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The Use of Slide-Tape for Teaching
Art Theory in CEGEP

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ABSTRACT

The Use of Slide-Tape for Teaching Art Theory in CEGEP

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The purpose of this study was to evaluate a slide-tape production used to teach art theory in CEGEP. The CEGEP studio art program allows inadequate time for the study of basic art theory, which is essential knowledge for application to studio art projects. A slide-tape production on the illusion of space was developed to serve as a model for other self-instructional units on basic art theory. It is the intention of the evaluator to develop and incorporate these units into the curriculum at Marianopolis College. A study was conducted to determine the effectiveness of the slide-tape production, and to decide if it could be used as a substitute for the same lesson taught in lecture-discussion format. A sample of 48 subjects was drawn from four art classes at Marianopolis College. Subjects were assigned to two treatment conditions — audio-visual and lecture discussion. An immediate posttest was administered to both groups. Subjects in the audio-visual treatment were also required to complete a questionnaire evaluating production quality. A one-way analysis of variance showed a significant main effect for lecture-discussion treatment. Further analysis showed that a segment of the material covered in the production was less explicit than in

the lecture-discussion. This possibly accounted for some of difference between the two groups. Recommendations for further studies were made. The evaluator felt that this study was an integral route to take in order to design and produce a valuable series of slide-tape presentations on basic elements of art.

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I would like to thank my husband Terry Creatchman, whose constant inspiration and sense of humour enabled me to complete the course work and this thesis.

To my sons Eric and Carl, both born after my enrollment in the educational technology program, I give thanks for waiting as patiently as little boys can.

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Chapter 1

Background

The author of this thesis has been a professional art teacher for 15 years. She has spent the last eight years on staff at Marianopolis College, teaching fine arts and humanities. She has designed and restructured academic courses at the college.

The two year pre-university CEGEP program offers numerous fine arts courses. Basic design theory is an important part of the curriculum for all introductory art courses. The students are required to learn basic design theory and to apply it to art projects assigned by the instructors. This art theory is taught by the instructors using lecture-discussion format. The art teacher presents the information to the students verbally. Visuals as well as illustrations sketched on the blackboard are used for demonstration. Students are encouraged to participate in the discussion. This method of teaching takes approximately 30 minutes of class time every meeting.

Studio courses are scheduled into three hour time slots. Instructors meet with each class once a week for 15 weeks. Classes are comprised of students with varying degrees of formal art education and artistic experience.

Three major problems exist in the present system of CEGEP art education: (a) The practical workload is heavy and students require the full three hours of class time to work

on their projects. The theory takes time away from the
valuable working hours, (b) with students entering the courses
from varied backgrounds, it is inevitable that the material
covered will be redundant for some, and (c) even a small rate
of absenteeism causes some of the students to miss certain
segments of the theory and to have difficulty with their
artwork because of this lack of knowledge.

The author concluded that a possible solution to this
problem was to design a series of self-instructional
slide-tape productions which could be viewed and reviewed in
the audio-visual center at a time other than class time. It
was hypothesized that this would be an effective method of
teaching, and that the students would learn as much, or more
information by this method as by lecture-discussion method.

The purpose of this thesis-equivalent is to design and
evaluate a slide-tape production on the illusion of space,
one of the basic elements of art. Its design will serve as a
model for other slide-tape productions on other elements of
art. They include colour, unity, emphasis, line, form, texture
and balance. These are all concepts which are presented in
the same way as the illusion of space. Information is
presented verbally. Visuals are shown to illustrate the theory.

Literature Review

Related Product Testing, Research and Case Studies

Extensive research has been done on the use of slide-tape for instructional purposes. King, Miller and Brenden (1977) sought a system that would bring about an optimum utilization of instructors' time. Various modes of instruction were tested. Slide-tape was found to be the most practical audio-visual mode considered. It could be implemented and operated at a minimum cost using existing facilities and budget. It was concluded that slide-tape units, preceded by an introduction, showed a high degree of success and provided an excellent means for individualized instruction.

Edgar (1974) analyzed audio-visual instruction and concluded the effectiveness of slide-tape in teaching and in the task of converting verbal information to visual. Slides of paintings, drawings and collages were expected to be an effective and practical way to display visuals.

Edgar stated that a good art education program should include development of spatial concepts as well as other elements of design. These elements can be taught most effectively by use of well organized visuals for adequate illustration. It is this knowledge and understanding of visual examples which results in correct application in studio projects. She discussed how critical it is to use visuals in the teaching of theory to enable the student to develop sensitive discrimination and familiarity with technique which leads to improving critical standards.

For purposes of illustrating basic art theory, the art educator must provide numerous examples of artwork. Hardiman and Zermich (1984) have questioned whether photographic reproductions have elicited response profiles similar to slides or original works of art. Three groups of subjects were tested, each using a different type of illustration. They include slide, photograph and original art. This study provides support for the proposition that mode of presentation has little effect on the subject's evaluation or analysis of the work.

Further support to the evaluator's choice of slide-tape format can be established by the research of Janssens (1977). This study concerned stimulating motivation through the use of audio-visual methods. It was found that slide-tape can bring an outside world into the classroom in a static way. The main advantages cited are: (a) Slides incite the pupil to critical observation and give support to his memory, (b) slides can correct vague or false concepts, and (c) they provide excellent offshoot to follow-up exercises.

Sigda (1983) advocated the use of media when first-hand experiences are impractical for classrooms. His research concentrated on presenting information from the inaccessible (i.e., field trips and travel). Slides are found to be an ideal way to reduce and enlarge the size of the illustration to be viewed. Financial expenses are low and valuable time can be saved with this format.

Research done by Harrell (1970) concerns similar issues

to those of Sigda, using slide-tape for teaching when teacher demonstrations are inadequate or impractical. It was found that groups of subjects progressed through the material on slide-tape faster than through lecture. Students who could adjust the pacing of the production benefited.

Johnson (1971) has found that in cases where the movement element of the picture is not essential, slide-tape is an inexpensive alternative to television of film to be used in higher education. His research shows that slides have the highest score in picture quality and are capable of carrying very fine detail. This format lends itself well to self-teaching devices.

In his research on programmed learning, Harris (1971) found that slide-tape productions dealing with different topics in general histology proved more effective than conventional teaching. This format permits a course to be prepared prior to its scheduled time for presentation. It provides better instruction to more students at lower costs and in less time.

Importance of Evaluation in Relation to Available Literature

Slide review and some testing within the unit was expected to be useful in instruction. Brown and Mitchell (1980) found that TIFS technology (tests with instructional feedback on slides) is an efficient, economical and practical method of meeting the needs of the instructor and the learner. Slides should be clear and unembellished. A study by Popham (1969) showed that the use of embellishments

significantly detracts from the learner performance.

Marchant (1974) presented techniques for the use of audio-visual instruction for large groups. In his research on slide-tape educational demonstrations for the purpose of library orientation, there were two relevant research findings: (a) Students tended to perform better under the supervision of teachers who are known to favour a given method, and (b) while photographic illustrations are superior for immediate retention, line drawings are superior when delayed retention tests are employed. Marchant concluded that slide-tape presentation is the best possible audio-visual medium to use when funds are limited.

Chapter 2

Educational Context

Educational Objectives

Specific objectives. The objective of this media presentation is to enable the student to recognize and identify which spatial devices are used in the original artwork and visuals which are presented to him or her.

Study of this theory will be eliminated from class time. The media presentation will be made available as resource material for any student or instructor at Marianopolis College.

Instructional Analysis

This self-instructional unit on the illusion of space includes concepts, not skills which are to be learned by the students. It is necessary for the student to understand each of these concepts in order to be able to analyze artwork and determine which spatial device is used in it.

This unit has been designed for a target audience with a wide range of art education experience. It includes very basic information on the illusion of space which must be covered in the CEGEP introductory level art courses. Any new vocabulary introduced in the unit is defined and illustrated by the use of examples. These examples include diagrams, paintings and photographs.

Art education does not lend itself to procedural analysis or hierarchical analysis as described by Dick and Carey (1978). Many art elements can be learned independently from one

another. They are non-fixed in sequencing, as described by
Harary, Norman, and Cartwright (1965).

The six devices are presented in the following order:
size, overlapping, vertical location, atmospheric
perspective, linear perspective, multiple perspective.
Each device is defined. Examples of each device are shown
for illustration purposes.

Size is the simplest concept presented. Although it
may be familiar to most students, there are still some who
have never analyzed this spatial device. Many of the students
have never applied it to artwork. This segment serves as
review to those students who have had previous art education.

Overlapping is presented next. It is also a simple
device to show the illusion of space, however it is more
complex than size. In this unit it is broken down into two
sections; one dealing with opaque overlap, the other dealing
with transparency.

The next four spatial devices are more difficult to
understand, identify and apply to artwork. Organization of
these devices is non-fixed in sequence.

Target Audience

The production is designed for CEGEP students enrolled
in introductory studio art classes. Art courses are open to
all students of the college and may be taken as either core
curriculum in a creative arts program, or as complementary
courses for students who are enrolled in other disciplines.

There are no prerequisites for introductory art courses. Some of the students will enter a course with no previous formal art education. Others will have previously covered some of the material either in CEGEP or in high school.

Classes are coeducational. Students range in age from 17-20. They are highly motivated students who are capable of handling the subject matter. All the students have had previous experience with audio-visual instruction.

Rationale for Media Selection

Slide-tape format was selected as the most appropriate format for many reasons. The reproductions used to illustrate the concepts are two-dimensional still images: drawings, paintings or photographs in colour or black and white. They can be easily reproduced in slide format. The use of slides facilitates showing many examples to illustrate one principle.

The productions will be predominantly visual. Verbal instructions on tape will be syncronized with the appropriate visual images. Upon implementation of the unit into the curriculum, the student will have the option of stopping the tape at any point if more time is needed to view a slide. The student will also be able to direct any questions concerning the content of the unit to the instructor who is available during office hours or class time to clarify any problems (MacLinker, 1968).

Slide-tape format was also chosen because it is compact

and portable. It can be shown within and outside the college. The units can be easily stored in the audio-visual library.

Students will be able to reserve the viewing room at their own convenience. They may view a production alone or in groups. An audio-visual technician is available for assistance.

Slide-tape is an inexpensive medium to use. Production costs of the complete series of slide-tape units must be within the college budget in order to receive funding for this project.

Outline of Content

The script of the slide-tape production (Appendix C) begins with an introduction to the concept of the illusion of space. The narrator discusses three-dimensional sculptures by Henry Moore and Archipenko, stating that we can move about these sculptures to experience various spatial patterns. It is then explained that in two-dimensional artwork, the artist may wish to convey a feeling of space. The images rendered are essentially flat, and space, or depth is an illusion. Examples are shown to illustrate this principle.

The objectives of the unit and viewing instructions are presented next. A list of the six spatial devices is presented verbally and on a slide.

The first device introduced is size. Diagrams and photographs are shown to illustrate the concept.

Overlapping is presented next. Differentiation between transparency and opaque overlapping is made on the tape and on the visuals.

Vertical location is the third spatial device defined. Illustrations are provided to demonstrate how elevation on the page indicates a recess in depth (Bates, 1970).

Atmospheric perspective is the fourth device presented. Illustrations show that colours far away become a less distinctive blue-grey (Bevlin, 1980).

The fifth spatial device presented is linear perspective. Examples of artwork are shown to describe how lines can pull us into the picture plane, giving us the illusion of depth.

Multiple perspective, looking at an object from more than one vantage point simultaneously, is the last device presented. Slides combining profile and front views are provided. Comparisons of the perspective are made (Lauer, 1979).

Review of the six spatial devices follows. Examples are presented and the viewer is asked to study them and guess which device is used. After each example is shown, the correct answer is given on the tape.

The narrator concludes with a statement that spatial forces are operative as soon as any mark is applied to a two-dimensional surface (Behrens, 1984).

Instructional Strategy

Students who will be using this unit are highly motivated and extremely hardworking. Introductory art is an elective course for most of the students, so learning attitudes are always positive.

Pre-instructional activities for this type of learner would include stating the objective of the module and emphasizing the relationship of the self-instructional unit to future application in the class projects. Once students understand that the knowledge they will acquire from the slide-tape unit will relate directly to their practical studio work, they will be more eager to begin the unit. They will have that theoretical knowledge which is necessary in order to approach their work more intellectually rather than through experimentation.

Students will also be informed of the amount of class time which will be saved by this type of learning. Students are aware of the need for more studio time to complete their artwork and they will be more motivated knowing that more class time will be freed for this purpose.

Although all the units are designed to work together as a package, there is no strict order in which the students will be expected to learn the theory. Should they be implemented into the curriculm, the instructor will recommend an order in which to see the individual units based on the order of class assignments. The unit on the illusion of space will be assigned to the students at the beginning of the

semester because the projects being done by the students are predominantly two-dimensional. The students will need to know how to create the illusion of space on a flat surface. Should the instructor notice a particular area of weakness, he or she will ask the student to review the unit. The students will also have the opportunity to ask questions about unclear areas of information. They will then be able to apply the knowledge to upcoming projects.

The production on the illusion of space is broken into smaller concepts. Each concept is illustrated with examples of artwork or photographs. The students can decide when and how much of the unit they wish to view in one session. They can review the production as often as desired and at any point in the semester.

There is only a small amount of student participation in the audio-visual unit. A review section and short question segment follow the main presentation of information. Students are presented with slides and asked to identify the spatial device used. Feedback is provided.

Recognition and identification of spatial devices, the immediate objective, will be tested during this study. In class, follow-through activities will include clarification of any necessary concepts in the theory supplemented by examples. Art projects done both in class time and at home will be an important aspect of the learning process.

Chapter 3

Method

Preliminary Evaluation

Preliminary evaluation of the instructional material, as described in Dick & Carey (1978), took place during the months of October and November, 1985.

Jennifer Salahub and Eva Brandl, two art education specialists acted as subject matter experts in the evaluation.

Jennifer Salahub teaches fine arts at Concordia University and at Marianopolis College. She has done script writing for art films and she reviews art exhibitions for several Canadian art journals.

Eva Brandl teaches art at Concordia University and at Marianopolis College.

The evaluator met with each subject matter expert on two occasions. During the first meeting the evaluator discussed the objectives of the project with the consultants. The slide-tape production was shown. Notes were recorded from the discussion.

The purpose of the second meeting was to view and discuss slides chosen for the posttest. Both instructors viewed a selection of 45 slides chosen by the evaluator, with the intention of eliminating ambiguous slides.

Two students from the target population were included in the next stage of this evaluation. One student, above

average in ability and with above average knowledge of art, viewed the production and took the posttest. No time limit was set for the posttest. The student discussed each test item with the evaluator and notes were recorded.

The second students included in the preliminary evaluation had no art experience. The same procedure was followed.

Eleven students from the target audience participated in a pilot test of the posttest. The students took the test together. One minute was allotted to examine each slide. Students were asked to raise their hands upon completion of each test item so that the evaluator would be able to verify that every student had sufficient time to respond.

Field Evaluation

Evaluation questions. Three major questions arose from the evaluation objectives:

1. The evaluator was testing to see whether or not the students at Marianopolis College would be able to master the art theory required for studio art projects. The test was to measure the ability of the subjects to identify spatial devices used in artwork.

2. It was also the concern of the evaluator to establish if the production was an effective substitute for the traditional lecture-discussion format covering the same material.

3. The evaluator wanted to assess the students' comments

on the questionnaire dealing with the production and content.

Rationale. The rationale for the first objective is that the evaluator wanted to have evidence that the students had learned the theory from this slide-tape unit. As stated before, this particular unit will serve as a model for others which the evaluator, an art education specialist, hopes to develop in the near future.

The rationale for the second objective is to have these students learn the basic art theory from slide-tape productions outside of class time, thus saving studio hours to work on their practical art assignments. This arrangement will give the instructor more time to help the students with their studio work.

The justification for the third objective is that the evaluation of the questionnaire will provide useful information on the slide-tape production which can be practical for revising this production on the illusion of space. It will also be useful in the design of other productions on basic elements of art.

Operational definitions. Mastery of the art theory as stated in the first objective will be defined as each subject scoring at least 80% correct on the posttest.

In order for the slide-tape production to be an effective substitute for lecture-discussion format, results of the posttest of Treatment 1 (slide-tape presentation) will have to be equal to or better than the results of the posttest of Treatment 2 of the experiment (lecture-discussion presentation).

Slide-tape treatment will be defined as the students viewing a self-instructional unit on the topic without the assistance of the instructor.

Lecture-discussion format includes the instructor presenting the information verbally, showing a limited number of visuals, sketching diagrams on the blackboard, and including the students in the discussion on the subject.

Instrumentation. Every subject in this study was required to complete the same posttest. This posttest was developed to evaluate recognition of spatial devices used in paintings.

The posttest was a slide test with 30 slides. Subjects were provided with a list of the six spatial devices which were covered in both treatments. They were asked to match the spatial device which best identified an artwork. Each visual had one dominating spatial device to be recognized. Each of the devices was represented at least four times.

The evaluator felt that a matching format posttest would enable the subjects to choose correct answers by discriminating from what was listed. Matching format would also minimize guessing (Dick & Carey, 1978).

Instructions were clearly stated and an example of how to answer the posttest was provided at the top of the page (Tuckman, 1975).

The test was worth a total of 30 marks, each item being worth one mark. A copy of the posttest and answers can be seen in Appendix A.

After completion of the posttest, subjects in the audio-visual treatment were asked to complete a questionnaire pertaining to production evaluation. The questionnaire was comprised of 18 questions. Twelve questions evaluated the slide-tape production and six pertained to program content. A space for additional comments was provided. The measurement used was a four point Likert scale ranging from 4, denoting 'excellent' to 1, denoting 'poor'. This enabled the subjects to circle the number which best reflected their opinions on each question (McMillan & Schumacher, 1984). A copy of the questionnaire can be found in Appendix B.

Sample and sampling procedures. The subject pool was drawn from four intact classes at Marianopolis College. Forty-eight subjects participated in the study. All the subjects were students who were enrolled in introductory fine arts classes at Marianopolis. Ten of the subjects were specializing in fine arts. They all had taken art courses in high school. Three had attended extra-curricular art courses before enrolling at the college. The other subjects involved in the study were enrolled in arts, commerce and science programs. They were taking art courses as elective courses to complete their D.E.C. (diplôma d'études collégiales). Subjects were of both sexes. They ranged in age from 17-19.

The subjects were randomly assigned to two treatment groups. Treatment 1 consisted of 26 subjects and Treatment 2

consisted of 22 subjects. Treatment 1 included six fine arts students; Treatment 2 included four.

Testing design. Posttest, two treatment randomized design was used in this study (Campbell & Stanley, 1963). This design was considered appropriate since the target audience was fairly homogeneous in regard to age. Subjects in Treatment 1 viewed the slide-tape production. The second treatment group reviewed the same information in lecture-discussion format.

The design can be diagrammed as follows:

$$R \quad X_1 \quad O_1$$
$$R \quad X_2 \quad O_2$$

Procedure. The study was conducted during the last week of November and the first week of December, 1985. As it was impossible to schedule the study at a convenient time for all participants, it was necessary to schedule it into two time slots which were convenient for most of the subjects.

The evaluator informed the subjects of the purpose of the study, and that participation was optional. The students were aware of the relevance of the subject matter to their course work and all consented to participate.

Subjects in the audio-visual treatment were moved to another room. Twenty minutes later they viewed the slide-tape unit. The evaluator was present.

Subjects in the lecture-discussion treatment remained in the original classroom. The lecture was prepared by the evaluator and taught to the subjects by Jennifer Campbell.

Mrs. Campbell is an art specialist who teaches at St. George's
School of Montreal. Format of the lecture-discussion, as
described in the operational definitions, included the
instructor presenting the information verbally, showing
visuals, sketching diagrams on the blackboard, and including
the students in the discussion. Students were permitted to
ask questions. No time limit was set for the lesson. A copy
of the lecture outline can be found in Appendix D.

Upon completion of the treatments, both groups
reassembled in the original classroom to take the posttest.
The subjects were shown 30 slides. They had one minute to
view each slide and match it to the spatial device which best
identified it. The six spatial devices were listed on the
test sheet.

A questionnaire was administered to the subjects in the
audio-visual treatment.

Data analysis. Three sets of data were obtained from
this study:

1. Descriptive statistics were obtained to measure
whether or not the subjects had mastered the art theory.

2. A one-way analysis of variance, with posttest raw
scores was performed to establish if the production was an
effective substitute for the traditional lecture-discussion
format covering the same material.

3. Responses to the questionnaire were analyzed to
determine the following: (a) sound quality, (b) suitability
of the pacing of the information, (c) adequate presentation

of examples, (d) clarity of the subject, and (e) visual
quality. The Likert scale was analyzed in terms of percentage
of responses to each item. Additional comments by the
subjects were reviewed and categorized.

Chapter 4

Results and Discussion

Preliminary Evaluation

After viewing the slide-tape production, the first subject matter expert, Jennifer Salahub, felt that the visuals and script were very explicit and appropriate for the target audience. She found the image on one slide unclear and recommended that the diagram be darkened. The slide was revised by darkening the image.

The second subject matter expert, Eva Brandl, felt that the production was appropriate for the audience.

During the second meeting, both instructors helped the evaluator to eliminate seven ambiguous slides from the ones which were being considered for the posttest.

The first student consulted found that the production was suitable for her level. She felt the information was clearly presented. She stated that she would have benefitted from the addition of more visuals of artworks identified with the spatial device used. She took the 38 slide posttest at her own pace with the evaluator present. She found certain slides to be slightly ambiguous. Notes were recorded by the evaluator for revision purposes.

The second student expressed criticisms similar to those of the more experienced art student. He felt that viewing more labeled examples of spatial devices in artworks would help him to improve his ability to identify them.

The evaluator chose 12 visuals from the Reinhold Visuals Series (1969) which she felt would exemplify the use of spatial devices covered in the slide-tape presentation. Each visual was labeled and added to the instructional unit.

At this point, the slides for the posttest were reviewed and eight were eliminated, based on observations from the one-to-one evaluations. The test was prepared for pilot testing.

Although one minute was allotted for examination of each slide, most of the students completed each test item in less than 30 seconds. All completed each item within the minute. No student asked for more time to see any slide. Scores on the pilot test, out of a possible total of 30, ranged from 7-19. The mean score was 13.4

No further revisions were made.

Field Evaluation

The purpose of this study was to evaluate a slide-tape production on the basic element of art, the illusion of space. It was developed and tested to serve as a model for other units on basic art theory which the evaluator hopes to design for her art classes at Marianopolis College. The unit used in this study was a self-instructional slide-tape production to be viewed outside of class time. The intention of this method of instruction was to save class time for more practical studio work.

It must be remembered that although the units will be

viewed outside of class hours, the students will be encouraged to consult with the instructor during office hours or scheduled class hours in order to review any concepts which need clarification. Should the instructor find that a particular concept is difficult for a number of students to understand, she will review it during class time for everyone.

It was hypothesized that the presentation of basic art theory in a self-instructional slide-tape production would be an effective method of teaching. It was also hypothesized that the students would learn as much, or more information by this method of teaching as by lecture-discussion method.

A descriptive statistical analysis was performed on the posttest scores of both treatments. Means and standard deviations are shown in Table 1.

Mastery of the art theory was defined as each subject scoring at least 80% on the posttest. In Treatment 1 (audio-visual), two subjects reached this level. In Treatment 2 (lecture-discussion), eight subjects scored 80% or higher.

A one-way analysis of variance with posttest raw scores was performed. Alpha was set at .05. The results of the ANOVA are shown in Table 2. Results show a significant main effect for lecture-discussion treatment, F (1, 46) = 6.94, $p < .05$.

Analysis of the results of the questionnaire show that the majority of the subjects found that the production quality, both audio and visual, was high. Pacing of the information was suitable. The rating of the program content was high. A table is provided in Appendix B showing the

Table 1

Means and Standard Deviations for the Posttest

of a Maximum Score of 30

Condition	n	
Audio-visual	26	
M		18.69
SD		3.41
Lecture-discussion	22	
M		21.64
SD		4.33

Table 2

Summary of the Analysis of Variance

Source	df	SS	MS	F	p
Between groups	1	103.29	103.29	6.94	.0114
Within groups	46.	684.63	14.88		
Total	47	787.92			

percent of responses to each item in the questionnaire.

Posttest scores indicate that most subjects in the audio-visual treatment did not master the content at the level set in the operational definitions.

Results of this study indicate that lecture-discussion method was a more effective method than audio-visual in teaching the concept of the illusion of space. Results of the statistical analysis were significant with 48 subjects.

As the ANOVA was significant for lecture-discussion and not for audio-visual as hypothesized, the evaluator decided to analyze the data further to determine why this happened.

The evaluator analyzed posttest results of the audio-visual treatment. Percent of correct responses to each spatial device is represented in the bar diagram (Figure 1). Subjects reached the 80% mastery criterion on only one item, atmospheric perspective. The two devices' showing the poorest posttest results are vertical location and multiple-perpective.

The evaluator reviewed the posttest item results and comments on the questionnaire to see if she could determine any particular areas of weakness of the audio-visual treatment.

Percent of responses on the checklist showed that areas of weakness on the slides included the presentation of more than one concept on one slide and continuity between the slides.

Responses to three items on the program content checklist indicated that some subjects had difficulty understanding the viewing instructions, some subjects did not feel that the unit maintained their attention and some desired more feedback.

1. size.
2. overlapping
3. vertical location
4. atmospheric perspective
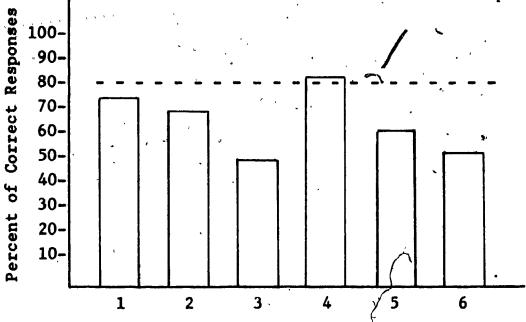5. linear perspective
6. multiple perspective

Figure 1: Correct responses to the posttest for the
audio-visual treatment.

Although comments on the questionnaire were generally very
positive, two subjects wrote that they had difficulty with the
concept of vertical location and two wrote that they did not
understand the concept of atmospheric perspective. One subject
expressed the need for more examples to illustrate concepts.

Eight posttest items demonstrating the concepts of
vertical location and atmospheric perspective showed that
subjects in the lecture-discussion treatment scored much
higher than subjects in the audio-visual treatment. The
lecturer was consulted and she reported that the subjects in

her treatment asked numerous questions about vertical location and atmospheric perspective. She spent a large amount of the lecture time clarifying these two concepts, using diagrams and reproductions of paintings.

It was hoped that the subjects in the audio-visual treatment would have mastered more of the theory than posttest scores indicate. One reason for these scores can be partially attributed to the lack of understanding of certain concepts as indicated in Figure 1. Concepts included needed more verbal explanation and visual illustration than was originally anticipated.

It is possible that the mastery criterion of 80% was too high. This percentage is difficult to reach even under traditional educational circumstances in which students are encouraged to discuss the material with the instructor and review is permitted.

It may also be that the posttest was too difficult for the conditions of Treatment 1. Even with this possibility, subjects in both treatments were able to apply many of the concepts to the slide test.

Another factor which may account for the posttest scores is the scheduling of this study. First semester classes at Marianopolis College end the first week of December. At the end of the semester there is a tension which exists. Students are anxious about exams and various deadlines to submit assignments and term papers. This affects their concentration. These distractions possibly hindered the subjects in this study.

All the subjects were cooperative in the study, but it is also possible that their levels of effort were reduced because they were informed that their posttest scores would not in any way affect their final grades in the art courses. They were less motivated than under normal conditions for this reason.

This study demonstrates that there are effective aspects for using slide-tape in teaching the illusion of space. One of the most important premises behind this study was to find a way to reduce class time used to teach art theory. Harrell (1970) determined in his research on modes of presentation of information for study, that subjects progressed through the material faster in slide-tape than through lecture-discussion. There is no doubt that this slide-tape production is a time saver both for the instructor and for the learner.

In this study, the lecturer spent 40 minutes covering the same material that was covered in the slide-tape in 12 minutes. In additions, she had to arrive at the college early to organize her visuals, review her notes, and set up for the lecture. This increased total time spent on the lecture-discussion treatment to almost four times that spent on organizing the slide-tape treatment.

This study shows that the use of this self-instructional unit can make optimum use of the instructor's time. Much smaller lengths of class time will be necessary to be set

aside for clarification and review of more difficult concepts. This is supported by the research on best use of teaching time by King, Miller, and Brenden (1979).

There is no need for the instructor to prepare the same material and visuals for different sections of the same course offered from one semester to another (Harris, 1971).

The use of slide-tape is supported by the positive responses to the comments section of the questionnaire. Subjects responded that they enjoyed learning the information from the production. They expressed the fact that they appreciated learning the material in a different mode of presentation from lecture-discussion.

Results of this study do not support the hypothesis that students would learn as much or more in the slide-tape treatment as in the lecture-discussion treatment. The fact that the subjects in the lecture-discussion treatment had the opportunity to ask the lecturer for clarification on difficult concepts possibly accounted for some of the posttest score differences between the two treatment groups.

Although the analysis of variance was statistically significant, the evaluator feels that the time saving factor of slide-tape instruction on the illusion of space makes it a reasonable learning tool. The evaluator is confident that viewing the slide-tape production and consulting the instructor for extra help when needed will produce little or no difference between the two methods of teaching. In this

study, subjects in the audio-visual treatment were not
permitted to ask questions about the content. As a developer,
it was important to determine whether or not the slide-tape
unit could serve as a substitute for lecture-discussion. It
was necessary to see how much subjects could learn on their
own without referring to the teacher for help. For this
reason the subjects were not permitted to ask questions about
the content. Optimum learning would require consultation
between the learner and the instructor.

Limitations of the Study

The design of the posttest can account for some of the
inability of the subjects to reach the mastery level of 80%.
The posttest slides were of paintings. The slide-tape
production did not include paintings to illustrate concepts.
Most concepts were illustrated by diagrams and collages.
Subjects possibly experienced difficulty in transferring
theory from one type of example to another.

A second limitation of the study could be the possibility
of ambiguity in analysis of each posttest slide. Although a
pilot test had been conducted using the same posttest, it
would have been preferable to include an item analysis of
each slide to determine any ambiguities.

Recommendations and Conclusion

This unit on the illusion of space was designed to serve as a model for other slide-tape units on basic elements of art. Before beginning another production on a different element of art, the evaluator offers recommendations for further study.

An important step should be taken before making any revisions to the slide-tape production tested in this study. This production should be shown to a new group of students from the same target audience. Unlike the route taken for this study, this group would be able to ask the instructor questions about any aspect of the content, after seeing the instructional unit. The same posttest would be administered to measure the ability of these students to identify the spatial devices used in the visuals. Comparisons would be made with the results of this study.

The evaluator recommmends that revisions of the slide-tape production before implementing it into the curriculum at Marianopolis College. Instructions on how to use the unit should be stated more clearly. Design of the visuals and the order in which they are presented must be improved in order to attract and maintain viewer attention. Visuals should be more colourful. Continuity should be smoother. More illustrations should be used in order to illustrate each concept. Each illustration should include only one concept

for each slide. More examples for practice and feedback should also be included. These recommendations would apply to the design of other slide-tape productions on basic elements of art.

The long-term objective of this study is that the student will be able to correctly apply the theory to the practical studio projects assigned by the instructor. Another study could be designed to measure the outcome of this objective. This assignment would be one in which the student would have to demonstrate various spatial concepts in assigned work. Evaluation would require the assistance of other art instructors who would be trained to objectively evaluate this aspect of the art work of the students.

In conclusion, the evaluator feels that this study was an integral route to take in order to design and produce a valuable series of slide-tape productions on basic elements of art.

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Appendix A

Posttest   Name:

The purpose of this test is to ascertain whether you are able to recognize and identify which spatial device is used in each of the artworks presented to you.

On the line preceding each item in column I, put the letter of your choice from column II that best identifies the item. Each of the alternatives in column II may be used more than once.

One mark will be given for each correct answer.

Example: _a_ Visual 00

Column I   Column II

___ visual 1   a) size

___ visual 2   b) overlapping

___ visual 3   c) vertical location

___ visual 4   d) aerial, or atmospheric perspective

___ visual 5   e) linear perspective

___ visual 6   f) multiple perspective

___ visual 7

___ visual 8

___ visual 9

___ visual 10

___ visual 11

___ visual 12

___ visual 13

Column I	Column II
___ visual 14	a) size
___ visual 15	b) overlapping
___ visual 16	c) vertical location
___ visual 17	d) aerial, or atmospheric perspective
___ visual 18	e) linear perspective
___ visual 19	f) multiple perspective
___ visual 20	
___ visual 21	
___ visual 22	
___ visual 23	
___ visual 24	
___ visual 25	
___ visual 26	
___ visual 27	
___ visual 28	
___ visual 29	
___ visual 30	

Posttest Visuals

1. Curnoe	Spring on a Ridgeway		B
2. O'Keefe	Autumn Leaves		B
3. Wyeth	Christina's World		C
4. Ancient Egypt	Winged Arms		C
5. Gris	Book, Pipe, Glasses		F
6. de Hooch	Bedroom		E, A
7. Perugino	Christ Giving Keys to Peter		B, A
8. Spenser	In Fairmont		B
9. Picasso	Violin		F
10. Hogarth	Untitled		E
11. Catlin	Buffalo Herd Grazing		A
12. Blake	Wise and Foolish Virgins		B
13. Lorenzetti	Good Government		C
14. Constable	Cathedral at Salisbury		D
15. Nash	Landscape and Dream		B
16. New Kingdom	Celestial Bull and Seven Cows		C
17. Picasso	Painter and Model		F
18. Turner	St. Giorgio Maggiore		D
19. Egypt Science	Brickmakers		C
20. Surrey	Boardwalk		E
21. Johns	Three Flags		B
22. Feininger	Zirchow		F
23. Bassano	Adoration of the Shepherds		B
24. Seurat	La Grande Jatte		A

25.	Cullen	The Last Loads	D
26.	Nash	Dead Spring	F
27.	Cole	The Voyage of Life: Youth	D
28.	Chagall	I and the Village	F
29.	Carra	Free-Word Painting	B
30.	Surrey	Red Portrait	E

Appendix B

Evaluation of Tape-Slide Checklist

Name:

Rating: 4: Excellent, 3: Good, 2: Fair, 1: poor

Circle the number most appropriate.

Slides

1. Does the artwork have unity? Is each
   slide free from uncomplicating ideas,
   techniques or type faces?   4   3   2   1

2. Are the visuals bold and functional?   4   3   2   1

3. Is there no more than one concept
   present on each?   4   3   2   1

4. Has colour been used effectively?   4   3   2   1

5. Is the printing large enough, well
   spaced, and easily read?   4   3   2   1

6. Are slides focused sharply?   4   3   2   1

7. Is there continuity between slides?   4   3   2   1

8. Is the soundtrack audible?   4   3   2   1

9. Is the narration clear and distinct?   4   3   2   1

10. Is the music free of distortion or
    extraneous noise?   4   3   2   1

11. Is the pacing appropriate to intended
    audience?   4   3   2   1

12. Does the soundtrack support the
    visuals?   4   3   2   1

Evaluation Checklist   Name:

Program Content·

1. Informs the learner how to use the unit?	4 3 2 1
2. Informs the learner of the desired outcome or provides for some type of advance organization?	4 3 2 1
3. Attracts and maintains viewer attention?	4 3 2 1
4. Provides for learner practice?	4 3 2 1
5. Provides the learner with feedback?	4 3 2 1
6. Content appropriate in size and complexity for the intended viewer?	4 3 2 1

Comments _____

_____

_____

_____

_____

Evaluation of Tape-Slide Checklist

Percent of Responses to Each Item

Rating: 4: Excellent, 3: Good, 2: Fair, 1: poor

Slides	4	3	2	1
1. Does the artwork have unity? Is each slide free from uncomplicating ideas, techniques or type faces?	17	71	12	0
2. Are the visuals bold and functional?	21	71	8	0
3. Is there no more than one concept present on each?	27	41	32	0
4. Has colour been used effectively?	17	61	22	0
5. Is the printing large enough, well spaced, and easily read?	88	12	0	0
6. Are slides focused sharply?	67	25	8	0
7. Is there continuity between slides?	25	46	29	0
8. Is the soundtrack audible?	62	33	4	0
9. Is the narration clear and distinct?	71	21	8	0
10. Is the music free of distortion or extraneous noise?	58	33	8	0
11. Is the pacing appropriate to intended audience?	42	50	8	0
12. Does the soundtrack support the visuals?	58	25	17	0

Evaluation Checklist

Percent of Responses to Each Item
Program Content

Program Content	4	3	2	1
1. Informs the learner how to use the unit?	13	61	22	4
2. Informs the learner of the desired outcome or provides for some type of advance organization?	30	61	9	0
3. Attracts and maintains viewer attention?	17	52	22	9
4. Provides for learner practice?	25	58	17	0
5. Provides the learner with feedback?	17	57	26	0
6. Content appropriate in size and complexity for the intended viewer?	25	71	4	0

Comments _____

_____

_____

_____

_____

Appendix C

Script for the Illusion of Space

Slide 1
Several art forms are three-dimensional and therefore occupy space; ceramics, jewelry, and sculpture, to name a few.

Slide 2
In sculptures like Henry Moore's reclining figure and Archipenko's standing woman, it is important

Slide 3
for us to move about and enjoy the changing spatial patterns from various angles.

Slide 4
In two-dimensional art forms such as drawing, painting and photography, the artist often desires to give us a feeling of space or depth. Here, space is merely an illusion, for the images rendered are essentially flat.

In this geometric collage there is no suggestion of depth. The composition is a flat pattern which remains on the picture plane.

Slide 5
This photograph of a street scene in Switzerland shows great depth. Several devices have been developed to create an illusion of space.

Slide 6
This tape-slide unit has been designed to demonstrate six methods which can be used to show the illusion of space on a two-dimensional surface. During the course of this program you will have to concentrate on the slide projector. By looking carefully at

each slide and listening to the accompanying
verbal information, you will be able to understand
the six devices used to show depth. You will also
be able to identify one or more of these devices
in the two-dimensional artwork you will see.

The following are the six methods we will examine;
size, overlap, vertical location, atmospheric
perspective, linear perspective, and multiple
perspective.

Slide 7
The easiest way to create an illusion of space or
distance is through size. As objects get further
away, they appear to become smaller.

Slide 8
We do not assume that the figure on the left is a
giant, nor that the figure on the right is tiny.
Instead, we understand that the smaller figure is
farther from us. A sense of space is established.

Slide 9
In this photograph the receding trees gradually
diminish in size, effectively leading us back
in space.

Slide 10
Size factor can be effective even with abstract
shapes. The smaller squares automatically begin to
recede and we see a spatial pattern.

Slide 11
Overlapping is a simple device for creating the
illusion of depth.

Slide 12   When you look at these two rectangles, you do not assume that the brown shape is actually as shown at the right. Instead, you realize that the red shape is hiding part of the brown rectangle because it is on top, or in front of it.

Slide 13   Since overlapping is the only spatial device used in this collage, the space created is very shallow.

Slide 14   This is also the case in this group photograph.

Slide 15   When overlapping is combined with size differences, the spatial feeling is greatly increased.

Slide 16   This principle can be illustrated with abstract shapes.

Slide 17   This design which combines overlapping and size differences gives us a more effective illusion of space.

Slide 18   By using transparency, many artists ignore the device of overlapping. Two forms overlap and both are seen completely. Transparency does not give us a clear spatial pattern.

Slide 19   Vertical location is a spatial device in which the elevation on the page indicates a recess in depth.

Slide 20
Slide 21   When combined with size difference, it provides an illusion of space. The isolation of the figures is dramatized by the distance created.

Slide 22   Aerial, or atmospheric perspective means the use of colour to show depth. The value contrast, light and dark, lessens and the colours become less distinctive.

Slide 23   The mountains that are far away appear to be more neutral and blue in colour.

Slide 24   In the design on the left we get a feeling of space, based on size differences. The example on the right shows the same design, but the spatial feeling is greatly increased because the smaller shapes have become progressively darker and show less contrast with the background.

Slide 25   Linear perspective is based on a relatively simple visual phenomenon. As parallel lines recede, they appear to converge on an imaginary line called the horizon.

Slide 26   In this case the lines serve to unify the composition.

Slide 27 28   The lines in these collages pull us into the picture plane, giving us an illusion of depth.

Slide 29 30.   All the lines of the stairs, walls, and building, if extended, pull the eye toward the center opening.

Slide 31   Multiple perspective means looking at an object from more than one vantage point simultaneously.

Slide 32	Which view of the head is more descriptive?
	(Pause)
	The profile says head more clearly.
Slide 33	The eye in profile is a confusing shape, whereas the front view is what we know as an eye.
Slide 34	Multiple perspective does not give us a clear pattern.
Slide 35	This aspect has been sacrificed to give us a more subjective, conceptual view of forms.
Slide 36	Let us review the six devices we have used to show the illusion of space. (Pause)
	They are size, overlapping, vertical location, atmospheric perspective, linear perspective, and multiple perspective.
Slide 37	Which devices are used in this painting? (Pause) If you said size and vertical location, you are correct.
Slide 38	In this collage size and overlapping are the devices used.
Slide 39	This photograph is a good example of linear perspective.
Slide 40	Look closely at this collage and try to determine which device is used here. (Pause) Overlapping is the answer.

Slide 41   Do you recall the method used to create this collage? (Pause)

Transparency is_used.

Slide 42   Which fruitbowl shows more depth? (Pause)

This opaque one does. Overlapping is used to show depth.

Slide 43   Look carefully. (Pause) Are both eyes pointing in the same direction? (Pause)

Since they do not, which spatial device has been used? (Pause) Multiple Perspective.

Slide 44   Spatial forces are operative as soon as any mark is applied to a two-dimensional surface. They become more apparent as soon as we are able to experience the differences among the six elements we have just studied to show the illusion of space.

Appendix D

Lecture-Discussion Outline

Introduction

Start with an introduction, explaining and defining the term
illusion of space.

Emphasize the work 'illusion'.

Explain that space is also referred to as 'depth'.

Definition: The artist tries to give us a feeling of space
or depth on a flat surface.

State that the class will be discussing six ways to create
the illusion of space on a two-dimensional surface.

Size

Size is the easiest way to create the illusion of space.
Make a sketch of two figures, one large and one small, on the
blackboard.

We do not assume that the figure on the right is a giant,
nor that the figure on the left is further away from us.

Draw abstract shapes of different sizes on the blackboard.
This works with abstract figures, too.

Show a large visual of a painting which is a good example

of size used to show the illusion of space. Point out how it is used.

Overlap

Overlapping is a simple device used to create the illusion of space.

Sketch an example of overlap. Emphasize that it is really a two-dimensional surface, but a sense of space is created.

Show appropriate visual. Discuss how overlap is used.

Transparency. Define transparency by saying that two forms overlap and they are both seen completely. Transparency does not give us a clear spatial pattern.

Show two visuals of the same images; one opaque, one transparent. Compare and discuss which shows space more clearly.

Vertical Location

Definition: Elevation on the page indicating a recess in depth is the use of vertical location.

Show a visual of Persian miniatures and Oriental work. This device was used widely in Near Eastern art and in Oriental art. It is more understandable to people in those cultures.

Make a small sketch on the blackboard of a composition

similar to Andrew Wyeth's 'Christina's World'. Discuss how
vertical location is used in this sketch.

Atmospheric Perspective

Define the term. The use of colour to show depth. The
value contrast between distant objects gradually lessens.
Colours become less distinct, usually blue-grey.

Show the view out the window. Discuss how the colour
changes.

Show a visual of a painting in which atmospheric
perspective is used. Discuss the work.

Linear Perspective

Define the term. As parallel line recede, they appear
to converge and meet on an imaginary line called the horizon.

Make a sketch of tracks or a path. Discuss the
perspective.

Show the appropriate visuals and trace where the lines
would follow.

Multiple Perspective

Define the term. Several different views are combined
into one image.

This device is used widely in 20th century art. It was
also the basic pictorial device in Egyptian art.

Sketch an eye on the blackboard; profile and front view.

Discuss which one of the eyes is easier to read, or understand.

Show visuals of artworks using multiple perspective.

Conclusion

Sum up with a review of the six spatial devices: size, overlap, vertical location, atmospheric perspective, linear perspective, and multiple perspective.

Ask if there are any questions. Respond accordingly.