___I___J X S X C X

Recommended Interest Level . . . . K___P___I___J X S X C X

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . (YES) NO

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Use of animation and illustrations:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Sound:

Poor			Fair			Good			Excellent
0 None	1	2	3	4	5	6	7	8	9 10

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Organization:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Thought provoking:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Complete with review:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

AVERAGE TECHNICAL AND EDUCATIONAL RATING 10

OVER-ALL EVALUATION:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

COMMERCIAL

PROJECTED MATERIALS APPRAISAL

Exact Title THE INDUCTION COIL (K & E Physics Series)

Material Type Transparency Producer Keuffel & Esser

Length ___ Minutes 3 Frames Source Inland Audio-Visual Co.

B/W___ Color X Production Date 1962 Rental Cost For purchase only.

Type of Sound:

Background_____ Dialogue_____

Narration _____ Silent X

Learning outcomes which help student achievement:

Specific facts retained X Interest increased X

Basic ideas understood X Attitudes clarified_____

Generalizations formed _____ Others_____

Unit for which the use is recommended Coils

Recommended Vocabulary Level . . . K___P___I___J___S___C None

Recommended Conceptual Level . . . K___P___I___J X S X C___

Recommended Interest Level . . . . K___P___I___J X S X C___

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . (YES) NO

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Use of animation and illustrations:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Sound:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 10

None

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Organization:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	(7)	8	9 10

Thought provoking:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Complete with review:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

AVERAGE TECHNICAL AND EDUCATIONAL RATING 8.83

OVER-ALL EVALUATION:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	(8)	9 10

COMMERCIAL

PROJECTED MATERIALS APPRAISAL

Exact Title THE TRANSFORMER (K & E Physics Series)

Material Type Transparency Producer Keuffel & Esser

Length ___ Minutes 3 Frames Source Inland Audio-Visual Co.

B/W ___ Color X Production Date 1962 Rental Cost For purchase only

Type of Sound:

Background _____ Dialogue _____

Narration _____ Silent X

Learning outcomes which help student achievement:

Specific facts retained ___ Interest increased ___

Basic ideas understood X Attitudes clarified ___

Generalizations formed X Others _____

Unit for which the use is recommended Transformers

Recommended Vocabulary Level . . . K___P___I___J___S___C None

Recommended Conceptual Level . . . K___P___I___J X S X C___

Recommended Interest Level . . . . K___P___I___J X S X C___

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . (YES) NO

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Use of animation and illustrations:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	(6)	7	8	9 10

Sound:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 10

None

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Organization:

Poor			Fair			Good			Excellent
0	(1)	2	3	4	5	6	7	8	9 10

Thought provoking:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	(7)	8	9 10

Complete with review:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

AVERAGE TECHNICAL AND EDUCATIONAL RATING 7.33

OVER-ALL EVALUATION:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	(6)	7	8	9 10

COMMERCIAL

PROJECTED MATERIALS APPRAISAL

Exact Title TRANSFORMERS

Material Type Transparency Producer Charles Beseler Co.

Length ___ Minutes 3 Frames Source Inland Audio-Visual Co.

B/W___ Color X Production Date 1960 Rental Cost For purchase only

Type of Sound:

Background_____ Dialogue_____

Narration _____ Silent XX

Learning outcomes which help student achievement:

Specific facts retained X Interest increased X

Basic ideas understood _____ Attitudes clarified_____

Generalizations formed _____ Others_____

Unit for which the use is recommended Transformers

Recommended Vocabulary Level . . . K___P___I___J___S___C None

Recommended Conceptual Level . . . K___P___I___J X S X C X

Recommended Interest Level . . . . K___P___I___J X S X C___

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . (YES) NO

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Use of animation and illustrations:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Sound:

Poor			Fair			Good			Excellent
0 None	1	2	3	4	5	6	7	8	9 10

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Organization:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	(8)	9 10

Should name parts of step up

Thought provoking:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	(8)	9 10

Complete with review:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (0)

AVERAGE TECHNICAL AND EDUCATIONAL RATING 9.0

OVER-ALL EVALUATION:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

NOT RECOMMENDED

COMMERCIAL

PROJECTED MATERIALS APPRAISAL

Exact Title GENERATOR

Material Type Transparency Producer Charles Beseler Co.

Length ___ Minutes 3 Frames Source Inland Audio-Visual Co.

B/W ___ Color X Production Date 1960 Rental Cost For Purchase only

Type of Sound:

Background _____ Dialogue _____

Narration _____ Silent X

Learning outcomes which help student achievement:

Specific facts retained ___ Interest increased ___

Basic ideas understood X Attitudes clarified ___

Generalizations formed X Others _____

Unit for which the use is recommended Generators

Recommended Vocabulary Level . . . K___P___I___J___S___C___None

Recommended Conceptual Level . . . K___P___I___J X S X C X

Recommended Interest Level . . . . K___P___I___J X S X C___

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . (YES) NO

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good			Excellent
0 1	2		3 4	5		6 7	8	(9)	10

Use of animation and illustrations:

Poor			Fair			Good			Excellent
0 1	2		3 (4)	5		6 7	8	9	10

Sound:

Poor			Fair			Good			Excellent
0 1	2		3 4	5		6 7	8	9	10
None									

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent
0 1	2		3 (4)	5		6 7	8	9	10

Organization:

Poor			Fair			Good			Excellent
0 1	2		3 (4)	5		6 7	8	9	10

Thought provoking:

Poor			Fair			Good			Excellent
0 1	2		3 4	(5)		6 7	8	9	10

Complete with review:

Poor			Fair			Good			Excellent
0 1	2		3 4	5		6 7	(8)	9	10

AVERAGE TECHNICAL AND EDUCATIONAL RATING 6.33

OVER-ALL EVALUATION:

Poor			Fair			Good			Excellent
0 1	2		3 4	(5)		6 7	8	9	10

APPENDIX B

EVALUATIONS OF 16 MILLIMETER FILMS

RECOMMENDED

PROJECTED MATERIALS APPRAISAL

Exact Title AUDIO OSCILLATOR OPERATION

Material Type 16 mm Producer United States Navy

Length 9 Minutes ___ Frames Source U. of W., W.S.U.

B/W X Color ___ Production Date 1949 Rental Cost $1.50

Type of Sound:

Background Introduction Dialogue ___

Narration X Silent ___

Learning outcomes which help student achievement:

Specific facts retained X Interest increased ___

Basic ideas understood X Attitudes clarified ___

Generalizations formed ___ Others ___

Unit for which the use is recommended Use of Audio Oscillator

Recommended Vocabulary Level . . . K ___ P ___ I ___ J ___ S X C X

Recommended Conceptual Level . . . K ___ P ___ I ___ J ___ S X C X

Recommended Interest Level . . . . K ___ P ___ I ___ J ___ S X C X

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . YES (NO)

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Use of animation and illustrations:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6 (7)		8	9 10

Sound:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Organization:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Thought provoking:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	(8)	9 10

Complete with review:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Sectional reviews

AVERAGE TECHNICAL AND EDUCATIONAL RATING 7.57

OVER-ALL EVALUATION:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	(8)	9 10

PROJECTED MATERIALS APPRAISAL

Exact Title BASIC PRINCIPLES OF FREQUENCY MODULATION

Material Type 16 mm Producer United States Army

Length 30 Minutes ___ Frames Source U. of W.

B/W X Color ___ Production Date 1947 Rental Cost $2.25

Type of Sound:

Background X Dialogue Some

Narration X Silent ___

Learning outcomes which help student achievement:

Specific facts retained X Interest increased ___

Basic ideas understood X Attitudes clarified ___

Generalizations formed ___ Others ___

Unit for which the use is recommended Advantages of FM over AM, Frequency Modulation, Production, Amplification, Transmission, and Reception

Recommended Vocabulary Level . . . K ___ P ___ I ___ J ___ S ___ C X

Recommended Conceptual Level . . . K ___ P ___ I ___ J ___ S X C X

Recommended Interest Level . . . . K ___ P ___ I ___ J ___ S X C X

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . YES (NO)

Are too many concepts presented? . . . . . (YES) NO

Is the length appropriate for the concepts that are presented? . . . . . YES (NO)

Technical Quality:

Use of good camera technique:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	6	(7)	8	9	10

Use of animation and illustrations:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	6	7	(8)	9	10

Sound:

Poor			Fair			Good		Excellent	
0	1	2	3	4	(5)	6	7	8	9	10

Static, Breaks

Educationally Well Produced:

Continuity:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	6	7	8	(9)	10

Organization:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	6	7	8	(9)	10

Thought provoking:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	(6)	7	8	9	10

Complete with review:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	6	7	8	9	(10)

Section review

AVERAGE TECHNICAL AND EDUCATIONAL RATING 7.71

OVER-ALL EVALUATION:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	6	(7)	8	9	10

To advanced for high school
Uses of "hell" and "damn"

PROJECTED MATERIALS APPRAISAL

Exact Title BOTTLE OF MAGIC

Material Type 16 mm Producer Western Electric

Length 14 Minutes ___ Frames Source U. of W.

B/W X Color ___ Production Date 1952 Rental Cost $1.25

Type of Sound:

Background X Dialogue Some

Narration X Silent ___

Learning outcomes which help student achievement:

Specific facts retained ___ Interest increased X

Basic ideas understood X Attitudes clarified ___

Generalizations formed X Others ___

Unit for which the use is recommended General History of Electron Tube

Recommended Vocabulary Level . . . K ___ P ___ I ___ J ___ S X C ___

Recommended Conceptual Level . . . K ___ P ___ I ___ J ___ S X C X

Recommended Interest Level . . . . K ___ P ___ I ___ J ___ S X C ___

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . YES (NO)

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Use of animation and illustrations:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Sound:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Organization:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Thought provoking:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Complete with reviews

Poor			Fair			Good			Excellent
0	1	2	3	4	5	(6)	7	8	9 10

AVERAGE TECHNICAL AND EDUCATIONAL RATING 8.86

OVER-ALL EVALUATION:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

PROJECTED MATERIALS APPRAISAL

Exact Title CAPACITANCE

Material Type 16 mm Producer United States Navy

Length 31 Minutes ___ Frames Source C.W.S.C., W.S.U.

B/W X Color ___ Production Date 1943 Rental Cost $1.00

Type of Sound:

Background ___ Dialogue ___

Narration X Silent ___

Learning outcomes which help student achievement:

Specific facts retained X Interest increased ___

Basic ideas understood X Attitudes clarified ___

Generalizations formed ___ Others ___

Unit for which the use is recommended Ohms Law, Capacitors, and Capacitance

Recommended Vocabulary Level . . . K ___ P ___ I ___ J ___ S X C X

Recommended Conceptual Level . . . K ___ P ___ I ___ J ___ S X C X

Recommended Interest Level . . . . K ___ P ___ I ___ J ___ S X C X

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . YES (NO)

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Use of animation and illustrations:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Sound:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	(8)	9 10

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Organization:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Thought provoking:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	(7)	8	9 10

Complete with review:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	(6)	7	8	9 10

AVERAGE TECHNICAL AND EDUCATIONAL RATING 8.43

OVER-ALL EVALUATION:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Divided into two parts. Second part, TIME CONSTANT OF CAPACITORS. Could be shown in two parts.

PROJECTED MATERIALS APPRAISAL

Exact Title CATHODE RAY OSCILLOSCOPE

Material Type 16 mm Producer Jan Handy and United States Navy

Length 20 Minutes ___ Frames Source U. of W., W.S.U.

B/W X Color ___ Production Date 1944 Rental Cost $1.75

Type of Sound:

Background _____ Dialogue _____

Narration X Silent _____

Learning outcomes which help student achievement:

Specific facts retained X Interest increased _____

Basic ideas understood X Attitudes clarified _____

Generalizations formed _____ Others _____

Unit for which the use is recommended Oscilloscope Operation and Review

Recommended Vocabulary Level . . . K___P___I___J___S___C X

Recommended Conceptual Level . . . K___P___I___J___S X C X

Recommended Interest Level . . . . K___P___I___J___S___C X

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Old equipment and materials

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . YES (NO)

Are too many concepts presented? . . . . . (YES) NO

Could be cut into sections explaining each circuit of the scope

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Must be introduced very carefully

Best for review

Technical Quality:

Use of good camera technique:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	(6)	7	8	9	10

Use of animation and illustrations:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	7	8	(9)	10

Sound:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	7	(8)	9	10

Breaks in sound

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	7	8	(9)	10

Organization:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	7	8	9	(10)

Thought provoking:

Poor			Fair			Good			Excellent	
0	1	2	3	4	(5)	6	7	8	9	10

Complete with reviews:

Poor			Fair			Good			Excellent	
0	1	2	3	(4)	5	6	7	8	9	10

Visual only, inadequate

AVERAGE TECHNICAL AND EDUCATIONAL RATING 8.14

OVER-ALL EVALUATION:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	(6)	7	8	9	10

Advanced classes only

PROJECTED MATERIALS APPRAISAL

Exact Title CATHODE RAY TUBE--HOW IT WORKS

Material Type 16 mm Producer United States Navy

Length 11 Minutes ___ Frames Source C.W.S.C., U. of W., W.S.U.

B/W X Color ___ Production Date 1943 Rental Cost $1.75

Type of Sound:

Background ___ Dialogue ___

Narration X Silent ___

Learning outcomes which help student achievement:

Specific facts retained X Interest increased ___

Basic ideas understood X Attitudes clarified ___

Generalizations formed ___ Others ___

Unit for which the use is recommended Construction of Oscillope, and Cathode Ray Tubes

Recommended Vocabulary Level . . . K ___ P ___ I ___ J ___ S X C X

Recommended Conceptual Level . . . K ___ P ___ I ___ J ___ S X C X

Recommended Interest Level . . . . K ___ P ___ I ___ J ___ S X C X

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO
Out-dated staging

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . YES (NO)

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Use of animation and illustrations:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Sound:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Static

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Organization:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Thought provoking:

Poor			Fair			Good			Excellent
0	1	2	3	4	(5)	6	7	8	9 10

Complete with review.

Poor			Fair			Good			Excellent
0	1	(2)	3	4	5	6	7	8	9 10

Sectional reviews inadequate

AVERAGE TECHNICAL AND EDUCATIONAL RATING 6.43

OVER-ALL EVALUATION:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	(8)	9 10

PROJECTED MATERIALS APPRAISAL

Exact Title CURRENT AND ELECTROMOTIVE FORCE

Material Type 16 mm Producer United States Navy

Length 10 Minutes ___ Frames Source C.W.S.C., W.S.U.

B/W X Color ___ Production Date 1945 Rental Cost $1.50

Type of Sound:

Background Introduction Dialogue ___

Narration X Silent ___

Learning outcomes which help student achievement:

Specific facts retained ___ Interest increased ___

Basic ideas understood X Attitudes clarified ___

Generalizations formed X Others ___

Unit for which the use is recommended Electron Flow, Electricity Review, and Factors Effecting Current Flow

Recommended Vocabulary Level . . . K ___ P ___ I ___ J X S X C ___

Recommended Conceptual Level . . . K ___ P ___ I ___ J ___ S X C X

Recommended Interest Level . . . . K ___ P ___ I ___ J X S X C ___

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . YES (NO)

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	6	7	(8)	9	10

Use of animation and illustrations:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	6	7	8	(9)	10

Sound:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	6	7	(8)	9	10

Educationally Well Produced:

Continuity:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	6	7	(8)	9	10

Organization:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	6	7	8	(9)	10

Thought provoking:

Poor			Fair			Good		Excellent	
0	1	2	3	4	(5)	6	7	8	9	10

Complete with reviews:

Poor			Fair			Good		Excellent	
0	1	2	3	4	(5)	6	7	8	9	10

AVERAGE TECHNICAL AND EDUCATIONAL RATING 7.43

OVER-ALL EVALUATION:

Poor			Fair			Good		Excellent	
0	1	2	3	4	(5)	6	7	8	9	10

PROJECTED MATERIALS APPRAISAL

Exact Title EFFECT OF THE IONOSPHERE ON RADIO WAVE PROPAGATION

Material Type 16 mm Producer United World Films

Length 39 Minutes ___ Frames Source C.W.S.C.

B/W X Color ___ Production Date 1950 Rental Cost $2.50

Type of Sound:

Background _____ Dialogue Some

Narration X Silent _____

Learning outcomes which help student achievement:

Specific facts retained X Interest increased _____

Basic ideas understood X Attitudes clarified _____

Generalizations formed _____ Others _____

Unit for which the use is recommended Ionosphere, and Radio Transmission

Recommended Vocabulary Level . . . K ___ P ___ I ___ J ___ S ___ C X

Recommended Conceptual Level . . . K ___ P ___ I ___ J ___ S ___ C X

Recommended Interest Level . . . . K ___ P ___ I ___ J ___ S ___ C X

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . (YES) NO

Are too many concepts presented? . . . . . (YES) NO

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Use of animation and illustrations:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Sound:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	(7)	8	9 10

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	(8)	9 10

Organization:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Thought provoking:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	(7)	8	9 10

Complete with review.

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	(8)	9 10

Unit Review

AVERAGE TECHNICAL AND EDUCATIONAL RATING 8.14

OVER-ALL EVALUATION:

Poor			Fair			Good			Excellent
0	1	2	3	4	(5)	6	7	(8)	9 10

Electronics Non-electronic

PROJECTED MATERIALS APPRAISAL

Exact Title ELECTRONS AT WORK

Material Type 16 mm Producer Encyclopedia Britannica Films, Inc.

Length 14 Minutes ___ Frames Source W.S.U.

B/W ___ Color X Production Date 1961 Rental Cost $3.40

Type of Sound:

Background Introduction Dialogue ___

Narration X Silent ___

Learning outcomes which help student achievement:

Specific facts retained ___ Interest increased X

Basic ideas understood X Attitudes clarified X

Generalizations formed X Others ___

Unit for which the use is recommended Television, Basic Operations of Tubes, Electron Flow, and Static Electricity

Recommended Vocabulary Level . . . K ___ P ___ I ___ J X S X C ___

Recommended Conceptual Level . . . K ___ P ___ I ___ J X S X C ___

Recommended Interest Level . . . . K ___ P ___ I ___ J X S X C ___

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . (YES) NO

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Use of animation and illustrations:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Sound:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Organization:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Thought provoking:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Complete with reviews

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

AVERAGE TECHNICAL AND EDUCATIONAL RATING 10

OVER-ALL EVALUATION:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

PROJECTED MATERIALS APPRAISAL

Exact Title ELECTRON THEORY

Material Type 16 mm Producer United States Navy & Wilding Picture Production, Inc.

Length 5 Minutes ___ Frames Source W.S.U.

B/W X Color ___ Production Date 1954 Rental Cost $1.50

Type of Sound:

Background ___ Dialogue ___

Narration X Silent ___

Learning outcomes which help student achievement:

Specific facts retained X Interest increased ___

Basic ideas understood ___ Attitudes clarified ___

Generalizations formed X Others ___

Unit for which the use is recommended Current Flow

Recommended Vocabulary Level . . . K ___ P ___ I ___ J X S X C ___

Recommended Conceptual Level . . . K ___ P ___ I ___ J ___ S X C X

Recommended Interest Level . . . . K ___ P ___ I ___ J ___ S X C X

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . YES (NO)

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Use of animation and illustrations:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Sound:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Organization:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	(8)	9 10

Thought provoking:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Complete with reviews

Poor			Fair			Good			Excellent
(0) None	1	2	3	4	5	6	7	8	9 10

AVERAGE TECHNICAL AND EDUCATIONAL RATING 8.0

OVER-ALL EVALUATION:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	(7)	8	9 10

PROJECTED MATERIALS APPRAISAL

Exact Title INDUCTANCE

Material Type 16 mm Producer Burton Holmes, Inc. & United States Navy

Length ___ Minutes ___ Frames Source C.W.S.C., U. OF W., W.S.U. U.S. Navy

B/W X Color ___ Production Date 1943 Rental Cost $2.50

Type of Sound:

Background ___ Dialogue ___

Narration X Silent ___

Learning outcomes which help student achievement:

Specific facts retained X Interest increased X

Basic ideas understood X Attitudes clarified ___

Generalizations formed ___ Others ___

Unit for which the use is recommended Inductance, Reactance, and Coils

Recommended Vocabulary Level . . . K___P___I___J___S X C___

Recommended Conceptual Level . . . K___P___I___J___S X C X

Recommended Interest Level . . . . K___P___I___J X S X C X

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . (YES) NO

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	9 (10)

Use of animation and illustrations:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	9 (10)

Sound:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	9 (10)

Educationally Well Produced:

Continuity:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	9 (10)

Organization:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	9 (10)

Thought provoking:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	9 (10)

Complete with reviews

Poor		Fair		Good		Excellent
(0) 1	2	3 4	5	6 7	8	9 10
None						

AVERAGE TECHNICAL AND EDUCATIONAL RATING 8.57

OVER-ALL EVALUATION:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	(9) 10

Divided into two parts. Second part, TIME CONSTANT OF INDUCTORS. Could be shown in parts.

PROJECTED MATERIALS APPRAISAL

Exact Title OSCILLATORS

Material Type 16 mm Producer United States Navy

Length 10 Minutes ___ Frames Source U. of W., W.S.U.

B/W X Color ___ Production Date 1945 Rental Cost $1.75

Type of Sound:

Background _____ Dialogue Some

Narration X Silent _____

Learning outcomes which help student achievement:

Specific facts retained X Interest increased X

Basic ideas understood X Attitudes clarified _____

Generalizations formed _____ Others _____

Unit for which the use is recommended Oscillating Circuits, Tank Circuits, Grid Leak, and Frequency Control

Recommended Vocabulary Level . . . K ___ P ___ I ___ J X S X C ___

Recommended Conceptual Level . . . K ___ P ___ I ___ J ___ S X C X

Recommended Interest Level . . . . K ___ P ___ I ___ J ___ S X C X

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . YES (NO)

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Use of animation and illustrations:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Sound:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Organization:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Thought provoking:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Complete with review:

Poor			Fair			Good			Excellent
(0)	1	2	3	4	5	6	7	8	9 10

None

AVERAGE TECHNICAL AND EDUCATIONAL RATING 8.14

OVER-ALL EVALUATION:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	(8)	9 10

Made for servicemen
Some scenes contain a slant toward girls and sex

PROJECTED MATERIALS APPRAISAL

Exact Title PERIODIC FUNCTIONS

Material Type 16 mm Producer United States Navy

Length 17 Minutes ___ Frames Source U. of W., W.S.U.

B/W X Color ___ Production Date 1943 Rental Cost $1.75

Type of Sound:

Background ___ Dialogue Some

Narration X Silent ___

Learning outcomes which help student achievement:

Specific facts retained X Interest increased X

Basic ideas understood X Attitudes clarified ___

Generalizations formed ___ Others ___

Unit for which the use is recommended Vectors, Trig Functions, Plotting, and Phase Angles

Recommended Vocabulary Level . . . K___P___I___J_X_S_X_C___

Recommended Conceptual Level . . . K___P___I___J___S_X_C_X_

Recommended Interest Level . . . . K___P___I___J___S_X_C_X_

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . YES (NO)

Are too many concepts presented? . . . . . (YES) NO
Could be broken down

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Use of animation and illustrations:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Sound:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	(8)	9 10

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Organization:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Thought provoking:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	(8)	9 10

Complete with review:

Poor			Fair			Good			Excellent
0	1	2	3	(4)	5	6	7	8	9 10

Slight review

AVERAGE TECHNICAL AND EDUCATIONAL RATING 8.29

OVER-ALL EVALUATION:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	(8)	9 10

Uses of "Hell of"

PROJECTED MATERIALS APPRAISAL

Exact Title PRINCIPLES OF GAS FILLED TUBES

Material Type 16 mm Producer United States Office of Engineers

Length 15 Minutes ___ Frames Source C.W.S.C., U. of W.

B/W X Color ___ Production Date 1943 Rental Cost $2.00

Type of Sound:

Background _____ Dialogue _____

Narration X Silent _____

Learning outcomes which help student achievement:

Specific facts retained X Interest increased _____

Basic ideas understood X Attitudes clarified _____

Generalizations formed _____ Others _____

Unit for which the use is recommended Gas Filled Tubes, and Tubes

Recommended Vocabulary Level . . . K ___ P ___ I ___ J ___ S X C X

Recommended Conceptual Level . . . K ___ P ___ I ___ J ___ S X C X

Recommended Interest Level . . . . K ___ P ___ I ___ J ___ S X C X

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . (YES) NO

Are too many concepts presented? . . . . . (YES) NO
Could be stopped and re-started

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	(7)	8	9 10

Use of animation and illustrations:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Sound:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Organization:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Thought provoking:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	(6)	7	8	9 10

Complete with review.

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

AVERAGE TECHNICAL AND EDUCATIONAL RATING 7.14

OVER-ALL EVALUATION:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

PROJECTED MATERIALS APPRAISAL

Exact Title RESISTANCE CAPACITANCE (RCL)

Material Type 16 mm Producer United States Navy

Length 18 Minutes ___ Frames Source C.W.S.C., U. of W., W.S.U.

B/W X Color___ Production Date 1944 Rental Cost $1.00

Type of Sound:

Background_____ Dialogue_____

Narration X Silent _____

Learning outcomes which help student achievement:

Specific facts retained X Interest increased_____

Basic ideas understood X Attitudes clarified_____

Generalizations formed _____ Others_____

Unit for which the use is recommended Resistance, and Capacitance, Inductance, Resonance

Recommended Vocabulary Level . . . K___P___I___J___S_X_C_X

Recommended Conceptual Level . . . K___P___I___J___S_X_C_X

Recommended Interest Level . . . . K___P___I___J___S___C_X

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . YES (NO)

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	(9) 10

Use of animation and illustrations:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	9 (10)

Sound:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	(9) 10

Educationally Well Produced:

Continuity:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	(9) 10

Organization:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	9 (10)

Thought provoking:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	(6) 7	8	9 10

Complete with review:

Poor		Fair		Good		Excellent
(0) 1	2	3 4	5	6 7	8	9 10

AVERAGE TECHNICAL AND EDUCATIONAL RATING 7.43

OVER-ALL EVALUATION:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	(8)	9 10

Highly technical

PROJECTED MATERIALS APPRAISAL

Exact Title SEMI CONDUCTORS I

Material Type 16 mm Producer Bray Studios

Length 21 Minutes ___ Frames Source C.W.S.C.

B/W X Color ___ Production Date N.G. Rental Cost $3.25

Type of Sound:

Background Introduction Dialogue ___

Narration X Silent ___

Learning outcomes which help student achievement:

Specific facts retained X Interest increased Some

Basic ideas understood X Attitudes clarified ___

Generalizations formed ___ Others ___

Unit for which the use is recommended How Diode Crystals & Triode Transistors Work

Recommended Vocabulary Level . . . K ___ P ___ I ___ J ___ S X C X

Recommended Conceptual Level . . . K ___ P ___ I ___ J ___ S X C X

Recommended Interest Level . . . . K ___ P ___ I ___ J ___ S X C X

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . YES (NO)

Are too many concepts presented? . . . . . YES (NO)
Background in Electronics necessary

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Use of animation and illustrations:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Sound:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	(8)	9 10

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Organization:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Thought provoking:

Poor			Fair			Good			Excellent
0	1	2	3	4	(5)	6	7	8	9 10

Complete with review:

Poor			Fair			Good			Excellent
0	1	2	(3)	4	5	6	7	8	9 10

AVERAGE TECHNICAL AND EDUCATIONAL RATING 7.57

OVER-ALL EVALUATION:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

PROJECTED MATERIALS APPRAISAL

Exact Title SEMI CONDUCTORS II

Material Type 16 mm Producer Bray Studios

Length 22 Minutes ___ Frames Source C.W.S.C.

B/W X Color ___ Production Date N.G. Rental Cost $3.25

Type of Sound:

Background Introduction Dialogue ___

Narration XX Silent ___

Learning outcomes which help student achievement:

Specific facts retained X Interest increased ___

Basic ideas understood X Attitudes clarified ___

Generalizations formed ___ Others ___

Unit for which the use is recommended Transistors, Low Frequency Amplifiers, Meaning of N, P, PNP, & NPN Types

Recommended Vocabulary Level . . . K ___ P ___ I ___ J ___ S ___ C X+

Recommended Conceptual Level . . . K ___ P ___ I ___ J ___ S ___ C X+

Recommended Interest Level . . . . K ___ P ___ I ___ J ___ S ___ C X+

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . YES (NO)

Are too many concepts presented? . . . . . (YES) NO

Excellent electronic background necessary

Is the length appropriate for the concepts that are presented? . . . . . YES (NO)

Technical Quality:

Use of good camera technique:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	(8)	9 10

Use of animation and illustrations:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	(8)	9 10

Sound:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 (7)	8	9 10

Echo

Educationally Well Produced:

Continuity:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	(8)	9 10

Organization:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 (7)	8	9 10

Thought provoking:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	(6) 7	8	9 10

Complete with review:

Poor		Fair		Good		Excellent
0 (1)	2	3 4	5	6 7	8	9 10

AVERAGE TECHNICAL AND EDUCATIONAL RATING 6.43

OVER-ALL EVALUATION:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 (7)	8	9 10

Use of lecture method poor

PROJECTED MATERIALS APPRAISAL

Exact Title THE DIODE: PRINCIPLES AND APPLICATIONS

Material Type 16 mm Producer United States Office of Engineers

Length 17 Minutes ___ Frames Source C.W.S.C., U. of W., W.S.U.

B/W X Color ___ Production Date 1945 Rental Cost $2.00

Type of Sound:

Background _____ Dialogue _____

Narration X Silent _____

Learning outcomes which help student achievement:

Specific facts retained X Interest increased _____

Basic ideas understood X Attitudes clarified _____

Generalizations formed _____ Others _____

Unit for which the use is recommended Diode Tube, Duo Diode, and Electron Flow in Space

Recommended Vocabulary Level . . . K___P___I___J___S_X_C_X

Recommended Conceptual Level . . . K___P___I___J___S_X_C_X

Recommended Interest Level . . . . K___P___I___J___S_X_C_X

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . YES (NO)

Are too many concepts presented? . . . . . (YES) NO
Should be cut shorter or used in parts for high school

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor		Fair			Good		Excellent	
0 1	2	3	4	5	6	7	8	(9) 10

Use of animation and illustrations:

Poor		Fair			Good		Excellent	
0 1	2	3	4	5	6	7	8	(9) 10

Sound:

Poor		Fair			Good		Excellent	
0 1	2	3	4	5	6	(7)	8	9 10

Educationally Well Produced:

Continuity:

Poor		Fair			Good		Excellent	
0 1	2	3	4	5	6	7	8	(9) 10

Organization:

Poor		Fair			Good		Excellent	
0 1	2	3	4	5	6	7	(8)	9 10

Thought provoking:

Poor		Fair			Good		Excellent	
0 1	2	3	4	(5)	6	7	8	9 10

Complete with review:

Poor		Fair			Good		Excellent	
0 1	2	3	4	5	(6)	7	8	9 10

AVERAGE TECHNICAL AND EDUCATIONAL RATING 7.57

OVER-ALL EVALUATION:

Poor		Fair			Good		Excellent	
0 1	2	3	4	5	6	(7)	8	9 10

PROJECTED MATERIALS APPRAISAL

Exact Title TRANSISTORS

Material Type 16 mm Producer Bell Telephone

Length 10 Minutes ___ Frames Source U. of W., W.S.U.

B/W X Color ___ Production Date 1953 Rental Cost $1.25

Type of Sound:

Background X Dialogue ___

Narration X Silent ___

Learning outcomes which help student achievement:

Specific facts retained ___ Interest increased X

Basic ideas understood X Attitudes clarified ___

Generalizations formed X Others ___

Unit for which the use is recommended Transistors, History of Electronics

Recommended Vocabulary Level . . . K ___ P ___ I ___ J ___ S X C ___

Recommended Conceptual Level . . . K ___ P ___ I ___ J X S X C ___

Recommended Interest Level . . . . K ___ P ___ I ___ J X S X C X

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Outdated staging

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . YES (NO)

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good			Excellent
0 1	2		3 4	5		6 7	8		9 (10)

Use of animation and illustrations:

Poor			Fair			Good			Excellent
0 1	2		3 4	5		6 7	8		9 10

Sound: none

Poor			Fair			Good			Excellent
0 1	2		3 4	5		6 7	8		9 (10)

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent
0 1	2		3 4	5		6 7	8		9 (10)

Organization:

Poor			Fair			Good			Excellent
0 1	2		3 4	5		6 7	8		9 (10)

Thought provoking:

Poor			Fair			Good			Excellent
0 1	2		3 4	5		6 7	(8)		9 10

Complete with review:

Poor			Fair			Good			Excellent
0 1	2		3 4	(5)		6 7	8		9 10

AVERAGE TECHNICAL AND EDUCATIONAL RATING 8.83

OVER-ALL EVALUATION:

Poor			Fair			Good			Excellent
0 1	2		3 4	5		6 7	8		(9) 10

Non-technical

PROJECTED MATERIALS APPRAISAL

Exact Title TRIODOE AMPLIFICATION

Material Type 16 mm Producer United States Office of Enginners

Length 14 Minutes ___ Frames Source U. of W.

B/W X Color ___ Production Date 1945 Rental Cost $1.25

Type of Sound:

Background _____ Dialogue _____

Narration X Silent _____

Learning outcomes which help student achievement:

Specific facts retained X Interest increased _____

Basic ideas understood X Attitudes clarified _____

Generalizations formed _____ Others _____

Unit for which the use is recommended Triode Tube, Triode Amplification (AC and DC)

Recommended Vocabulary Level . . . K___P___I___J___S___C___

Recommended Conceptual Level . . . K___P___I___J___S___C___

Recommended Interest Level . . . . K___P___I___J___S___C___

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . YES (NO)

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	(7)	8	9	10

Use of animation and illustrations:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	(7)	8	9	10

Sound:

Poor			Fair			Good			Excellent	
0	1	2	3	(4)	5	6	7	8	9	10

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	7	(8)	9	10

Organization:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	7	(8)	9	10

Thought provoking:

Poor			Fair			Good			Excellent	
0	1	2	3	4	(5)	6	7	8	9	10

Complete with review:

Poor			Fair			Good			Excellent	
0	1	2	3	4	(5)	6	7	8	9	10

AVERAGE TECHNICAL AND EDUCATIONAL RATING 6.29

OVER-ALL EVALUATION:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	(7)	8	9	10

PROJECTED MATERIALS APPRAISAL

Exact Title VACUUM TUBES

Material Type 16 mm Producer Erpi Classroom Films

Length 9 Minutes ___ Frames Source W.S.U.

B/W X Color ___ Production Date 1943 Rental Cost $2.50

Type of Sound:

Background ___ Dialogue ___

Narration X Silent ___

Learning outcomes which help student achievement:

Specific facts retained X Interest increased ___

Basic ideas understood X Attitudes clarified ___

Generalizations formed ___ Others ___

Unit for which the use is recommended Vacuum Tubes, Triode Amplification, Detection, and Transmission

Recommended Vocabulary Level . . . K___P___I___J___S X C___

Recommended Conceptual Level . . . K___P___I___J___S X C X

Recommended Interest Level . . . . K___P___I___J___S X C___

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . YES (NO)

Are too many concepts presented? . . . . . (YES) NO

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Use of animation and illustrations:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Sound:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	(8)	9 10

Variations in volume

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Organization:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Thought provoking:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	(6)	7	8	9 10

Complete with reviews:

Poor			Fair			Good			Excellent
(0)	1	2	3	4	5	6	7	8	9 10

none

AVERAGE TECHNICAL AND EDUCATIONAL RATING 7.28

OVER-ALL EVALUATION:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	(6)	7	8	9 10

PROJECTED MATERIALS APPRAISAL

Exact Title VACUUM TUBES: ELECTRON THEORY AND DIODE TUBES

Material Type 16 mm Producer Castle

Length 16 Minutes ___ Frames Source C.W.S.C.

B/W X Color ___ Production Date 1945 Rental Cost $1.75

Type of Sound:

Background Introduction Dialogue ___

Narration X Silent ___

Learning outcomes which help student achievement:

Specific facts retained X Interest increased Some

Basic ideas understood X Attitudes clarified ___

Generalizations formed ___ Others ___

Unit for which the use is recommended Vacuum, Diode Tubes

Recommended Vocabulary Level . . . K___P___I___J___S X C___

Recommended Conceptual Level . . . K___P___I___J___S X C X

Recommended Interest Level . . . . K___P___I___J___S X C___

Is the content presented truthfully, accurately, and up to date? . . . . . YES (NO)
Stating "electrons are invisible" is poor

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . YES (NO)

Are too many concepts presented? . . . . . (YES) NO
Could cut out diode and duo diode and study separately

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	6	7	(8)	9	10

Use of animation and illustrations:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	6	7	8	(9)	10

Sound:

Poor			Fair			Good		Excellent	
0	1	2	3	4	(5)	6	7	8	9	10

Introduction poor

Educationally Well Produced:

Continuity:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	6	7	(8)	9	10

Organization:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	6	7	(8)	9	10

Thought provoking:

Poor			Fair			Good		Excellent	
0	1	2	3	(4)	5	6	7	8	9	10

Complete with reviews

Poor			Fair			Good		Excellent	
0	1	2	3	(4)	5	6	7	8	9	10

AVERAGE TECHNICAL AND EDUCATIONAL RATING 6.57

OVER-ALL EVALUATION:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	6	7	8	(9)	10

PROJECTED MATERIALS APPRAISAL

Exact Title VOLT OHMMETER OPERATIONS

Material Type 16 mm Producer United States Navy

Length 15 Minutes ___ Frames Source W.S.U.

B/W X Color ___ Production Date 1944 Rental Cost $1.00

Type of Sound:

Background Some Dialogue Some

Narration X Silent ___

Learning outcomes which help student achievement:

Specific facts retained X Interest increased X

Basic ideas understood X Attitudes clarified ___

Generalizations formed ___ Others ___

Unit for which the use is recommended VOM, Electron Flow, and Ohms Law

Recommended Vocabulary Level . . . K P I J S X C X

Recommended Conceptual Level . . . K P I J S X C X

Recommended Interest Level . . . . K P I J S X C X

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . YES (NO)

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	9 (10)

Use of animation and illustrations:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	(9) 10

Sound:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	9 (10)

Volume low

Educationally Well Produced:

Continuity:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	9 (10)

Organization:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	9 (10)

Thought provoking:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 (7)	8	9 10

Complete with review

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	9 (10)

Good section reviews

AVERAGE TECHNICAL AND EDUCATIONAL RATING 9.43

OVER-ALL EVALUATION:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	(9) 10

Shows some good non-projected materials to use
Use of "damn good conductors," "damn things"

NOT RECOMMENDED

PROJECTED MATERIALS APPRAISAL

Exact Title BASIC ELECTRICITY

Material Type 16 mm Producer United States Air Force

Length 19 Minutes ___ Frames Source U. of W.

B/W ___ Color X Production Date 1944 Rental Cost $3.75

Type of Sound:

Background Introduction Dialogue ___

Narration X Silent ___

Learning outcomes which help student achievement:

Specific facts retained X Interest increased X

Basic ideas understood X Attitudes clarified ___

Generalizations formed ___ Others ___

Unit for which the use is recommended Current Flow, Introduction to Electricity

Recommended Vocabulary Level . . . K___P___I___J X S___C___

Recommended Conceptual Level . . . K___P___I___J X S X C___

Recommended Interest Level . . . . K___P___I___J X S___C___

Is the content presented truthfully, accurately, and up to date? . . . . . YES (NO)

Poor explanation of inductance
Current instead of electron flow

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . YES (NO)

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	6	7	(8)	9	10

Use of animation and illustrations:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	7	8	9	(10)

Sound:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	6	7	(8)	9	10

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	7	8	(9)	10

Organization:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	(7)	8	9	10

Thought provoking:

Poor			Fair			Good			Excellent	
0	1	2	3	4	(5)	6	7	8	9	10

Complete with review:

Poor			Fair			Good			Excellent	
0	1	2	3	(4)	5	6	7	8	9	10

AVERAGE TECHNICAL AND EDUCATIONAL RATING 7.29

OVER-ALL EVALUATION:

Poor			Fair			Good			Excellent	
0	1	2	3	(4)	5	6	7	8	9	10

PROJECTED MATERIALS APPRAISAL

Exact Title BASIC ELECTRONICS

Material Type 16 mm Producer Walt Disney

Length 18 Minutes ___ Frames Source U. of W.

B/W___ Color X Production Date 1944 Rental Cost $3.50

Type of Sound:

Background Introduction Dialogue ____

Narration X Silent ____

Learning outcomes which help student achievement:

Specific facts retained ____ Interest increased ____

Basic ideas understood X Attitudes clarified ____

Generalizations formed X Others ____

Unit for which the use is recommended Electron Theory, Vacuum Tubes, and Amplification

Recommended Vocabulary Level . . . K___P___I X J X S X C___

Recommended Conceptual Level . . . K___P___I___J X S X C X

Recommended Interest Level . . . . K___P___I X J X S X C___

Is the content presented truthfully, accurately, and up to date? . . . . . YES (NO)

Tends to give a false impression

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . YES (NO)

Are too many concepts presented? . . . . . (YES) NO

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Should be used as a follow-up of film "Basic Electricity"

Technical Quality:

Use of good camera technique:

Poor		Fair		Good		Excellent
0 (1)	2	3 4	5	6 7	8	9 10

Poor visibility, color selection poor, poorly developed

Use of animation and illustrations:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 (7)	8	9 10

Sound:

Poor		Fair		Good		Excellent
0 1	2	3 4	(5)	6 7	8	9 10

Static, poor tone, breaks in sound

Educationally Well Produced:

Continuity:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 (7)	8	9 10

Organization:

Poor		Fair		Good		Excellent
0 1	2	3 4	(5)	6 7	8	9 10

Thought provoking:

Poor		Fair		Good		Excellent
0 1	2	(3) 4	5	6 7	8	9 10

Complete with review:

Poor		Fair		Good		Excellent
(0) 1	2	3 4	5	6 7	8	9 10

None

AVERAGE TECHNICAL AND EDUCATIONAL RATING 4.14

OVER-ALL EVALUATION:

Poor		Fair		Good		Excellent
0 1	2	3 (4)	5	6 7	8	9 10

PROJECTED MATERIALS APPRAISAL

Exact Title CREATION AND BEHAVIOR OF RADIO WAVES

Material Type 16 mm Producer United States Army

Length 12 Minutes ___ Frames Source C.W.S.C., U. of W., W.S.U.

B/W X Color ___ Production Date 1942 Rental Cost $1.50

Type of Sound:

Background Introduction Dialogue ___

Narration X Silent ___

Learning outcomes which help student achievement:

Specific facts retained ___ Interest increased ___

Basic ideas understood X Attitudes clarified ___

Generalizations formed X Others ___

Unit for which the use is recommended Radio Waves, and Transmissions

Recommended Vocabulary Level . . . K___P___I___J___S_X_C_X_

Recommended Conceptual Level . . . K___P___I___J___S_X_C_X_

Recommended Interest Level . . . . K___P___I___J___S___C_X_

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Referral to vacuum tube as radio tube

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . YES (NO)

Are too many concepts presented? . . . . . (YES) NO

Is the length appropriate for the concepts that are presented? . . . . . YES (NO)

Technical Quality:

Use of good camera technique:

Poor			Fair			Good		Excellent		
0	1	2	3	4	5	6	7	(8)	9	10

Use of animation and illustrations:

Poor			Fair			Good		Excellent		
0	1	2	3	4	5	6	7	8	(9)	10

Sound:

Poor			Fair			Good		Excellent		
0	1	2	3	4	5	6	(7)	8	9	10

Educationally Well Produced:

Continuity:

Poor			Fair			Good		Excellent		
0	1	2	3	4	5	6	(7)	8	9	10

Organization:

Poor			Fair			Good		Excellent		
0	1	2	3	4	5	6	(7)	8	9	10

Thought provoking:

Poor			Fair			Good		Excellent		
0	1	(2)	3	4	5	6	7	8	9	10

Complete with review:

Poor			Fair			Good		Excellent		
(0)	1	2	3	4	5	6	7	8	9	10

AVERAGE TECHNICAL AND EDUCATIONAL RATING 5.71

OVER-ALL EVALUATION:

Poor			Fair			Good		Excellent		
0	1	2	(3)	4	5	6	7	8	9	10

PROJECTED MATERIALS APPRAISAL

Exact Title ELECTRONS

Material Type 16 mm Producer ~~Encyclopedia Britannica~~ Films, Inc.

Length 11 Minutes ___ Frames Source ~~C.W.S.C., U. of W., W.~~ S.U.

B/W X Color ___ Production Date 1937 Rental Cost $2.50

Type of Sound:

Background _____ Dialogue _____

Narration X Silent _____

Learning outcomes which help student achievement:

Specific facts retained ___ Interest increased ___

Basic ideas understood ___ Attitudes clarified ___

Generalizations formed X Others Poor, too fast

Unit for which the use is recommended Vacuum Tubes, Electron Flow

Recommended Vocabulary Level . . . K P I J S C X

Recommended Conceptual Level . . . K P I J S C X

Recommended Interest Level . . . . K P I J S C X

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . YES (NO)

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . YES (NO)

Technical Quality:

Use of good camera technique:

Poor		Fair		Good		Excellent
0 (1)	2	3 4	5	6 7	8	9 10

Use of animation and illustrations:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 (7)	8	9 10

Sound:

Poor		Fair		Good		Excellent
0 1	2	3 4	(5)	6 7	8	9 10

Educationally Well Produced:

Continuity:

Poor		Fair		Good		Excellent
0 1	2	3 (4)	5	6 7	8	9 10

Organization:

Poor		Fair		Good		Excellent
0 1	2	3 4	(5)	6 7	8	9 10

Thought provoking:

Poor		Fair		Good		Excellent
0 1	2	3 (4)	5	6 7	8	9 10

Complete with reviews

Poor		Fair		Good		Excellent
0 1	2	3 4	(5)	6 7	8	9 10

AVERAGE TECHNICAL AND EDUCATIONAL RATING 4.43

OVER-ALL EVALUATION:

Poor		Fair		Good		Excellent
0 1	(2)	3 4	5	6 7	8	9 10

Too advanced

PROJECTED MATERIALS APPRAISAL

Exact Title FUNDAMENTALS OF THE ANTENNA

Material Type 16 mm Producer Signal Corps

Length 13 Minutes ___ Frames Source U. of W.

B/W X Color ___ Production Date 1942 Rental Cost $1.25

Type of Sound:

Background Introduction Dialogue ___

Narration X Silent ___

Learning outcomes which help student achievement:

Specific facts retained X Interest increased ___

Basic ideas understood X Attitudes clarified ___

Generalizations formed ___ Others ___

Unit for which the use is recommended Antenna

Recommended Vocabulary Level . . . K P I J S C X

Recommended Conceptual Level . . . K P I J S C X

Recommended Interest Level . . . . K P I J S C X

Is the content presented truthfully, accurately, and up to date? . . . . . YES (NO)
Staging outdated

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . YES (NO)

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good			Excellent	
0	1	(2)	3	4	5	6	7	8	9	10

Use of animation and illustrations:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	(6)	7	8	9	10

Sound:

Poor			Fair			Good			Excellent	
0	1	2	3	4	(5)	6	7	8	9	10

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	(7)	8	9	10

Organization:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	(7)	8	9	10

Thought provoking:

Poor			Fair			Good			Excellent	
0	1	2	(3)	4	5	6	7	8	9	10

Complete with review:

Poor			Fair			Good			Excellent	
0	1	(2)	3	4	5	6	7	8	9	10

AVERAGE TECHNICAL AND EDUCATIONAL RATING 4.29

OVER-ALL EVALUATION:

Poor			Fair			Good			Excellent	
0	1	2	3	(4)	5	6	7	8	9	10

PROJECTED MATERIALS APPRAISAL

Exact Title HOW TELEVISION WORKS

Material Type 16 mm Producer United World

Length 10 Minutes ___ Frames Source W.S.U.

B/W X Color___ Production Date 1952 Rental Cost $2.75

Type of Sound:

Background X Dialogue ___

Narration X Silent ___

Learning outcomes which help student achievement:

Specific facts retained ___ Interest increased ___

Basic ideas understood X Attitudes clarified ___

Generalizations formed X Others ___

Unit for which the use is recommended Television

Recommended Vocabulary Level . . . K___P___I___J___S___C___

Recommended Conceptual Level . . . K___P___I___J___S___C___

Recommended Interest Level . . . . K___P___I___J___S___C___

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . YES (NO)

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	(6)	7	8	9	10

Use of animation and illustrations:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	7	8	(9)	10

Sound:

Poor			Fair			Good			Excellent	
0	1	2	(3)	4	5	6	7	8	9	10

Volume tapers off at conclusion of each narration

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	7	(8)	9	10

Organization:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	(7)	8	9	10

Thought provoking:

Poor			Fair			Good			Excellent	
0	1	2	3	(4)	5	6	7	8	9	10

Complete with reviews

Poor			Fair			Good			Excellent	
(0)	1	2	3	4	5	6	7	8	9	10

AVERAGE TECHNICAL AND EDUCATIONAL RATING 5.29

OVER-ALL EVALUATION:

Poor			Fair			Good			Excellent	
0	1	2	3	(4)	5	6	7	8	9	10

British narration

PROJECTED MATERIALS APPRAISAL

Exact Title PRINCIPLES OF RADIO RECEIVERS

Material Type 16 mm Producer United States Army

Length 17 Minutes ___ Frames Source W.S.U.

B/W XX Color ___ Production Date 1945 Rental Cost $2.25

Type of Sound:

Background Introduction Dialogue ___

Narration X Silent ___

Learning outcomes which help student achievement:

Specific facts retained ___ Interest increased ___

Basic ideas understood ___ Attitudes clarified ___

Generalizations formed X Others ___

Unit for which the use is recommended Radio Circuits, Crystals, Detectors, and Amplifiers

Recommended Vocabulary Level . . . K ___ P ___ I ___ J ___ S X C X

Recommended Conceptual Level . . . K ___ P ___ I ___ J ___ S X C X

Recommended Interest Level . . . . K ___ P ___ I ___ J ___ S X C X

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Symbols not up to date

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . YES (NO)

Are too many concepts presented? . . . . . (YES) NO

Could be divided into sections by circuits

Is the length appropriate for the concepts that are presented? . . . . . YES (NO)

Technical Quality:

Use of good camera technique:

Poor			Fair			Good		Excellent		
0	1	2	3	4	5	6	7	(8)	9	10

Use of animation and illustrations:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	7	8	9	(10)

Sound:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	7	8	(9)	10

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent	
0	1	2	3	4	(5)	6	7	8	9	10

Organization:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	(6)	7	8	9	10

Thought provoking:

Poor			Fair			Good			Excellent	
(0)	1	2	3	4	5	6	7	8	9	10

Complete with review:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	(6)	7	8	9	10

Section Reviews

AVERAGE TECHNICAL AND EDUCATIONAL RATING 6.29

OVER-ALL EVALUATION:

Poor			Fair			Good			Excellent	
0	1	2	3	(4)	5	6	7	8	9	10

Background of circuits is necessary
Good for review

PROJECTED MATERIALS APPRAISAL

Exact Title SIGNAL GENERATOR OPERATION

Material Type 16 mm Producer United States Navy

Length 10 Minutes ___ Frames Source W.S.U.

B/W X Color ___ Production Date 1944 Rental Cost $1.00

Type of Sound:

Background ___ Dialogue Some

Narration X Silent ___

Learning outcomes which help student achievement:

Specific facts retained ___ Interest increased ___

Basic ideas understood X Attitudes clarified ___

Generalizations formed ___ Others Poor

Unit for which the use is recommended Superhetherdrone Signal Generator

Recommended Vocabulary Level . . . K ___ P ___ I ___ J ___ S X C X

Recommended Conceptual Level . . . K ___ P ___ I ___ J ___ S ___ C X

Recommended Interest Level . . . . K ___ P ___ I ___ J ___ S ___ C X

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO
Poor content

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . YES (NO)

Are too many concepts presented? . . . . . (YES) NO

Is the length appropriate for the concepts that are presented? . . . . . YES (NO)

Technical Quality:

Use of good camera technique:

Poor			Fair			Good			Excellent
0	1	2	3	4	(5)	6	7	8	9 10

Use of animation and illustrations:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	(7)	8	9 10

Sound:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	(6)	7	8	9 10

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent
0	1	2	3	4	(5)	6	7	8	9 10

Organization:

Poor			Fair			Good			Excellent
0	1	2	3	4	(5)	6	7	8	9 10

Thought provoking:

Poor			Fair			Good			Excellent
(0)	1	2	3	4	5	6	7	8	9 10

Complete with reviews

Poor			Fair			Good			Excellent
0	1	2	(3)	4	5	6	7	8	9 10

Some section reviews

AVERAGE TECHNICAL AND EDUCATIONAL RATING 4.43

OVER-ALL EVALUATION:

Poor			Fair			Good			Excellent
0	1	2	3	4	(5)	6	7	8	9 10

Use of "hells bells"
Too advanced for high school

APPENDIX C

EVALUATIONS OF FILMSTRIPS

RECOMMENDED

COMMERCIAL

PROJECTED MATERIALS APPRAISAL

Exact Title AC METERS

Material Type Filmstrip Producer Long Filmslide Service

Length ___ Minutes 31 Frames Source Inland Audio-Visual Co.

B/W XX Color___ Production Date NG Rental Cost For Purchase only.

Type of Sound:

Background_____ Dialogue_____

Narration _____ Silent X

Learning outcomes which help student achievement:

Specific facts retained X Interest increased X

Basic ideas understood X Attitudes clarified_____

Generalizations formed _____ Others_____

Unit for which the use is recommended AC meters

Recommended Vocabulary Level . . . K___P___I___J___S X C___

Recommended Conceptual Level . . . K___P___I___J___S X C X

Recommended Interest Level . . . . K___P___I___J___S X C___

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . (YES) NO

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Use of animation and illustrations:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Sound:

Poor			Fair			Good			Excellent
0 None	1	2	3	4	5	6	7	8	9 10

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Organization:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Thought provoking:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Complete with review:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

AVERAGE TECHNICAL AND EDUCATIONAL RATING 9.33

OVER-ALL EVALUATION:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

PROJECTED MATERIALS APPRAISAL

Exact Title AUDIO FREQUENCY AMPLIFICATION

Material Type Filmstrip Producer Jim Handy

Length ___ Minutes NG Frames Source W.S.U.

B/W X Color ___ Production Date NG Rental Cost NG

Type of Sound:

Background _____ Dialogue _____

Narration _____ Silent X

Learning outcomes which help student achievement:

Specific facts retained X Interest increased _____

Basic ideas understood X Attitudes clarified _____

Generalizations formed _____ Others _____

Unit for which the use is recommended Audio Amplifiers

Recommended Vocabulary Level . . . K ___ P ___ I ___ J X S X C ___

Recommended Conceptual Level . . . K ___ P ___ I ___ J ___ S X C X

Recommended Interest Level . . . . K ___ P ___ I ___ J ___ S X C X

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . YES (NO)

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Use of animation and illustrations:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Sound:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 10

None

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Organization:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Thought provoking:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Complete with review:

Poor			Fair			Good			Excellent
(0)	1	2	3	4	5	6	7	8	9 10

None

AVERAGE TECHNICAL AND EDUCATIONAL RATING 9.4

OVER-ALL EVALUATION:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	(8)	9 10

COMMERCIAL

PROJECTED MATERIALS APPRAISAL

Exact Title CONDENSERS

Material Type Filmstrip Producer Long Filmslide Service

Length ___ Minutes 28 Frames Source Inland Audio-Visual Co.

B/W X Color ___ Production Date NG Rental Cost For Purchase only

Type of Sound:

Background _____ Dialogue _____

Narration _____ Silent X

Learning outcomes which help student achievement:

Specific facts retained XX Interest increased XX

Basic ideas understood XX Attitudes clarified _____

Generalizations formed _____ Others _____

Unit for which the use is recommended Condensers

Recommended Vocabulary Level . . . K___P___I___J___S X C___

Recommended Conceptual Level . . . K___P___I___J___S X C X

Recommended Interest Level . . . . K___P___I___J___S X C___

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . (YES) NO

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	9 (10)

Use of animation and illustrations:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	(9) 10

Sound:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	9 10

None

Educationally Well Produced:

Continuity:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	9 (10)

Organization:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	(9) 10

Thought provoking:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	9 (10)

Complete with review:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	9 (10)

AVERAGE TECHNICAL AND EDUCATIONAL RATING 9.67

OVER-ALL EVALUATION:

Poor		Fair		Good		Excellent
0 1	2	3 4	5	6 7	8	9 (10)

COMMERCIAL

PROJECTED MATERIALS APPRAISAL

Exact Title DC METERS

Material Type Filmstrip Producer Long Filmslide Service

Length ___ Minutes 43 Frames Source Inland Audio-Visual Co.

B/W X Color ___ Production Date NG Rental Cost For purchase only

Type of Sound:

Background _____ Dialogue _____

Narration _____ Silent X

Learning outcomes which help student achievement:

Specific facts retained X Interest increased X

Basic ideas understood X Attitudes clarified _____

Generalizations formed _____ Others _____

Unit for which the use is recommended DC Meters

Recommended Vocabulary Level . . . K___P___I___J___SX C___

Recommended Conceptual Level . . . K___P___I___J___SX CX

Recommended Interest Level . . . . K___P___I___J___SX C___

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . (YES) NO

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Use of animation and illustrations:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	(7)	8	9 10

Sound:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 10

None

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Organization:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Thought provoking:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Complete with review:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

AVERAGE TECHNICAL AND EDUCATIONAL RATING 9.0

OVER-ALL EVALUATION:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

PROJECTED MATERIALS APPRAISAL

Exact Title DETECTORS

Material Type Filmstrip Producer Civil Aeronautics Administration

Length ___ Minutes 35 Frames Source U. of W.

B/W X Color ___ Production Date 1942 Rental Cost $1.25

Type of Sound:

Background _____ Dialogue _____

Narration _____ Silent X

Learning outcomes which help student achievement:

Specific facts retained _____ Interest increased _____

Basic ideas understood X Attitudes clarified _____

Generalizations formed X Others _____

Unit for which the use is recommended Diode, Grid Detection

Recommended Vocabulary Level . . . K ___ P ___ I ___ J X S X C ___

Recommended Conceptual Level . . . K ___ P ___ I ___ J X S X C ___

Recommended Interest Level . . . . K ___ P ___ I ___ J X S X C ___

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO
Outdated Staging

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . YES (NO)

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good		Excellent	
0	1	2	3	4	(5)	6	7	8	9	10

Some poor frames

Use of animation and illustrations:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	6	7	(8)	9	10

None

Sound:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	6	7	8	9	10

Educationally Well Produced:

Continuity:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	6	7	8	(9)	10

Organization:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	6	7	8	(9)	10

Thought provoking:

Poor			Fair			Good		Excellent	
0	1	2	3	4	(5)	6	7	8	9	10

Complete with review:

Poor			Fair			Good		Excellent	
0	1	(2)	3	4	5	6	7	8	9	10

Not adequate

AVERAGE TECHNICAL AND EDUCATIONAL RATING 6.33

OVER-ALL EVALUATION:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	6	(7)	8	9	10

PROJECTED MATERIALS APPRAISAL

Exact Title ELECTRIC METER

Material Type Filmstrip Producer Jim Handy

Length ___ Minutes 84 Frames Source C.W.S.C.

B/W x Color ___ Production Date 1941 Rental Cost NC

Type of Sound:

Background _____ Dialogue _____

Narration _____ Silent x

Learning outcomes which help student achievement:

Specific facts retained x Interest increased _____

Basic ideas understood x Attitudes clarified _____

Generalizations formed _____ Others _____

Unit for which the use is recommended Construction and Use of Meters

Recommended Vocabulary Level . . . K___P___I___J x S x C___

Recommended Conceptual Level . . . K___P___I___J x S x C___

Recommended Interest Level . . . . K___P___I___J x S x C___

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . YES (NO)

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good			Excellent
0 1	2		3 4	5		6 7	8		(9) 10

Use of animation and illustrations:

Poor			Fair			Good			Excellent
0 1	2		3 4	5		6 7	(8)		9 10

Sound:

Poor			Fair			Good			Excellent
0 1	2		3 4	5		6 7	8		9 10

None

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent
0 1	2		3 4	5		6 7	8		(9) 10

Organization:

Poor			Fair			Good			Excellent
0 1	2		3 4	5		6 7	8		(9) 10

Thought provoking:

Poor			Fair			Good			Excellent
0 1	2		3 4	5		(6) 7	8		9 10

Complete with review:

Poor			Fair			Good			Excellent
0 1	2		3 4	5		6 7	8		(9) 10

AVERAGE TECHNICAL AND EDUCATIONAL RATING 7.14

OVER-ALL EVALUATION:

Poor			Fair			Good			Excellent
0 1	2		3 4	5		6 7	8		9 (10)

PROJECTED MATERIALS APPRAISAL

Exact Title HOW COLOR TELEVISION WORKS

Material Type Filmstrip Producer McGraw-Hill

Length ___ Minutes 44 Frames Source C.W.S.C.

B/W___ Color X Production Date 1954 Rental Cost 50¢ + postage

Type of Sound:

Background_____ Dialogue_____

Narration _____ Silent X

Learning outcomes which help student achievement:

Specific facts retained X Interest increased_____

Basic ideas understood X Attitudes clarified_____

Generalizations formed X Others_____

Unit for which the use is recommended Color Television

Recommended Vocabulary Level . . . K___P___I___J X S X C___

Recommended Conceptual Level . . . K___P___I___J___S X C X

Recommended Interest Level . . . . K___P___I___J X S X C___

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . (YES) NO

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good			Excellent
0 1	2		3 4	5		6 7	8		9 (10)

Use of animation and illustrations:

Poor			Fair			Good			Excellent
0 1	2		3 4	5		6 7	8		(9) 10

Sound:

Poor			Fair			Good			Excellent
0 1	2		3 4	5		6 7	8		9 10

None

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent
0 1	2		3 4	5		6 7	8		9 (10)

Organization:

Poor			Fair			Good			Excellent
0 1	2		3 4	5		6 7	8		9 (10)

Thought provoking:

Poor			Fair			Good			Excellent
0 1	2		3 4	5		6 7	8		(9) 10

Complete with review:

Poor			Fair			Good			Excellent
0 1	2		3 4	5		6 7	(8)		9 10

AVERAGE TECHNICAL AND EDUCATIONAL RATING 9.33

OVER-ALL EVALUATION:

Poor			Fair			Good			Excellent
0 1	2		3 4	5		6 7	8		9 (10)

PROJECTED MATERIALS APPRAISAL

Exact Title HOW TELEVISION WORKS

Material Type Filmstrip Producer Popular Science

Length ___ Minutes 50 Frames Source C.W.S.C.

B/W X Color ___ Production Date 1950 Rental Cost 50¢ + postage

Type of Sound:

Background _____ Dialogue _____

Narration _____ Silent XX

Learning outcomes which help student achievement:

Specific facts retained ____ Interest increased ____

Basic ideas understood X Attitudes clarified ____

Generalizations formed X Others _____

Unit for which the use is recommended Television

Recommended Vocabulary Level . . . K ___ P ___ I ___ J X S X C X

Recommended Conceptual Level . . . K ___ P ___ I ___ J ___ S X C X

Recommended Interest Level . . . . K ___ P ___ I ___ J X S X C X

Is the content presented truthfully, accurately, and up to date? . . . . . YES (NO)

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . (YES) NO

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good		Excellent		
0	1	2	3	4	5	6	7	(8)	9	10

Use of animation and illustrations:

Poor			Fair			Good		Excellent		
0	1	2	3	4	5	6	(7)	8	9	10

Sound:

Poor			Fair			Good		Excellent		
0	1	2	3	4	5	6	7	8	9	10

None

Educationally Well Produced:

Continuity:

Poor			Fair			Good		Excellent		
0	1	2	3	4	5	6	7	(8)	9	10

Organization:

Poor			Fair			Good		Excellent		
0	1	2	3	4	5	6	(7)	8	9	10

Thought provoking:

Poor			Fair			Good		Excellent		
0	1	2	3	4	(5)	6	7	8	9	10

Complete with review.

Poor			Fair			Good		Excellent		
0	1	2	3	4	5	6	7	8	9	(10)

AVERAGE TECHNICAL AND EDUCATIONAL RATING . . . . . ~~7.5~~

OVER-ALL EVALUATION:

Poor			Fair			Good		Excellent		
0	1	2	3	4	5	6	7	(8)	9	10

PROJECTED MATERIALS APPRAISAL

Exact Title REPRODUCERS

Material Type Filmstrip Producer Civil Aeronautics Administration

Length ___ Minutes 29 Frames Source U. of W.

B/W X Color ___ Production Date 1942 Rental Cost $1.25

Type of Sound:

Background _____ Dialogue _____

Narration _____ Silent X

Learning outcomes which help student achievement:

Specific facts retained X Interest increased _____

Basic ideas understood X Attitudes clarified _____

Generalizations formed _____ Others _____

Unit for which the use is recommended Microphones and Ear Phones

Recommended Vocabulary Level . . . K ___ P ___ I ___ J X S X C ___

Recommended Conceptual Level . . . K ___ P ___ I ___ J X S X C ___

Recommended Interest Level . . . . K ___ P ___ I ___ J X S X C ___

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Old illustrations

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . YES (NO)

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	6	7	(8)	9	10

Use of animation and illustrations:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	6	7	(8)	9	10

Sound:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	6	7	8	9	10

None

Educationally Well Produced:

Continuity:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	6	7	(8)	9	10

Organization:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	7	8	(9)	10

Thought provoking:

Poor			Fair			Good			Excellent	
0	1	2	3	4	(5)	6	7	8	9	10

Complete with review:

Poor			Fair			Good			Excellent	
0	1	2	(3)	4	5	6	7	8	9	10

AVERAGE TECHNICAL AND EDUCATIONAL RATING 6.83

OVER-ALL EVALUATION:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	(6)	7	8	9	10

COMMERCIAL

PROJECTED MATERIALS APPRAISAL

Exact Title RESISTANCE

Material Type Filmstrip Producer ~~Long Filmslide Service~~

Length ___ Minutes 29 Frames Source Inland Audio-Visual Co.

B/W X Color ___ Production Date NG Rental Cost For purchase only

Type of Sound:

Background _____ Dialogue _____

Narration _____ Silent X

Learning outcomes which help student achievement:

Specific facts retained X Interest increased X

Basic ideas understood X Attitudes clarified _____

Generalizations formed _____ Others _____

Unit for which the use is recommended Resistance

Recommended Vocabulary Level . . . K___P___I___J X S X C___

Recommended Conceptual Level . . . K___P___I___J___S X C X

Recommended Interest Level . . . . K___P___I___J___S X C___

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . (YES) NO

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	6	7	(8)	9	10

Use of animation and illustrations:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	7	8	(9)	10

Sound:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	7	8	9	10

None

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	7	8	9	(10)

Organization:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	7	8	(9)	10

Thought provoking:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	7	8	9	(10)

Complete with review:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	7	8	9	(10)

AVERAGE TECHNICAL AND EDUCATIONAL RATING 9.33

OVER-ALL EVALUATION:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	7	8	(9)	10

COMMERCIAL

PROJECTED MATERIALS APPRAISAL

Exact Title TRANSFORMERS

Material Type Filmstrip Producer Long Filmslide Service

Length ___ Minutes 33 Frames Source Inland Audio-Visual Co.

B/W X Color ___ Production Date NG Rental Cost For purchase only.

Type of Sound:

Background _____ Dialogue _____

Narration _____ Silent X

Learning outcomes which help student achievement:

Specific facts retained X Interest increased X

Basic ideas understood X Attitudes clarified _____

Generalizations formed _____ Others _____

Unit for which the use is recommended Transformers

Recommended Vocabulary Level . . . K___P___I___J___S X C X

Recommended Conceptual Level . . . K___P___I___J___S X C X

Recommended Interest Level . . . . K___P___I___J___S X C X

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . (YES) NO

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Use of animation and illustrations:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	(8)	9 10

Sound:

Poor			Fair			Good			Excellent
0 None	1	2	3	4	5	6	7	8	9 10

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Organization:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Thought provoking:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Complete with review:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

AVERAGE TECHNICAL AND EDUCATIONAL RATING 9.17

OVER-ALL EVALUATION:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

NOT RECOMMENDED

PROJECTED MATERIALS APPRAISAL

Exact Title LOOP AND TRAILING WIRE ANTENNAE

Material Type Filmstrip Producer Air Force Films

Length ___ Minutes 48 Frames Source U. of W.

B/W X Color ___ Production Date 1943 Rental Cost $1.25

Type of Sound:

Background _____ Dialogue _____

Narration _____ Silent X

Learning outcomes which help student achievement:

Specific facts retained X Interest increased _____

Basic ideas understood X Attitudes clarified _____

Generalizations formed _____ Others _____

Unit for which the use is recommended Aircraft. Antennae

Recommended Vocabulary Level . . . K___P___I___J___S X C___

Recommended Conceptual Level . . . K___P___I___J___S X C___

Recommended Interest Level . . . . K___P___I___J___S X C___

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . YES (NO)

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good			Excellent
0	1	2	3	(4)	5	6	7	8	9 10

Some frames hard to read

Use of animation and illustrations:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 10

None

Sound:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 10

None

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	(7)	8	9 10

Organization:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	(8)	9 10

Thought provoking:

Poor			Fair			Good			Excellent
0	1	(2)	3	4	5	6	7	8	9 10

Complete with review:

Poor			Fair			Good			Excellent
0	1	(2)	3	4	5	6	7	8	9 10

AVERAGE TECHNICAL AND EDUCATIONAL RATING 4.6

OVER-ALL EVALUATION:

Poor			Fair			Good			Excellent
0	1	2	3	(4)	5	6	7	8	9 10

Not adequate for class use--air craft only

PROJECTED MATERIALS APPRAISAL

Exact Title RADIO AND ELECTRONIC SYMBOLS

Material Type Filmstrip Producer Visual Science

Length ___ Minutes 42 Frames Source C.W.S.C.

B/W X Color ___ Production Date 1930 Rental Cost 50¢ + postage

Type of Sound:

Background _____ Dialogue _____

Narration _____ Silent X

Learning outcomes which help student achievement:

Specific facts retained X Interest increased _____

Basic ideas understood X Attitudes clarified _____

Generalizations formed _____ Others _____

Unit for which the use is recommended Symbols

Recommended Vocabulary Level . . . K ___ P ___ I ___ J ___ S X C X

Recommended Conceptual Level . . . K ___ P ___ I ___ J X S X C X

Recommended Interest Level . . . . K ___ P ___ I ___ J ___ S X C X

Is the content presented truthfully, accurately, and up to date? . . . . . YES (NO)

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . YES (NO)

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	(6)	7	8	9	10

Use of animation and illustrations:

Poor			Fair			Good			Excellent	
0	1	2	3	4	(5)	6	7	8	9	10

Sound:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	7	8	9	10

None

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	7	8	(9)	10

Organization:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	(7)	8	9	10

Thought provoking:

Poor			Fair			Good			Excellent	
0	1	2	3	(4)	5	6	7	8	9	10

Complete with review:

Poor			Fair			Good			Excellent	
(0)	1	2	3	4	5	6	7	8	9	10

AVERAGE TECHNICAL AND EDUCATIONAL RATING 5.17

OVER-ALL EVALUATION:

Poor			Fair			Good			Excellent	
0	1	(2)	3	4	5	6	7	8	9	10

PROJECTED MATERIALS APPRAISAL

Exact Title TUNING

Material Type Filmstrip Producer Civil Aeronautics Administration

Length ___ Minutes 27 Frames Source U. of W.

B/W XX Color___ Production Date 1942 Rental Cost $1.25

Type of Sound:

Background_____ Dialogue_____

Narration _____ Silent X

Learning outcomes which help student achievement:

Specific facts retained_____ Interest increased_____

Basic ideas understood X Attitudes clarified_____

Generalizations formed X Others_____

Unit for which the use is recommended Tuning a Receiver

Recommended Vocabulary Level . . . K___P___I___J X S X C___

Recommended Conceptual Level . . . K___P___I___J X S X C___

Recommended Interest Level . . . . K___P___I___J X S X C___

Is the content presented truthfully, accurately, and up to date? . . . . . (YES) NO

Old equipment used

Is the subject appropriate to this type of instructional material? . . . . . (YES) NO

Does it encourage student participation? . . . . . YES (NO)

Are too many concepts presented? . . . . . YES (NO)

Is the length appropriate for the concepts that are presented? . . . . . (YES) NO

Technical Quality:

Use of good camera technique:

Poor			Fair			Good			Excellent
0 1	2		3 4	(5)		6 7	8		9 10

Hard to read

Use of animation and illustrations:

Poor			Fair			Good			Excellent
0 1	2		3 4		5	6 7	8		9 10

None

Sound:

Poor			Fair			Good			Excellent
0 1	2		3 4		5	6 7	8		9 10

None

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent
0 1	2		3 4		5	6 7	8	(9)	10

Organization:

Poor			Fair			Good			Excellent
0 1	2		3 4		5	6 7	8	(9)	10

Thought provoking:

Poor			Fair			Good			Excellent
0 1	2		3	(4)	5	6 7	8		9 10

Complete with review:

Poor			Fair			Good			Excellent
0 1		(2)	3 4		5	6 7	8		9 10

AVERAGE TECHNICAL AND EDUCATIONAL RATING 6.0

OVER-ALL EVALUATION:

Poor			Fair			Good			Excellent
0 1	2		3 4		(5)	6 7	8		9 10

APPENDIX D

EVALUATIONS OF SELF-INSTRUCTIONAL MATERIALS

RECOMMENDED

MACHINE EVALUATION

Name AUTO TUTOR MARK II

Material Type Electronic Producer U.S. Industries, Inc.

Source C.W.S.C., U. of W. Production Date 1961

Cost of Machine $1250 Cost of Programs $40 to $550

RESEARCH INFORMATION:

Is learning accomplished? . . . . . (YES) NO

Is knowledge retained? . . . . . (YES) NO

Has it been tried? . . . . . (YES) NO

Have revisions been based on earlier use? . . . . . (YES) NO

GENERAL INFORMATION:

Type of programming used: Linear _____ Branching XX

Can it be reset for use in separate classes? . . . YES (NO)

Is it possible to back up and review? . . . . . (YES) NO

Is it mechanically dependable? . . . . . (YES) NO

Is it portable? . . . . . (YES) NO

Is it possible to prevent skipping ahead? . . . . . (YES) NO

Does it provide for individual differences? . . . . (YES) NO

Is a record of the student's progress available? . (YES) NO

Is it adaptable to other commercial programs? . . . YES (NO)

Can locally produced programs be used? . . . . . YES (NO)

Are programs in electronics available? . . . . . (YES) NO

OVER-ALL EVALUATION OF THE MACHINE:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	7	8	9	(10)

PROGRAM EVALUATION

Exact Title VOL. I FIRST YEAR ELECTRONICS, DIRECT CURRENT--Reel 1 Length 1572 Frames

Machine Type Autotutor Program Cost $1.25/2

Learning outcomes which help student achievement:

Specific facts retained X Generalizations formed ____

Basic ideas understood ____ Interest increased X

Subject for which the use is recommended: Direct Current

Vocabulary Level. . . . . K ___ P ___ I ___ J ___ S X C X

Conceptual Level. . . . . K ___ P ___ I ___ J ___ S X C X

Interest Level. . . . . K ___ P ___ I ___ J ___ S X C X

Is the material accurate and up to date? . . . . . (YES) NO

Is the subject adaptable to programming? . . . . . (YES) NO

Is a careful, logical progression used? . . . . . (YES) NO

Educationally Well Produced:

Continuity:

Poor		Fair			Good			Excellent	
0	1	2	3	4	5	6	7	8	9 (10)

Organization:

Poor		Fair			Good			Excellent	
0	1	2	3	4	5	6	7	8	9 (10)

Thought Provoking:

Poor		Fair			Good			Excellent	
0	1	2	3	4	5	6	7	8	9 (10)

Complete with review:

Poor		Fair			Good			Excellent	
0	1	2	3	4	5	6	7	8	9 (10)

AVERAGE EDUCATIONAL RATING 10

OVER-ALL EVALUATION OF THE PROGRAM:

Poor		Fair			Good			Excellent	
0	1	2	3	4	5	6	7	8	9 (10)

PROGRAM EVALUATION

Exact Title VOL. I FIRST YEAR ELECTRONICS, DIRECT CURRENT--Reel 2 Length 1262 Frames

Machine Type Autotutor Program Cost $125/2

Learning outcomes which help student achievement:

Specific facts retained X Generalizations formed ____

Basic ideas understood ____ Interest increased X

Subject for which the use is recommended: Direct Current

Vocabulary Level. . . . . K___P___I___J___S_X_C_X

Conceptual Level. . . . . K___P___I___J___S_X_C_X

Interest Level. . . . . K___P___I___J___S_X_C_X

Is the material accurate and up to date? . . . . . (YES) NO

Is the subject adaptable to programming? . . . . . (YES) NO

Is a careful, logical progression used? . . . . . (YES) NO

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	7	8	9	(10)

Organization:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	7	8	9	(10)

Thought Provoking:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	7	8	9	(10)

Complete with review:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	7	8	9	(10)

AVERAGE EDUCATIONAL RATING 10

OVER-ALL EVALUATION OF THE PROGRAM:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	7	8	9	(10)

PROGRAM EVALUATION

Exact Title VOL. II FIRST YEAR ELECTRONICS, ALTERNATING CURRENT--Reel 1 Length 567 Frames

Machine Type Autotutor Program Cost $85/2

Learning outcomes which help student achievement:

Specific facts retained X Generalizations formed ____

Basic ideas understood ____ Interest increased ____

Subject for which the use is recommended: Alternating Current

Vocabulary Level. . . . . K ___ P ___ I ___ J ___ S X C ___

Conceptual Level. . . . . K ___ P ___ I ___ J ___ S X C X

Interest Level. . . . . K ___ P ___ I ___ J ___ S X C ___

Is the material accurate and up to date? . . . . . (YES) NO

Is the subject adaptable to programming? . . . . . (YES) NO

Is a careful, logical progression used? . . . . . (YES) NO

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	(6)	7	8	9 10

Organization:

Poor			Fair			Good			Excellent
0	1	2	3	(4)	5	6	7	8	9 10

Thought Provoking:

Poor			Fair			Good			Excellent
0	1	2	3	(4)	5	6	7	8	9 10

Complete with review:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	(8)	9 10

AVERAGE EDUCATIONAL RATING 5.5

OVER-ALL EVALUATION OF THE PROGRAM:

Poor			Fair			Good			Excellent
0	1	2	3	4	(5)	6	7	8	9 10

PROGRAM EVALUATION

Exact Title VOL. II FIRST YEAR ELECTRONICS, ALTERNATING CURRENT--Reel 2 Length 1134+ Frames

Machine Type Autotutor Program Cost $85/2

Learning outcomes which help student achievement:

Specific facts retained X Generalizations formed ____

Basic ideas understood ____ Interest increased X

Subject for which the use is recommended: Alternating Current

Vocabulary Level. . . . . K ___ P ___ I ___ J ___ S X C X

Conceptual Level. . . . . K ___ P ___ I ___ J ___ S X C X

Interest Level. . . . . K ___ P ___ I ___ J ___ S X C X

Is the material accurate and up to date? . . . . . (YES) NO

Is the subject adaptable to programming? . . . . . (YES) NO

Is a careful, logical progression used? . . . . . (YES) NO

Educationally Well Produced:

Continuity:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	6	7	(8)	9	10

Organization:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	6	7	8	(9)	10

Thought Provoking:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	6	7	8	9	(10)

Complete with review:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	6	7	(8)	9	10

AVERAGE EDUCATIONAL RATING 8.75

OVER-ALL EVALUATION OF THE PROGRAM:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	6	7	8	(9)	10

PROGRAM EVALUATION

Exact Title VOL. III FIRST YEAR ELECTRONICS, REACTIVE CIRCUITS, Reel 1 Length 1214 Frames

Machine Type Autututor Program Cost $85/2

Learning outcomes which help student achievement:

Specific facts retained X Generalizations formed ____

Basic ideas understood ____ Interest increased X

Subject for which the use is recommended: Reactive Currents

Vocabulary Level. . . . . K ___ P ___ I ___ J ___ S ___ C X

Conceptual Level. . . . . K ___ P ___ I ___ J ___ S X C X

Interest Level. . . . . K ___ P ___ I ___ J ___ S ___ C X

Is the material accurate and up to date? . . . . . (YES) NO

Is the subject adaptable to programming? . . . . . (YES) NO

Is a careful, logical progression used? . . . . . (YES) NO

Educationally Well Produced:

Continuity:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	6	7	(8)	9	10

Organization:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	6	7	8	9	(10)

Thought Provoking:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	6	7	8	9	(10)

Complete with review:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	6	7	8	(9)	10

AVERAGE EDUCATIONAL RATING 9.25

OVER-ALL EVALUATION OF THE PROGRAM:

Poor			Fair			Good		Excellent	
0	1	2	3	4	5	6	7	(8)	9	10

PROGRAM EVALUATION

Exact Title VOL. III FIRST YEAR ELECTRONICS, REACTIVE CIRCUITS, Reel 2 Length 1702+ Frames

Machine Type Autotutor Program Cost $85/2

Learning outcomes which help student achievement:

Specific facts retained X Generalizations formed ____

Basic ideas understood ____ Interest increased X

Subject for which the use is recommended: Reactive Circuits

Vocabulary Level. . . . . K___P___I___J___S___C X

Conceptual Level. . . . . K___P___I___J___S___C X

Interest Level. . . . . K___P___I___J___S___C X

Is the material accurate and up to date? . . . . . (YES) NO

Is the subject adaptable to programming? . . . . . (YES) NO

Is a careful, logical progression used? . . . . . (YES) NO

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Organization:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Thought Provoking:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Complete with review:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

AVERAGE EDUCATIONAL RATING 9.5

OVER-ALL EVALUATION OF THE PROGRAM:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

PROGRAM EVALUATION

Exact Title VOL. IV FIRST YEAR ELECTRONICS, PRINCIPLES OF VACUUM TUBES & TRANSISTORS--Reel 1 Length 1055 Frames
Machine Type Autotutor Program Cost $90/2

Learning outcomes which help student achievement:

Specific facts retained X Generalizations formed ____

Basic ideas understood ____ Interest increased X

Subject for which the use is recommended: Vacuum tubes and Semi-conductors

Vocabulary Level. . . . . K P I J S C X

Conceptual Level. . . . . K P I J S C X

Interest Level. . . . . K P I J S C X

Is the material accurate and up to date? . . . . . (YES) NO

Is the subject adaptable to programming? . . . . . (YES) NO

Is a careful, logical progression used? . . . . . (YES) NO

Educationally Well Produced:

Continuity:

Poor		Fair		Good		Excellent	
0 1	2	3 4	5	6 7	8	9	(10)

Organization:

Poor		Fair		Good		Excellent	
0 1	2	3 4	5	6 7	8	9	(10)

Thought Provoking:

Poor		Fair		Good		Excellent	
0 1	2	3 4	5	6 7	8	9	(10)

Complete with review:

Poor		Fair		Good		Excellent	
0 1	2	3 4	5	6 7	8	9	(10)

AVERAGE EDUCATIONAL RATING 10

OVER-ALL EVALUATION OF THE PROGRAM:

Poor		Fair		Good		Excellent	
0 1	2	3 4	5	6 7	8	9	(10)

PROGRAM EVALUATION

Exact Title VOL. IV. FIRST YEAR ELECTRONICS, PRINCIPLES OF VACUUM TUBES & TRANSISTORS--Reel 2 Length 1212+ Frames
Machine Type Autotutor Program Cost $90/2

Learning outcomes which help student achievement:

Specific facts retained X Generalizations formed ____

Basic ideas understood ____ Interest increased X

Subject for which the use is recommended: Vacuum tubes and Transistors

Vocabulary Level. . . . . K ___ P ___ I ___ J ___ S ___ C X

Conceptual Level. . . . . K ___ P ___ I ___ J ___ S ___ C X

Interest Level. . . . . K ___ P ___ I ___ J ___ S ___ C X

Is the material accurate and up to date? . . . . . (YES) NO

Is the subject adaptable to programming? . . . . . (YES) NO

Is a careful, logical progression used? . . . . . (YES) NO

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent
0 1	2		3 4	5		6 7	8		9 (10)

Organization:

Poor			Fair			Good			Excellent
0 1	2		3 4	5		6 7	8		9 (10)

Thought Provoking:

Poor			Fair			Good			Excellent
0 1	2		3 4	5		6 7	8		9 (10)

Complete with review:

Poor			Fair			Good			Excellent
0 1	2		3 4	5		6 7	8		9 (10)

AVERAGE EDUCATIONAL RATING 10

OVER-ALL EVALUATION OF THE PROGRAM:

Poor			Fair			Good			Excellent
0 1	2		3 4	5		6 7	8		9 (10)

PROGRAM EVALUATION

Exact Title VOL. V. SPECIAL PURPOSE TUBES AND TEST EQUIPMENT Length 1380+ Frames

Machine Type Autotutor Program Cost $60

Learning outcomes which help student achievement:

Specific facts retained X Generalizations formed ____

Basic ideas understood ____ Interest increased X

Subject for which the use is recommended: Equipment and Soldering

Vocabulary Level. . . . . K ___ P ___ I ___ J ___ S ___ C X

Conceptual Level. . . . . K ___ P ___ I ___ J ___ S ___ C X

Interest Level. . . . . K ___ P ___ I ___ J ___ S ___ C X

Is the material accurate and up to date? . . . . . (YES) NO

Is the subject adaptable to programming? . . . . . (YES) NO

Is a careful, logical progression used? . . . . . (YES) NO

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Organization:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Thought Provoking:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

Complete with review:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

AVERAGE EDUCATIONAL RATING 9.5

OVER-ALL EVALUATION OF THE PROGRAM:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	(8)	9 10

MACHINE EVALUATION

Name DIDAK 501

Material Type Non-electronic Producer Rheem Califome Co.

Source C.W.S.C. Production Date Available now

Cost of Machine $157.50 Cost of Programs Example only
Use any 8½" x 11" paper

RESEARCH INFORMATION:

Is learning accomplished? . . . . . (YES) NO

Is knowledge retained? . . . . . (YES) NO

Has it been tried? . . . . . (YES) NO

Have revisions been based on earlier use? . . . . . (YES) NO

GENERAL INFORMATION:

Type of programming used: Linear X Branching

Can it be reset for use in separate classes? . . . (YES) NO

Is it possible to back up and review? . . . . . YES (NO)

Is it mechanically dependable? . . . . . YES (NO)

Is it portable? . . . . . (YES) NO

Is it possible to prevent skipping ahead? . . . . . YES (NO)

Does it provide for individual differences? . . . . (YES) NO

Is a record of the student's progress available? . (YES) NO

Is it adaptable to other commercial programs? . . . YES (NO)

Can locally produced programs be used? . . . . . (YES) NO

Are programs in electronics available? . . . . . YES (NO)

OVER-ALL EVALUATION OF THE MACHINE:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	7	(8)	9	10

MACHINE EVALUATION

Name MAST TEACHING MACHINE

Material Type Electronic Producer Master Development Co.

Source U. of W. Production Date ?

Cost of Machine $245 Cost of Programs $20 to $40

RESEARCH INFORMATION:

Is learning accomplished? . . . . . (YES) NO

Is knowledge retained? . . . . . (YES) NO

Has it been tried? . . . . . (YES) NO

Have revisions been based on earlier use? . . . . . YES (NO)

GENERAL INFORMATION:

Type of programming used: Linear X Branching

Can it be reset for use in separate classes? . . . (YES) NO

Is it possible to back up and review? . . . . . YES (NO)

Is it mechanically dependable? . . . . . (YES) NO

Is it portable? . . . . . (YES) NO

Is it possible to prevent skipping ahead? . . . . . (YES) NO

Does it provide for individual differences? . . . . (YES) NO

Is a record of the student's progress available? . (YES) NO

Is it adaptable to other commercial programs? . . . (YES) NO

Can locally produced programs be used? . . . . . (YES) NO

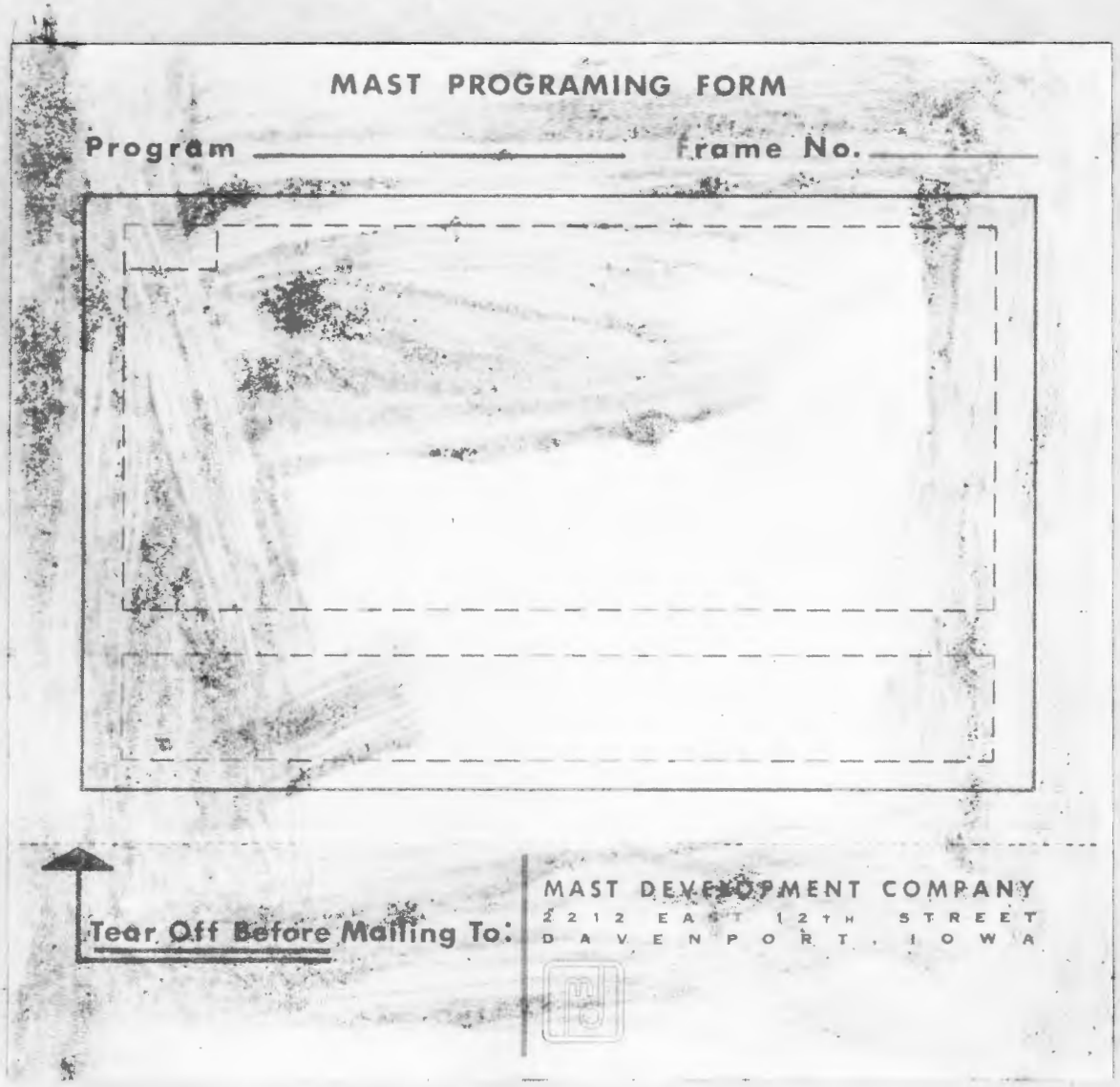
Are programs in electronics available? . . . . . YES (NO)

OVER-ALL EVALUATION OF THE MACHINE:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	7	8	9	(10)

SAMPLE FRAME FORM

FOR MAST TEACHING MACHINE



MACHINE EVALUATION

Name TUTOR TEXT

Material Type Scrambled Producer Western Design

Source C.W.S.C., Science Supply Production Date 1961

Cost of Machine $3.95 Cost of Programs $3.95

RESEARCH INFORMATION:

Is learning accomplished? . . . . . (YES) NO

Is knowledge retained? . . . . . (YES) NO

Has it been tried? . . . . . (YES) NO

Have revisions been based on earlier use? . . . . . (YES) NO

GENERAL INFORMATION:

Type of programming used: Linear _____ Branching XX

Can it be reset for use in separate classes? . . . (YES) NO

Is it possible to back up and review? . . . . . (YES) NO

Is it mechanically dependable? . . . . . (YES) NO

Is it portable? . . . . . (YES) NO

Is it possible to prevent skipping ahead? . . . . . YES (NO)

Does it provide for individual differences? . . . . (YES) NO

Is a record of the student's progress available? . YES (NO)

Is it adaptable to other commercial programs? . . . YES (NO)

Can locally produced programs be used? . . . . . YES (NO)

Are programs in electronics available? . . . . . (YES) NO

OVER-ALL EVALUATION OF THE MACHINE:

Poor			Fair			Good			Excellent	
0	1	2	3	4	5	6	7	8	(9)	10

PROGRAM EVALUATION

Exact Title INTRODUCTION TO ELECTRONICS Length 418 Frames

Machine Type Tutor Text Program Cost $3.95/2

Learning outcomes which help student achievement:

Specific facts retained X Generalizations formed ____

Basic ideas understood ____ Interest increased X

Subject for which the use is recommended: Basic Electronics

Vocabulary Level. . . . . K ___ P ___ I ___ J ___ S X C X

Conceptual Level. . . . . K ___ P ___ I ___ J X S X C X

Interest Level. . . . . K ___ P ___ I ___ J ___ S XX C X

Is the material accurate and up to date? . . . . . (YES) NO

Is the subject adaptable to programming? . . . . . (YES) NO

Is a careful, logical progression used? . . . . . (YES) NO

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent
0 1	2		3 4	5		6 7	8		9 (10)

Organization:

Poor			Fair			Good			Excellent
0 1	2		3 4	5		6 7	8		(9) 10

Thought Provoking:

Poor			Fair			Good			Excellent
0 1	2		3 4	5		6 7	8		9 (10)

Complete with review:

Poor			Fair			Good			Excellent
0 1	2		3 4	5		6 7	8		9 (10)

AVERAGE EDUCATIONAL RATING 9.75

OVER-ALL EVALUATION OF THE PROGRAM:

Poor			Fair			Good			Excellent
0 1	2		3 4	5		6 7	8		9 (10)

NOT RECOMMENDED

MACHINE EVALUATION

Name FORINGER #2002

Material Type Non-electronic Producer Programmed Teaching Aids, Inc.

Source C.W.S.C., U. of W., W.S.U. Production Date Available now

Cost of Machine $80 Cost of Programs Samples only

RESEARCH INFORMATION:

Is learning accomplished? . . . . . (YES) NO

Is knowledge retained? . . . . . (YES) NO

Has it been tried? . . . . . (YES) NO

Have revisions been based on earlier use? . . . . . (YES) NO

GENERAL INFORMATION:

Type of programming used: Linear x Branching

Can it be reset for use in separate classes? . . . YES (NO)

Is it possible to back up and review? . . . . . YES (NO)

Is it mechanically dependable? . . . . . (YES) NO

Is it portable? . . . . . (YES) NO

Is it possible to prevent skipping ahead? . . . . . YES (NO)

Does it provide for individual differences? . . . . YES (NO)

Is a record of the student's progress available? . (YES) NO

Is it adaptable to other commercial programs? . . . (YES) NO

Can locally produced programs be used? . . . . . (YES) NO

Are programs in electronics available? . . . . . YES (NO)

OVER-ALL EVALUATION OF THE MACHINE:

Poor			Fair			Good			Excellent	
0	1	2	3	4	(5)	6	7	8	9	10

MACHINE EVALUATION

Name MIN/MAX and ANSWER MATE

Material Type Non-electronic Producer Teaching Materials Corp. Division of Grolier, Inc.

Source C.W.S.C., U. of W., W.S.U. Production Date Available now

Cost of Machine $30 Cost of Programs $7.50 to $15

RESEARCH INFORMATION:

Is learning accomplished? . . . . . (YES) NO

Is knowledge retained? . . . . . (YES) NO

Has it been tried? . . . . . (YES) NO

Have revisions been based on earlier use? . . . . . (YES) NO

GENERAL INFORMATION:

Type of programming used: Linear XX Branching ____

Can it be reset for use in separate classes? . . . (YES) NO

Is it possible to back up and review? . . . . . YES (NO)

Is it mechanically dependable? . . . . . YES (NO)

Is it portable? . . . . . (YES) NO

Is it possible to prevent skipping ahead? . . . . . YES (NO)

Does it provide for individual differences? . . . . (YES) NO

Is a record of the student's progress available? . (YES) NO

Is it adaptable to other commercial programs? . . . YES (NO)

Can locally produced programs be used? . . . . . (YES) NO

Are programs in electronics available? . . . . . (YES) NO

OVER-ALL EVALUATION OF THE MACHINE:

Poor		Fair		Good		Excellent
0 1	2	(3) 4	5	6 7	8	9 10

PROGRAM EVALUATION

Exact Title FUNDAMENTALS OF ELECTRICITY Length 1450 Frames

Machine Type Min/Max Program Cost $10

Learning outcomes which help student achievement:

Specific facts retained X Generalizations formed ____

Basic ideas understood X Interest increased ____

Subject for which the use is recommended: Electricity

Vocabulary Level. . . . . K ___ P ___ I X J X S ___ C ___

Conceptual Level. . . . . K ___ P ___ I ___ J X S ___ C ___

Interest Level. . . . . K ___ P ___ I ___ J X S ___ C ___

Is the material accurate and up to date? . . . . . (YES) NO

Is the subject adaptable to programming? . . . . . (YES) NO

Is a careful, logical progression used? . . . . . (YES) NO

Educationally Well Produced:

Continuity:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

Organization:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	(8)	9 10

Thought Provoking:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	(7)	8	9 10

Complete with review:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	9 (10)

AVERAGE EDUCATIONAL RATING 8.5

OVER-ALL EVALUATION OF THE PROGRAM:

Poor			Fair			Good			Excellent
0	1	2	3	4	5	6	7	8	(9) 10

APPENDIX E

LETTERS TO COMMERCIAL DISTRIBUTORS

405 South 31st Avenue
Yakima, Washington
July 10, 1963

U.S. Industries, Inc.
Educational Service Division
250 Park Avenue
New York 17, New York

Gentlemen:

At the present time I am working towards a Master's Degree in Education at Central Washington State College. The title of my thesis is "Instructional Materials for Use in Teaching Electronics." One chapter of the thesis deals with Electronic Teaching Machines or Programmed Readers. The college has your machine (AutoTutor Mark II) and the Introduction to Algebra Tutorfilm on hand. From all indication, they will be ordering Volume I-V of the First Year Electronics Tutorfilm (ESD-303) within the next two years.

In the meantime, I wish to preview and evaluate this series for its worth and use in teaching electronics. If you could tell me of a school or college in the state of Washington which has this Tutorfilm on hand, I would be most grateful.

If there is no such school or college, I am sure you would welcome the opportunity of allowing your product to be previewed and evaluated by myself. Of course this evaluation and any recommendations would be available to all educators in the state of Washington through our college library.

It is necessary that I receive these Tutorfilms soon. I expect to complete the study this summer; and would, therefore, like to obtain your Tutorfilms soon. If it is not possible for you to ship the above mentioned Tutorfilms or requested information, upon receipt of this request will you please notify me by return mail.

Sincerely,

/s/ H. Allen Shockley

H. Allen Shockley
Instructor

405 South 31st Avenue
Yakima, Washington
July 10, 1963

Encyclopedia Britannica Films, Inc.
Wilmette,
Illinois

Gentlemen:

At the present time I am working towards a Master's Degree in Education at Central Washington State College. The title of my thesis is "Instructional Materials for Use in Teaching Electronics." One chapter of the thesis deals with 8mm single concept films.

I have managed to obtain Technicolor's series of basic electronics and electricity on a preview basis. I am sure you would want your films dealing with these subjects given equal time for evaluation. If you have any 8mm single concept films which could possibly be used in teaching electricity or electronics, would you please ship them to me immediately on a preview basis.

It is necessary that I receive these films soon. I expect to complete the study this summer--preferably by the end of this month.

If it is not possible for you to ship the above mentioned materials, upon receipt of this request will you please notify me by return mail.

Sincerely,

/s/ H. Allen Shockley

H. Allen Shockley
Instructor

405 South 31st Avenue
Yakima, Washington
July 10, 1963

Educational Services, Inc.
46 Galen Street
Watertown, Massachusetts

Gentlemen:

At the present time I am working towards a Master's Degree in Education at Central Washington State College. The title of my thesis is "Instructional Materials for Use in Teaching Electronics." One chapter of the thesis deals with 8mm single concept films.

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It is necessary that I receive these films soon. I expect to complete the study this summer--preferably by the end of this month.

If it is impossible for you to ship the above mentioned materials upon receipt of this request, will you please notify me by return mail.

Sincerely,

/s/ H. Allen Shockley

H. Allen Shockley
Instructor

405 South 31st Avenue
Yakima, Washington
July 10, 1963

International Communications Foundation
870 Pass Road
Monterey Park, California

Gentlemen:

At the present time I am working towards a Master's Degree in Education at Central Washington State College. The title of my thesis is "Instructional Materials for Use in Teaching Electronics." One chapter of the thesis deals with 8mm single concept films.

I have managed to obtain Technicolor's series on basic electronics and electricity on a preview basis. I am sure you would want your films dealing with these subjects given equal time for evaluation. If you have any 8mm single concept films which could possibly be used in teaching electricity or electronics, would you please ship them to me immediately on a preview basis.

It is necessary that I receive these films soon. I expect to complete the study this summer--preferably by the end of this month.

If it is not possible for you to ship the above mentioned materials, upon receipt of this request, will you please notify me by return mail.

Sincerely,

/s/ H. Allen Shockley

H. Allen Shockley
Instructor

APPENDIX F

LIST OF OTHER SELF-INSTRUCTIONAL MATERIALS

LIST OF OTHER SELF-INSTRUCTIONAL MATERIALS

1. BASIC ELECTRONICS 07

   Published by EDUCATION ENGINEERING, Inc.,
   3810 Pacific Coast Highway,
   Torrance, Calif.

   7650 frames, for use in "SPEED" machine, $70; program reusable. Programed text, Paperback, 252 pages, 5" x 7", 7 separate units @ $3.75 each.

2. CAPACITANCE AND CAPACITORS
   ROBERT H. KANTOR, Programmer,
   Varian Associates

   Published by VARIAN ASSOCIATES,
   611 Hansen Way,
   Palo Alto, Calif.

   Programmed Text, 115 frames, Paperback, 120 pp., 6" x 9", $3.00.

3. KLYSTRONS
   ROBERT H. KANTOR, Programmer, and
   ROBERT F. MAGER, Senior Scientist,
   Varian Associates

   Published by VARIAN ASSOCIATES,
   611 Hansen Way,
   Palo Alto, Calif.

   Programmed Text, 85 frames, Paperback, 93 pp., 5½" x 8½", $2.00.

4. RELAYS
   ROBERT H. KANTOR, Programmer and
   ROBERT F. MAGER, Senior Scientist,
   Varian Associates

   Published by VARIAN ASSOCIATES,
   611 Hansen Way,
   Palo Alto, Calif.

   Programmed Text, 95 frames, Spiralbound Paperback, 100pp., 5½" x 8½", $ .85.

5. SWITCHES
ROBERT F. MAGER, Senior Scientist,
Varian Associates

Published by VARIAN ASSOCIATES,
611 Hansen Way,
Palo Alto, Calif.

Programmed Text, 58 frames, Spiralbound Paperback 66 pp., 5½" x 8", $.75.