THE EFFECT OF ART 135-136, FOUNDATIONS OF ART, ON DESIGN JUDGMENT OF ELEMENTARY EDUCATION MAJORS AT NORTH TEXAS STATE UNIVERSITY

THESIS

Presented to the Graduate Council of the North Texas State University in Partial Fulfillment of the Requirements

For the Degree of

MASTER OF ARTS

By

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Denton, Texas
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CHAPTER I

INTRODUCTION

One phase of the teacher education program at North Texas State University is concerned with preparing the elementary education major to teach in elementary school classrooms. Recognizing that the effective classroom teacher becomes involved in art activities, the School of Education places an art course in the curriculum of the student preparing for that teaching position.

The Art Department at North Texas State University provides the course, Art 135-136, Foundations of Art, for the elementary education major. This art experience course attempts to acquaint the non-art major with an understanding of visual organization, with insight into the arrangement of visual material, and with a discernment in design judgment.

The Problem

This paper is a report of research at North Texas State University concerning the effect of Art 135-136 on the design judgment of elementary education majors. It describes the measurement of the level of design judgments of elementary education majors who have completed the course and those who have not.
Significance of the Problem

This problem derives its meaning from the fact that a difference in the ability to make design judgments can be measured between art majors and non-art majors, and an assumption that the difference can be reduced by meaningful art experiences, such as Foundations in Art, Art 135-136.

Method of Procedure

An investigation was made of available standard tests for measuring art-centered abilities considered desirable for teachers in elementary grade schools. A test was chosen and evaluated through a study of its use and performance in recent art education research. An experimental test was created to augment the standard test. A questionnaire was compiled for obtaining additional data at the time of testing. The testing program was executed during the spring and summer of 1965. The data from the questionnaire, the standard test and the experimental test were recorded, tabulated and evaluated. A survey of related theses and a study of literature and information pertaining to art education and teacher training were organized for presentation in the paper. Conclusions were drawn and recommendations were made with reference to the findings of the test, the study, and the survey.

Sources of Data

Data for this paper were obtained (1) from Dissertation Abstracts and unpublished theses; (2) from professional
magazines, journals and bulletins in the fields of education, psychology, and art education; (3) from books and textbooks of these fields; and (4) from the findings of the questionnaire, the standard test, and the experimental test. Information pertaining to the course evaluated was obtained from the art education advisor responsible for its design, from members of the faculty active in its presentation, and from personal experience in teaching the course as a teaching assistant in the Art Department.

Organization of the Study

The study is organized into six chapters.

Chapter I introduces the study, stating the purpose of the study, outlining the method of procedure, identifying the sources of data for the study, and presenting the study's organization.

Chapter II includes the survey of related literature and research.

Chapter III presents generalizations based on readings concerning the art education of the classroom teacher, the value of the classroom teacher's design judgment in the elementary school, the role of the classroom teacher in art activities, and the functions of art in the elementary classroom.

Chapter IV introduces the course under consideration, the groups tested in this study, the instruments used in the measurement, and the procedure followed in the testing program.
Chapter V is concerned with the data obtained in the testing program, their tabulation and statistical analysis.

Chapter VI summarizes the study and gives conclusions and recommendations.

A description of the process followed in designing, testing, modifying and evaluating the experimental test is in the appendix of this paper.
CHAPTER II

SURVEY OF SIMILAR PROJECTS

An investigation of theses presented at North Texas State University and recent dissertation abstracts from universities over the United States revealed no projects of identical design and purpose with this problem, though several were found to have similar elements.

Related Theses at North Texas State University

An investigation was reported concerning the testing of one-hundred Austin College students for their aesthetic judgment levels in an experimental three-place evaluation of twenty-six useful items.¹ Each item was presented in three design versions photographically reproduced. Twenty-five women and seventy-five men from seven areas of study: art, business, chemistry, English, engineering, philosophy and psychology, responded to the test and an accompanying questionnaire. By correlating the data from tests and questionnaire it was found that a significant difference existed between the mean score of the art students (77) and the mean score of the remaining students (49), with the

psychology majors mean score (69) being the nearest to the art students' mean. No score differences were attributed to variations in age, classification, or high school attended.

A report was made of an experimental teaching technique in which actual articles, paired as being exemplary of good and bad design, were arranged in a portable exhibit, and displayed in six local schools of various socio-economic levels. Children in the schools were asked to answer questions on an experimental test, evaluating each of the paired items. Verbal evaluations of the exhibit were recorded by the art teachers. The data obtained led to the conclusion that those children in the lower socio-economic area schools made better selections than those in the higher classified area schools.

An experiment in community education was described in which an exhibit of well designed articles was displayed and evaluated by the general public of a small town. While the articles were acceptable to a portion of the sample, the negative reactions indicated that the general public stood in need of design education.

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3Phoebe W. Tyson, "The Exhibition as a Medium for Developing Awareness to Good Design in Useful Objects Available in Wichita Falls, Texas," unpublished master's thesis, Department of Art, North Texas State College, Denton, Texas, 1951.
An account was given of a testing program among high school students and their art teachers, in which four standard tests and one experimental test were evaluated in identifying students' creative ability in art. Among the standard tests found to have shown validity in this program was the *Graves Design Judgment Test*. The project showed that, under the circumstances present in this situation, the trained art teachers' recognition of creative abilities among their students correlated with the findings of the tests employed.

Two groups of students were tested on completion of experimental curriculum designs employing simultaneous versus sequential aesthetic experiences in art, music, and dance. The experiment and the results of the tests were reported. It was concluded that no significant difference could be measured between the two groups participating in the two plans.


A study of the Golden Proportion as found in the paintings of Raphael and Titian\(^6\) gave an historical tracing of the proportional theory employed by Graves in parts of his test.\(^7\)

A series of case studies was presented by a teacher who used art in a guidance program among fifth-grade pupils.\(^8\) Art was used to improve design judgments in a community having little beauty. The use of art was encouraged for emotional expression and for compensation among a low socio-economic group. Teaching methods and parent-contact were described in each group. The results were evaluated by observation rather than by testing.

Related Dissertations

Among recent dissertation abstracts the following were found to have similarities with this project:

A paper from the University of Arkansas reported a comparison of graduate art and architecture students.\(^9\)

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A study was made of the data gathered from test ratings, teacher evaluations, and intelligence quotients. The data showed no significant correlations to exist among any of the ratings. Neither group was superior to the other. The conclusions included the statement that the lack of correlations between test findings and teacher evaluations showed the tests were unsuitable for testing this select portion of the population. The Graves test was one of the standard tests employed in this project.

An abstract from Pennsylvania State University described a study of the effects of classroom size and class size on creative drawings of fifth-grade children. Using nine classes, three each of small, medium, and large population, nine rooms with the same number of variations, and teachers of different experience levels, three motivational approaches to a creative drawing problem were administered. The classroom climate was rated by visiting each room. Two testings were obtained with each of the motivational approaches. The drawings were evaluated by a stated criterion. The findings indicated that no measurable difference could be found to show that room size or class size affected the quality of the drawings. Teacher attitude and teacher involvement caused the greatest differences.

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A paper was presented explaining the effectiveness of a theory-based teaching method on spatial perception, art interest and design judgments on high school students under the direction of a Stanford University doctoral candidate.\(^{11}\) Four groups of students equal in intelligence and aptitude were selected by testing. The groups were instructed with reference to different dimensional problems, and were tested at the end of the course. No significant difference was found that could be attributed to the variations in course material selected for their theoretical bases. The Graves test was used in the final testing, but not for pre-testing.

A study reported at the University of Minnesota was concerned with the Graves test's predicting performance in art tasks as a measurement of general art aptitudes among elementary education students.\(^ {12}\) It was concluded that the Graves test was not suitable for predictive purposes. The Graves test was not administered at the end of the eleven week course. No use was made of it in measuring an increased ability in making design judgments as the result of the course.


CHAPTER III

GENERALIZATIONS BASED ON SURVEY OF RELATED LITERATURE

One Task of Art Education

One area where all teachers in the elementary school affect the child's art growth is art judgment. Intentionally or unintentionally the teacher recommends to the child the standards she believes to have value.

The most important contribution art education can make to the elementary education student is guidance in deriving standards for making art judgments. In assisting the student to recognize those qualities that define a work of art, art education serves the student, the school, the child, the community and the culture. The teacher's art judgment affects the child at every level of involvement with him.

Art Education of the Teacher

The continuing demand for elementary classroom teachers gives cause for the educator of those teachers to evaluate the college and university courses required for graduation, for certification or for acquiring teaching positions. His placing an art course in the degree requirements for students
planning to teach in the elementary grades indicates that he values the course as necessary for those students.  

The basis for his evaluation lies in theory and practice. The educator of the elementary teacher calls on the art educator for a course planned to give the classroom teacher confidence in art experiences with children.

The art educator is assigned the task of developing an art course for elementary education students, and in-service teachers. This is a vastly different problem from educating a student who has had enough success in art that he plans to make it his life-work. Without changing the basic principles underlying his field he must introduce materials, means of expression, skills, history, and visual aesthetics to students unfamiliar, disinterested, frightened, or antagonistic toward art. Because of the time allotted the course, he cannot hope to expose the education student to all the available art information, nor all the information he has, nor even the information he shares with the art major. He must encourage the student to get involved in the process of art, and recognize success when the student experiences the dynamics of that process. He must plan a course that presents the subject matter of art so that the non-art major can

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receive maximum learning and finish the course sensitive to future experiences as producer, appreciator, or both.  

The Significance of the Teacher's Design Judgment

It is desirable that the teacher's design judgments be based on standards and principles harmonious with the historical art community. Valid standards, and resulting sound design judgments, expressed by the elementary grade teacher, allow the child's design and art education to follow a continuous and progressing growth. During the early elementary grade years the child examines the standards of adults in his environment. His encountering a unity of purpose, receiving consistent information and clues, and experiencing significant learning situations encourage him in constructing a criterion for making design judgments independent of adult influence.

In later elementary grades the child, an early adolescent, makes judgments within his peer group. He observes the responses of his peers and adapts his standards as he relates to the group. He is selecting those standards and principles that will form his individual aesthetic judgment level at maturity. Ideally he will be a flexible

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4 Ibid., p. 5.

adult who will adjust his standards and principles of design as meaningful experiences and new learnings come into his environment.6

The Teacher's Role in Art Activities

The classroom teacher's involvement in art experiences varies with her school system. Often she will have full responsibility for all art activities in her room. Occasionally the classroom teacher is expected to direct art instruction with the aid of an art specialist. Less frequently she shares the teaching load with an art teacher.7 In each of these situations, and in variations of them, she is involved with the child in his art education. Only the amount of involvement changes.

Whether a teacher is responsible for the total art program in her classroom, is assisted by an art specialist, or is a co-teacher with an art instructor, she is performing roles of example, critic, and appreciator. She fills the roles by choosing and combining her own clothing, by arranging, or helping arrange, visual material for bulletin boards

6Ibid., pp. 171-172.

7Six hundred and fifty-seven representative schools interviewed in 1962 by the Research Division of National Education Association reported 89 per cent employing classroom teachers in art activities. Only 26 per cent of the schools furnished art specialist assistance. Art teachers taught in 4 per cent of the schools. Hazel Davis, project director, Music and Art in the Public Schools, Research Monography NEA (Washington, 1963), p. 25.
and displays, and by accepting or rejecting objects or works of art in the classroom experience. Words, actions, and attitudes express her judgments of visual material.8

The Teacher's Role in Art Experience

The teacher's attitudes and judgments are reflected in the products executed by the child, and in the child's attitudes toward the works of others. In the first instance, the child is the creator, the initiator of a visual communication or expression; in the second, the child is the viewer, or the receiver of visual communication or expression. In both instances the teacher has the potential of acting as a filter, a barrier, an inhibitor, or a catalyst. The information she gives to, or shares with the child, her attitudes and responses toward his works and the works of artists through history, her aesthetic judgments and choices affect the child as he participates in art experience.9

The teacher's role in activities centered in art is the same as her role in any experiences planned to assist children in understanding, in relating, and in interpreting new material and information.10 Her role includes stimulation,


9McFee, Preparation for Art, pp. 4, 6-10.

10Ibid., p. 9.
motivation, direction, encouragement, control, and response. As the child grows and develops the teacher's role changes, though she must blend the roles as needs arise in her class.\textsuperscript{11}

Acting as a teacher of art, the classroom teacher needs special skills, selected information and art experiences.\textsuperscript{12} The special skills are necessary only if she is fully involved with the art program. The selected information includes: standards and expectations for the child's works of art, skills and activities recommended for the child's level of development and aptitude, methods of motivation for the art program, and equipment, space and materials for art activities. This information can be obtained from books, periodicals and other teachers. Time demands that she use other's reports of experiences where it is possible, but direct experience offers the best opportunity for learning.

Functions of Art in the Elementary-Grade Classroom

In the elementary-grade classroom art is a unifying activity, an integral part of the total learning experience. As the child delineates his discoveries and relates them to


past learnings his passive knowledge is activated.\(^\text{13}\) Art motivates the child to seek new information.\(^\text{14}\)

Art serves the child in communicating his individual developmental needs as he relates and adjusts to his environment socially, psychologically, and emotionally.\(^\text{15}\) Classroom art allows the child occasions for working in groups, and occasions for individual expressions. Art's materials and modes of expression offer opportunities for the child's creative growth and development.\(^\text{16}\) Art experiences stemming from sense perceptions aid the child in keener awareness of his senses.\(^\text{17}\) As the child develops physically, art activities give him tasks that develop manipulative skills he uses in his total development.\(^\text{18}\) Art offers one child emotional release through a means of expression associated with play or low-threat activity.\(^\text{19}\) For another child art-success is compensation for deficiencies in other areas of his development. Art successes give him the will to undertake more

\(^{13}\)Saunders, "The Art Specialist and the Classroom Teacher," p. 6.


\(^{15}\)Helen Heffernan, editor, Guiding the Young Child (Boston, 1959), p. 330.


\(^{17}\)McFee, Preparation for Art, p. 60.

\(^{18}\)Heffernan, Guiding the Young Child, p. 330.

\(^{19}\)Townsend, Learning for Teachers, p. 90.
difficult tasks. They give him a new point of departure for learning material blocked by past defeats.\textsuperscript{20} The child's works of art are reports on his progress in his total growth and development. They provide clues for the classroom teacher to recognize the child's individual differences and his place in the classroom pattern.\textsuperscript{21}

Art, as the organized creative form of visual communication, is helpful to the child and the teacher as they investigate and explore the cultural material of all periods of history.\textsuperscript{22} As human expression from a particular place, time, culture and cultural area, art enriches the study of an area, time or people. As the child experiences the art, skills, activities, and materials of an area, or time, he has opportunity for new understandings and identification with that area of study. Through these experiences he may come to a better understanding of the differences and similarities that exist between times, places, and peoples.\textsuperscript{23}

Art's function in the elementary classroom extends to heightening the child's perception of the presence of the elements existing in visual information (color, line,

\textsuperscript{20}\textit{Ibid.}, p. 53.
\textsuperscript{21}\textit{Heffernan, Guiding the Young Child}, p. 167.
\textsuperscript{23}\textit{McFee, Preparation for Art}, pp. 227-228, 238.
texture, space, and form). As he sees and manipulates the elements during art activities he becomes more aware of their presence in his total environment. He is more sensitive in perceiving and recording visual data used in other areas of study, such as science and mathematics. He has more possibilities for relating new information in the whole learning situation.  

Through his art experiences, the child comes to understand art principles in nature and art. He has opportunity to relate art principles to principles in other areas of expression, such as music, literature, dance, and drama. From involvements with the Arts, the child begins to build and organize a set of values for making aesthetic judgments. The classroom teacher, one of the most significant adult figures in the child's school environment, aids the child's aesthetic growth when she understands art as an integral part of life and makes art judgments that the child will find valid in his later development.

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24Ibid., pp. 39, 49, 60, 64.

25Margaret Erdt, Teaching Art (New York, 1958), pp. 94-104.

26Wachowiak, Emphasis: Art, pp. 5-6.
CHAPTER IV

APPROACH TO THE MEASUREMENT

The Course

Foundations of Art, Art 135-136 has as its stated purpose the offering of a study of materials and techniques that is directed toward creative expression in various fields of art.\(^1\) This course is presented on an adult level with references to those art experiences suitable for use at different levels of elementary-grade classes. Child art, in its patterns and variations, is presented in exhibits, periodicals, color slides and movies to acquaint the student with developmental levels in perception, skills, delineation, and interests. The literature of art education and art is surveyed, emphasizing art's development and its cultural value. The course is organized to teach by example that art abilities and interests vary within a classroom; that the teacher of art remains as flexible as the potentials, interests and skills within the class suggest; and that guided and group-directed discovery offer the most significant opportunity for meaningful learning through sound visual experiences.

Among the anticipated values of the course are the following: readying the student for learning experiences in art; developing the student's creative abilities; encouraging the student to express emotions, perceptions and thoughts through art; introducing new art skills and techniques and giving opportunity to use them; aiding the student in understanding art concepts through sensory experiences; directing the student in discovering the elements and the principles of visual art and their relationship to each other; assisting the student to arrive at a comprehension of the aims of art in the various conditions of human development; acquainting the student with the cultural and historic function of art; and giving the student opportunities for identifying with childrens' work in attempting to create in new materials. The teacher's experiences in the university classroom will modify attitudes in the elementary-grade classroom.²

The Subjects

The one hundred and forty-six subjects were chosen from students enrolled at North Texas State University. All were in good standing at the University. The subjects, graduates and undergraduates, were in three groups; elementary education majors (EE), elementary education majors with the art experience course (EEA), and art majors (A).

EE, Elementary Education Majors

The group designated as EE consisted of forty-four graduate and undergraduate elementary education majors without the experience of Art 135-136 or any portion of it. No subject within this group had experienced a college art course within the last five years.

EEA, Elementary Education Majors with the Course

The group designated as EEA consisted of forty-four undergraduate elementary education majors completing the last half of Art 135-136. All were first- and second-year students. No subject within this group had experienced an art course on the university level other than Art 135-136.

A, Art Majors

The group designated as A consisted of fifty-eight undergraduate art majors completing the last half of Design 144-145. All were first- and second-year students.

The Instruments

The Standard Test

The Graves Design Judgment Test is in the form of a ninety-page booklet printed in black, white, and grays. On each page there is a selection of compositions representing either two- or three-dimensional designs. Sixteen three-dimensional problems are presented. There are twenty-three line problems and thirty-eight problems presenting
two-dimensional forms. The remaining problems are combinations of line and form. The test was "devised to measure certain components of aptitudes for the appreciation or production of art structure."³ It is reported to do this by measuring the perception and responses to principles of aesthetic order.

The test was chosen because: (1) a testing instrument was being sought that would measure one of the desirable abilities of a classroom teacher, (2) the information available implied that it was a reliable test to differentiate between art and non-art students, (3) it was reported to measure a mid-group with significance,⁴ (4) the sample of the test showed it to have a pleasing form, (5) it was graded by answers based on design principles rather than interpretative evaluation, (6) it had enough choices in its score data to use in statistical analysis, and (7) members of the art faculty at North Texas State University evaluated its answer decisions as valid.

The test was designed by Maitland Graves as part of his doctoral problem. Items were accepted when they were approved by art teachers; when they were chosen more frequently by art students than non-art students; and when


⁴Alford, "Teacher Judgments as Related to Certain Predictors of Artistic Creativity in Senior High Students," p. 7.
the high-scoring subjects chose them more often than the low-scoring subjects. It was refined and submitted to testings at different levels of schools and different types of schools. It has been used in at least four recent doctoral dissertations.

The error of the measurement is reported to be such that the chances are two out of three, that no score will vary from the true score by more than one standard error of the measurement. The company distributing the test states that the test's value is in prediction. It was not used for that purpose in this study, but for measuring ability to make design judgments.

One reason given for the test's validity is that each selection is presented in non-objective form, with no identifiable objects to prejudice the decision. For this study, the non-objective quality of the Graves Test offers a possibility of comparing the subject's non-objective design judgment with his applied design or objective judgment.

One criticism of the test states that it did not predict the level of ability to perform art tasks. Another reported that it was unsuitable for finding differences among a highly


select part of the population. Since it was not to predict or to separate a highly trained segment of the population, the test was employed for this problem.

The Experimental Test

The "Applied Design Test" is composed of selections reproduced and presented in black and white line in booklet form. Four items involve architectural problems, nine involve useful objects, nine involve furniture, and three involve advertising and commercial products. Proportional variations are presented in seven items. Variations in design principles are presented in eight items. Elements of design are changed in five items and relationship of decoration to form is changed in five items. In three instances, historical items are changed to comply with the Golden Proportion (1:1.618), and in four items, having the Golden Proportion, the proportion is distorted for the test.

The suggestion was made that elementary education majors may have separate standards for making design judgments on familiar objects (applied design) and on non-objective design. Their design judgment level in one area did not appear to correlate with the judgment level in the other. To investigate this question an applied design testing

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instrument was proposed for use with the Graves test. After similar tests were studied, the following decisions were made: that the presentation would be composed of original line drawings; that the variables in the designs would be kept to a minimum; that designs adapted from Graves items would be included; and that elements involving more than visual design would be kept minimal. The criterion for accepting items would be consistent with Graves' criterion: (1) each selection would be acceptable to three out of five faculty members involved in teaching design, (2) each item would be chosen by more art students than non-art students, (3) each item would be chosen by more high-scoring subjects than low-scoring subjects.

The test was designed. Experimental testings were executed among faculty and students. Deletions and adaptations were made. Final acceptance by the art department faculty was obtained. Statistical analysis was run for the mean scores for each group, the standard deviation for each group, and the standard error of the measurement. The significance of the difference between the groups was determined by computing Fisher's $t$ and then consulting a $t$ table to determine the level of significance. All statistical data were satisfactory. (See Appendix, p. 45 for detailed history of experimental test.)

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The Questionnaire

For purposes of delineating the limitations of this study a questionnaire was compiled. The questionnaire data related to this study included the subject's experience group, the subject's number within the group, the subject's university classification and his university art experience.

In addition to this information the subject was requested to give his name, sex, the name of his hometown, and his art experience in elementary school, junior high school, high school, or by private instruction.

A four-place evaluation was provided for the subject to rate his ability in accomplishing such art-centered tasks as planning classroom displays, arranging bulletin boards, selecting wardrobe, and choosing household articles. The subject was asked to rate the anticipated score on each of the tests completed. Each subject in the EEA group was given an opportunity to evaluate his art growth during Art 135-136. The EEA subject was requested to list the three most beneficial projects during his experience in the course.

The questionnaire proved successful in achieving the task for which it was designed.9

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9 An example of the questionnaire is in the Appendix of this paper, page 80.
Procedure in Testing

Art majors were tested in all sections of Art 145, Design, during the last week of the spring semester, 1965. All elementary education majors completing Foundations of Art were tested in classes of that course during the last week of the spring semester, 1965. Three volunteer elementary education majors who had not taken the course, Foundations of Art, were tested during the spring semester, 1965; all others were tested in Foundations of Art classes the first day of the first term of summer school, 1965.

At each testing, the subjects were assured that the results of the tests would in no way affect their course grade. All students were asked to follow the standard directions of the Graves test. On the applied design test, they were requested to choose one selection from each item as having pleasing visual design. The directions for the questionnaire were that the subject consistently give his identifying group letter, or letters, and his individual number within the group. Questions concerning the three instruments were invited and answered.

No time limit was set for completing the tests or the questionnaire, and no record was kept of the time used by any one student. The time used ranged from twenty-five to sixty minutes.
CHAPTER V

FINDINGS

The Tests

The Data

The Graves Design Judgment Test.—The scores of the standard test ranged from eighty-seven through twenty-six, as shown in the following table.

<table>
<thead>
<tr>
<th>Group</th>
<th>Range</th>
<th>Gravess</th>
<th>Applied Design</th>
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<tr>
<td>EE</td>
<td>26 - 81</td>
<td>8 - 19</td>
<td></td>
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<tr>
<td>EEA</td>
<td>32 - 87</td>
<td>11 - 23</td>
<td></td>
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<tr>
<td>A</td>
<td>55 - 86</td>
<td>11 - 23</td>
<td></td>
</tr>
<tr>
<td>All</td>
<td>26 - 87</td>
<td>8 - 23</td>
<td></td>
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The elementary education majors without Foundations in Art had scores ranging from twenty-six through eighty-one.¹
The scores of the elementary education majors completing the course ranged from thirty-two through eighty-seven.² The range within the art majors' group was from fifty-five through eighty-six.³

The "Applied Design Test."—The experimental test scores ranged from eight through twenty-three for the whole sample, as shown in Table I. The elementary education majors without Foundations of Art scored from eight through nineteen. The elementary education majors completing the course had scores ranging from eleven through twenty-three. The art majors' scores were also from eleven through twenty-three.⁴

The Processed Data

Graves Design Judgment Test.—For the Graves Test the mean scores for the three groups were as follows:

¹These scores are comparable with scores of the non-art majors reported in the Graves manual.

²These scores appear superior to scores of non-art majors reported in the Graves manual.

³This score range is identical to the scores obtained from Pratt Institute among freshmen architecture students. It is higher than the range of scores from the art education majors of the same school. Graves Design Judgment Test Manual (New York, 1948).

⁴The range among non-art majors' scores in the experimental testing was higher than this range. (See Appendix, p. 49.)
(1) elementary education majors, 58.23 with a standard deviation of 14.27; (2) elementary education majors completing Art 135-136, 66.0 with a standard deviation of 13.85; (3) art majors, 75.72 with a standard deviation of 6.25. (Table II)

**TABLE II**

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Graves Test Score</th>
<th>&quot;Applied Design Test&quot; Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mean</td>
<td>Standard Deviation</td>
</tr>
<tr>
<td>EE</td>
<td>44</td>
<td>58.23</td>
<td>14.17</td>
</tr>
<tr>
<td>EEA</td>
<td>44</td>
<td>66.00</td>
<td>13.85</td>
</tr>
<tr>
<td>A</td>
<td>58</td>
<td>75.72</td>
<td>6.25</td>
</tr>
</tbody>
</table>

The numerical difference between the mean scores of Group A and the mean scores of Group EE was 17.50. The result from the Fisher $t$ formula was 8.26 as shown in Table III. This was interpreted by the Fisher $t$ table as a 0.001 level of significance. That is, a difference as great as 17.50 would occur by chance only one time in one thousand. Thus some factor other than chance caused this difference.

The numerical difference between the scores of Group EE and the mean scores of Group EEA was 7.73. The result of the Fisher $t$, 2.55 as shown in Table III, indicated
that a difference as great as 7.73 would occur by chance only fifteen times in one thousand, or one and a half times in a hundred. The level of significance was 0.015.

The numerical difference still remaining between the score of Group A and the mean score of Group EEA was 9.77. The results from the Fisher $t$ was 4.72 as shown in Table III. The level of significance was 0.001.

**TABLE III**

$t$ **SCORES AND LEVELS OF SIGNIFICANCE BETWEEN GROUPS EE, EEA AND A**

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Graves Test Score</th>
<th>Applied Design Test Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mean Fisher Level of Significance</td>
<td>Mean Fisher Level of Significance</td>
</tr>
<tr>
<td>EE</td>
<td>44</td>
<td>58.23 8.26 0.001</td>
<td>14.16 6.67 0.001</td>
</tr>
<tr>
<td>A</td>
<td>58</td>
<td>75.72 17.47</td>
<td></td>
</tr>
<tr>
<td>EE</td>
<td>44</td>
<td>58.23 2.55 0.015</td>
<td>14.16 3.33 0.005</td>
</tr>
<tr>
<td>EEA</td>
<td>44</td>
<td>66.00 15.98</td>
<td></td>
</tr>
<tr>
<td>EEA</td>
<td>44</td>
<td>66.00 4.72 0.001</td>
<td>15.98 2.72 0.01</td>
</tr>
<tr>
<td>A</td>
<td>58</td>
<td>75.72 17.47</td>
<td></td>
</tr>
</tbody>
</table>

The mean score of the EE group was 76.9 per cent of the A group's mean score, while the mean score of the EEA group was 87.1 per cent of the mean score of Group A. The measured difference between the scores of Groups EEA and A was
56.0 per cent of the measured difference between the mean scores of Groups A and EE.

"Applied Design Judgment Test."—For the applied design test, the mean scores for the three groups were as follows: (1) elementary education majors, 14.16 with a standard deviation of 2.20; (2) elementary education majors completing Art 135-136, 15.98 with a standard deviation of 2.83; and (3) art majors, 17.47 with a standard deviation of 2.26 as shown in Table II.

The numerical difference between the scores of Group A and the scores of Group EE was 3.31. The results from the Fisher t was 6.67, a 0.001 level of significance, as shown in Table III.

The numerical difference between the scores of Group EE and the scores of Group EEA was 1.72. The results from the Fisher t was 3.33 as shown in Table III, or a level of significance of 0.005.

The numerical difference still remaining between the scores of Group EEA and the scores of Group A was 1.49 with a Fisher t of 2.72, a level of significance of 0.01, as shown in Table III.

The mean score of the EE group was 81 per cent of the mean score of the A group. The mean score of the EEA group was almost 92 per cent of the mean score of the A Group. The measured difference between the scores of Groups EEA
and A is 45 per cent of the measured difference between the mean scores of Groups A and EE. The design judgment level of the EEA group was more nearly like that of the A group than that of the EE group.

An analysis of the findings would seem to indicate that Art 135-136 caused a positive difference in the design judgment level of elementary education majors. The positive difference was found in both the Graves Design Judgment Test and the "Applied Design Test."

A simple correlative analysis was computed between the scores on the two tests for each group. As the results in Table IV indicate, no significant correlation was found between the subjects' performances in making non-objective design decisions and in making applied design judgments.

**TABLE IV**

**RESULTS OF CORRELATION STUDY BETWEEN SCORES ON GRAVES DESIGN JUDGMENT TEST AND "APPLIED DESIGN TEST"

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Test</th>
<th>Mean Score</th>
<th>Standard Deviation</th>
<th>Coef.</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE</td>
<td>44</td>
<td>Graves</td>
<td>58.23</td>
<td>14.27</td>
<td>0.10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Applied</td>
<td>14.11</td>
<td>2.16</td>
<td>Neg</td>
</tr>
<tr>
<td>A</td>
<td>58</td>
<td>Graves</td>
<td>75.72</td>
<td>6.25</td>
<td>0.10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Applied</td>
<td>17.47</td>
<td>2.62</td>
<td>Neg</td>
</tr>
<tr>
<td>EEA</td>
<td>44</td>
<td>Graves</td>
<td>65.95</td>
<td>13.85</td>
<td>0.12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Applied</td>
<td>15.98</td>
<td>2.82</td>
<td>Neg</td>
</tr>
</tbody>
</table>
The Questionnaire

The findings of the questionnaire showed that among the entire sample of one hundred and forty-six subjects there were eight graduates, eleven seniors, ten juniors, twenty-nine sophomores, and eighty-eight freshmen.

Among the art majors, forty-six were freshmen and twelve were sophomores. In the group of elementary education majors completing Art 135-136, thirty-two were freshmen and twelve were sophomores. Of the group of elementary education majors without Art 135-136, ten were freshmen, five were sophomores, ten were juniors, eleven were seniors and eight were graduates.

Concerning art experience in higher education, it was found that all subjects in the art major group had completed one or two years experience at the university level; and all elementary education majors had as their only art experience in higher education Art 135-136. Among the elementary education majors without the art course, none had taken art courses in the past five years. One subject had completed a course in 1927; one in 1929; one in 1935; one in 1948; and one in 1959. None had completed these experiences at North Texas State University.¹

¹Data gathered but not included in this study are found in the Appendix of this paper.
CHAPTER VI

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

In following the progression of a communication process model, it is found that the child-artist receives feedback, or response, from his teachers, his peers and his family. The person or persons having the greatest effect vary with the child's development. During the child's early elementary school years the teacher's responses are of high importance.

The response-feedback affects the child's psychological environment. This in turn affects his dealing with subsequent visual expressions and judgments.

The teacher's response to the child's art and to visual material in the child's environment depends on the teacher's ability to make wise art judgments. These judgments are based on the teacher's design standards derived from past art experiences and the ability to recognize art structure.¹

The art educator cannot alter the teacher's childhood art experiences. He can assist the teacher in dealing with them. He can give opportunity for meaningful art experiences while the teacher is under his direction. The amount of

training and art experience the teacher receives is reflected in the quality of her design or art judgments.\(^2\)

In seeking indications that Art 135-136, Foundations of Art, at North Texas State University, provides significant training and meaningful art experiences for the elementary education major, a program of testing and evaluation was planned.

Summary

The study was begun by accepting Dewey's statement that research should be based on theory, that an experiment in the scientific sense is "directed by some leading idea."\(^3\)

It was assumed that non-art majors having had a meaningful art experience, Art 135-136 at North Texas State University, would have scores differing from those non-art majors who had not experienced the course, when tested with tests designed to indicate a difference between art majors and non-art majors.

A study of the desirable capacities to be found in a teacher involved in art activities led to the conclusion that on every level of involvement the teacher needed discrimination in making visual design judgments.

\(^2\)Ibid.

One standard test, the *Graves Design Judgment Test*, was chosen. One experimental test, the "Applied Design Test," was developed. A questionnaire was compiled.

A group of art majors and a group of elementary education majors were tested with the three instruments. Another group of elementary education majors, completing Art 135-136 was tested. The data from the testing instruments were recorded and presented for statistical analysis. The means and the standard deviations of the means were determined for each group. The groups were compared to each other by an analysis of variance being computed between the groups and within each group; by determining the degrees of freedom; and by establishing the level of significance for the difference between the groups by use of the Fisher t formula. No correlation was found between the ability to make non-objective design judgments and applied design judgments.

**Conclusions**

The findings indicated that Art 135-136 improved the quality of design judgments in both non-objective and applied design. The difference measured between art majors and non-art majors was reduced by approximately 50 per cent by the experience of the art course.
Art, "not only a manner of expression but more fundamentally . . . a manner of seeing and understanding,"⁴ was affected by an art course planned to give "experience in modes of expression with various art media."⁵ Direct experience affected standards. Improved standards raised the design judgment level of non-art majors as measured by the instruments used in this study.

The statistical evaluations leading to this conclusion were as follows:

1. The score means of the art majors and the elementary education majors with no art experience showed a highly significant difference, exceeding 0.001, when submitted to the Fisher t formula. This indicated that the tests employed in the measurement discriminated between art and non-art majors to a significant level. This wide margin of discrimination offered more possibility for measuring a third, or mid-group, than would have been possible with less difference.

2. The difference between the mean scores of the two education groups showed the group having experienced Art 135-136 to be sufficiently superior to the second group to conclude that the possibility of their score difference

---


being a matter of chance was one in a thousand on the Graves test and one in a hundred on the Applied Design Test.

The difference between the groups is concluded to be a product of experience and training provided in Art 135-136.

3. The lack of correlation between the scores of the two tests is explained in one of two ways, or a combination of the two. The two possibilities are (1) that the tests did not measure the same variable, and (2) that separate criteria were employed in making the decisions in the two tests. Though the second is a more desirable possibility, the first is not ruled as unlikely. For the purpose of this study each test measured a significant difference. The reason for the lack of correlation is outside the scope of the problem.

4. The individual scores showed no trend within the two education groups toward a higher ability in either non-objective judgments or applied design judgments. The art majors showed a slight superiority in making non-objective design judgments compared to making applied design judgments.

Recommendations

From this study the following recommendations are made:

1. The course should continue as it is, flexible in meeting the needs of the students.
2. The curriculum of the course should continue being adapted at the discretion of the trained art educators basing their decisions on scientific theory and intuitive reason.

3. A further study should be initiated to analyze the lack of correlation between the score of the two tests employed in this study.6

4. These tests should be compared with the results obtained by other tests designed at North Texas State University.

5. Studies should be made in the public schools on the correlation between the teacher's design judgments and those of the children she contacts.

6. Further studies should be made into the qualities and abilities considered desirable for a classroom teacher involved in art activities and art education.

6The standard test is readily available. The experimental test is provided in the appendix to this paper. Additional data is available for depth studies.
## APPENDIX

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Outline for Foundations of Art, Art 135-136</td>
<td>43</td>
</tr>
<tr>
<td>History of the Experimental Test, &quot;Applied Design Test&quot;</td>
<td>45</td>
</tr>
<tr>
<td>&quot;Applied Design Test&quot;</td>
<td>52</td>
</tr>
<tr>
<td>Questionnaire Data</td>
<td>77</td>
</tr>
</tbody>
</table>
I. Understanding visual organization in two- and three-dimensional form as related to art as an adult activity.

A. Design fundamentals (lab problems and discussion)
   1. Balance
   2. Movement
   3. Proportion
   4. Rhythm
   5. Color
   6. Value
   7. Mass
   8. Illusion of depth
   9. Texture
   10. etc. etc.

B. Design fundamentals as found in masterworks of painting, sculpture, architecture, industrial design, printmaking, etc.
   1. Color relationships
   2. Figure ground relationships
   3. Proportion
   4. Interrelationship
   5. Form and function
   6. Interrelationship of balance, mass-shape, etc.

C. Cultural Emphasis
   1. Masterworks of all time
   2. Art history to 19th century

II. Understanding visual organization in two- and three-dimensional form as related to child art.

A. Art for the elementary grades
   1. Creativity and theories of child art
   2. Identifiable stages found through creative activity
   3. Child growth and development as seen in creative activity
   4. Evaluation of creative products

B. Problems in art media for children
   1. Experiences in two-dimensional form
      a. Printmaking
      b. Painting
      c. Wax crayons - unusual methods
      d. Mixed media - unusual combinations
   2. Problems in art media - three-dimensional form
      a. Sculpture - open form
      b. Sculpture - closed form
      c. Found object sculpture - unusual combinations
ART 136 FOUNDATIONS OF ART
(General Outline)

I. Three-dimensional design as applied to problems in teaching child art in the elementary school.

A. Masks
   1. Scored and folded paper experiments
   2. Papier mache experiments
   3. Paper bag experiments
   4. Unusual combinations

B. Tactile tecture study and sculpture
   1. Wood experiments
   2. Sand casting experiments
   3. Unusual combinations
   4. Wire sculpture
   5. Found object sculpture constructions

C. Kites
   1. Study of kite techniques (lecture & demonstration)
   2. Construction of kites as original designs

II. Two-dimensional design as applied to problems in grade-level child art.

A. Printmaking
   1. Found object prints
   2. Linoleum prints
   3. Fabric prints

B. Posters and lettering
   1. Single message posters (high impact)
   2. Cut paper, pen and ink, brush and ink lettering for posters and bulletin boards

C. Bulletin boards
   1. Study of organization (lecture and demonstration)
   2. Experiments in board layout and emphasis
   3. Organization for subject matter and special occasions in classroom

D. Mixed media
   1. Cloth batik experiments
   2. 35 mm slides
   3. Mural painting

III. Cultural emphasis.

A. Art of 19th-20th centuries
   1. Masterworks
   2. Scope of impact of the industrial revolution

B. Seminar in art
   1. Final questions in art education
   2. Final questions in art appreciation or art understandings
HISTORY OF THE EXPERIMENTAL APPLIED DESIGN TEST

Criterion for Acceptance

The criterion for accepting choices in the applied design test were the same as employed by Maitland Graves in the Graves Design Judgment Test. All selections designated as correct were accepted by faculty members of the Art Department at North Texas State University, were chosen more often by art majors than by non-art majors, and were chosen more frequently by high-scoring subjects than by low-scoring subjects.

Each unit of two or three selections had one selection complying with design principles. Other selections violated at least, and preferably, only one principle. An attempt was made to correlate some of the selections with non-objective designs from the Graves test.

Sources of Selections

The three sources of examples to be used as selections were books, periodicals, and actual items. Among the books were those concerned with art history, with history of furniture, with interior design, with design in general and with art education. Periodical sources were product advertisements in newspapers, illustrations and advertisements from magazines, and illustrations from current retail catalogues.
Actual items used as examples were personally owned. The remaining selections were original designs, as shown in Table V. Most often a unit included one selection from reference material and an alternate selection from original designs.

**TABLE V**

**SOURCES OF MATERIAL**

<table>
<thead>
<tr>
<th>Source</th>
<th>No.</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BOOKS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Art History</td>
<td>10</td>
<td>32</td>
</tr>
<tr>
<td>History of Furniture</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Design</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Art Education</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Interior Design</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td><strong>PERIODICALS</strong></td>
<td></td>
<td>18</td>
</tr>
<tr>
<td>Newspapers</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Magazines</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Catalogues</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td><strong>ACTUAL ITEMS</strong></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td><strong>ORIGINAL DESIGN.</strong></td>
<td></td>
<td>71</td>
</tr>
<tr>
<td>Primary Selection</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Alternate Selection</td>
<td>64</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL.</strong></td>
<td></td>
<td>127</td>
</tr>
</tbody>
</table>

An example of an original design based on the Graves test is item 5 in the final test, page 56. This design is adapted from item 11, a non-objective design, in the Graves Test. An example of selections originally designed from historic forms is item 4 in the final test, page 55.

All items were presented in line drawings.

---

Procedure

The first experimental test included fifty-six items. It was submitted to testing among five faculty members of the art department and five members of the non-art faculty at North Texas State University. The forty items most frequently chosen by the art faculty and least chosen by the non-art faculty were retained. Suggestions were offered that some selections had more than one variable, such as the item below.

Some choices were too subtle in their variations, as exemplified by the following item.
Other items were too obvious in their variations. (See below.)

Adjustments were made among the items, and thirteen new items were added.

Fifty-three items were used in an experimental testing of sixteen high school students. Further changes were made before this test was submitted to a second group of art faculty. In this testing forty-seven items received faculty approval exceeding 60 per cent.

The forty-seven items were reproduced by the Xerox process. They were presented in a five-by-eight inch booklet. An experimental testing was arranged and executed among twenty-nine junior and senior art majors and twenty-nine junior and senior secondary education majors (non-art). The scores from this testing were analyzed for art versus non-art selection. The results were tabulated on the bases of tests of forty-seven items, twenty items, twenty-five items, and two groups of thirty items each. These scores were submitted to statistical analysis.

The results as shown in Table VI, were highly significant.
### TABLE VI

STATISTICS FOR EXPERIMENTAL TESTING: ART STUDENTS VERSUS NON-ART STUDENTS

<table>
<thead>
<tr>
<th>Group</th>
<th>No.</th>
<th>No. of Items</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Fisher t</th>
</tr>
</thead>
<tbody>
<tr>
<td>(art)</td>
<td>29</td>
<td>47</td>
<td>34.517</td>
<td>2.486</td>
<td>8.020</td>
</tr>
<tr>
<td>(non-art)</td>
<td>29</td>
<td>47</td>
<td>28.414</td>
<td>3.168</td>
<td></td>
</tr>
<tr>
<td>(art)</td>
<td>29</td>
<td>20</td>
<td>15.793</td>
<td>1.845</td>
<td>11.628</td>
</tr>
<tr>
<td>(non-art)</td>
<td>29</td>
<td>20</td>
<td>10.414</td>
<td>1.608</td>
<td></td>
</tr>
<tr>
<td>(art)</td>
<td>29</td>
<td>25</td>
<td>19.483</td>
<td>2.127</td>
<td>10.593</td>
</tr>
<tr>
<td>(non-art)</td>
<td>29</td>
<td>25</td>
<td>13.483</td>
<td>2.111</td>
<td></td>
</tr>
<tr>
<td>(art)</td>
<td>29</td>
<td>30A</td>
<td>23.621</td>
<td>2.156</td>
<td>9.825*</td>
</tr>
<tr>
<td>(non-art)</td>
<td>29</td>
<td>30A</td>
<td>17.379</td>
<td>2.579</td>
<td></td>
</tr>
<tr>
<td>(art)</td>
<td>29</td>
<td>30B</td>
<td>23.203</td>
<td>2.604</td>
<td>9.261</td>
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<tr>
<td>(non-art)</td>
<td>29</td>
<td>30B</td>
<td>17.000</td>
<td>2.319</td>
<td></td>
</tr>
</tbody>
</table>

*Level of Significance = 0.001.

The group of items designated as 30A in Table VI were selected as the group to be prepared for the final test. These were refined, reproduced by the Dennison process, and make into booklet form. The test was submitted to five members of the art department faculty active in teaching Art 144-145, Design. Twenty-seven items received faculty approval exceeding 75 per cent. Of these twenty-seven, twenty-five showed power of discrimination of 33 per cent and above, as shown in Table VII, p. 50.
TABLE VII
FACULTY APPROVAL, POWER OF DISCRIMINATION,
AND FINAL ACCEPTANCE

<table>
<thead>
<tr>
<th>Item</th>
<th>Faculty Approval</th>
<th>Discriminating Power</th>
<th>Final Acceptance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5/5</td>
<td>44%</td>
<td>X</td>
</tr>
<tr>
<td>2</td>
<td>5/5</td>
<td>66%</td>
<td>X</td>
</tr>
<tr>
<td>3</td>
<td>5/5</td>
<td>55%</td>
<td>X</td>
</tr>
<tr>
<td>4</td>
<td>4/5</td>
<td>33%</td>
<td>X</td>
</tr>
<tr>
<td>5</td>
<td>4/5</td>
<td>22%</td>
<td>X</td>
</tr>
<tr>
<td>6</td>
<td>5/5</td>
<td>66%</td>
<td>X</td>
</tr>
<tr>
<td>7</td>
<td>5/5</td>
<td>33%</td>
<td>X</td>
</tr>
<tr>
<td>8</td>
<td>5/5</td>
<td>44%</td>
<td>X</td>
</tr>
<tr>
<td>9</td>
<td>4/5</td>
<td>66%</td>
<td>X</td>
</tr>
<tr>
<td>10</td>
<td>5/5</td>
<td>55%</td>
<td>X</td>
</tr>
<tr>
<td>11</td>
<td>5/5</td>
<td>22%</td>
<td>X</td>
</tr>
<tr>
<td>12</td>
<td>5/5</td>
<td>44%</td>
<td>X</td>
</tr>
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<td>13</td>
<td>5/5</td>
<td>55%</td>
<td>X</td>
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<td>14</td>
<td>5/5</td>
<td>22%</td>
<td>X</td>
</tr>
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<td>15</td>
<td>5/5</td>
<td>44%</td>
<td>X</td>
</tr>
<tr>
<td>16</td>
<td>5/5</td>
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<td>X</td>
</tr>
<tr>
<td>17</td>
<td>5/5</td>
<td>33%</td>
<td>X</td>
</tr>
<tr>
<td>18</td>
<td>4/5</td>
<td>22%</td>
<td>X</td>
</tr>
<tr>
<td>19</td>
<td>4/5</td>
<td>22%</td>
<td>X</td>
</tr>
<tr>
<td>20</td>
<td>4/5</td>
<td>44%</td>
<td>X</td>
</tr>
<tr>
<td>21</td>
<td>5/5</td>
<td>33%</td>
<td>X</td>
</tr>
<tr>
<td>22</td>
<td>5/5</td>
<td>55%</td>
<td>X</td>
</tr>
<tr>
<td>23</td>
<td>5/5</td>
<td>66%</td>
<td>X</td>
</tr>
<tr>
<td>24</td>
<td>5/5</td>
<td>22%</td>
<td>X</td>
</tr>
<tr>
<td>25</td>
<td>5/5</td>
<td>11%</td>
<td>X</td>
</tr>
<tr>
<td>26</td>
<td>5/5</td>
<td>33%</td>
<td>X</td>
</tr>
<tr>
<td>27</td>
<td>5/5</td>
<td>33%</td>
<td>X</td>
</tr>
<tr>
<td>28</td>
<td>2/5</td>
<td>33%</td>
<td>X</td>
</tr>
<tr>
<td>29</td>
<td>4/5</td>
<td>33%</td>
<td>X</td>
</tr>
<tr>
<td>30</td>
<td>5/5</td>
<td>33%</td>
<td>X</td>
</tr>
</tbody>
</table>

With the weakest items removed the twenty-five items included two with both selections from reference material, three with both selections from original design, and twenty with one selection from reference material and other selections from original design.
The twenty-five remaining items passed the three-point criterion. That is (1) they were acceptable to members of the art department faculty; (2) were chosen more frequently by art majors than by non-art majors; (3) and were chosen more often by high-scoring subjects than by low-scoring subjects.

The tests' items were selected from various periods in history. In some instances items were correlated with selections from the Graves test. Sources of the items are shown in the following table.

**TABLE VIII**

**SOURCES OF THE TWENTY-FIVE ITEMS IN THE EXPERIMENTAL DESIGN TEST**

<table>
<thead>
<tr>
<th>Sources</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Books.</td>
<td>13</td>
</tr>
<tr>
<td>Art History</td>
<td>6</td>
</tr>
<tr>
<td>History of furniture</td>
<td>3</td>
</tr>
<tr>
<td>Interior design</td>
<td>2</td>
</tr>
<tr>
<td>Design</td>
<td>1</td>
</tr>
<tr>
<td>Art education</td>
<td>1</td>
</tr>
<tr>
<td>Periodicals</td>
<td>6</td>
</tr>
<tr>
<td>Newspaper ads</td>
<td>2</td>
</tr>
<tr>
<td>Magazine ads</td>
<td>3</td>
</tr>
<tr>
<td>Catalogues</td>
<td>1</td>
</tr>
<tr>
<td>Actual Objects</td>
<td>3</td>
</tr>
<tr>
<td>Original Designs</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>25</td>
</tr>
</tbody>
</table>

The items used in the Applied Design Test are on the following pages.
"APPLIED DESIGN TEST"
QUESTIONNAIRE DATA

Art Experience

Each subject within Groups EE, EEA and A was directed to indicate whether he or she had had art experience while attending elementary grade school, junior high school, high school or a university. Information concerning private instruction was requested also. The subject was asked to note the number of years experience in each instance. The following table shows that Group EE, the elementary education majors without Foundations of Art, had had little art experience since elementary grade school. Group EEA's percentage of art experience was lower than that of Group EE in elementary grade school, but was higher in junior high school. The almost constant percentage of art majors having been involved in art experiences was a point of interest.

TABLE IX

GROUPS EE, EEA AND A PAST ART EXPERIENCE REPORTED BY PERCENTAGES

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Elementary School</th>
<th>Junior High School</th>
<th>High School</th>
<th>University</th>
<th>Private Instruction</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE</td>
<td>44</td>
<td>72.7</td>
<td>22.7</td>
<td>4.6</td>
<td>9.0</td>
<td>2.0</td>
</tr>
<tr>
<td>EEA</td>
<td>44</td>
<td>63.6</td>
<td>29.8</td>
<td>11.3</td>
<td>9.0</td>
<td>2.0</td>
</tr>
<tr>
<td>A</td>
<td>58</td>
<td>58.0</td>
<td>56.9</td>
<td>56.9</td>
<td>100.0</td>
<td>22.0</td>
</tr>
</tbody>
</table>

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The number of subjects within each group having had combinations of art experiences is recorded in the following table.

### TABLE X
**NUMERICAL ACCOUNT OF ART EXPERIENCE WITHIN GROUPS EE, EEA AND A**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>EE</td>
<td>44</td>
<td>23</td>
<td>1</td>
<td>0</td>
<td>9</td>
<td>0</td>
<td>0</td>
<td>11</td>
<td>0</td>
</tr>
<tr>
<td>EEA</td>
<td>44</td>
<td>16</td>
<td>2</td>
<td>1</td>
<td>10</td>
<td>3</td>
<td>1</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>A</td>
<td>58</td>
<td>6</td>
<td>2</td>
<td>8</td>
<td>6</td>
<td>1</td>
<td>8</td>
<td>8</td>
<td>19</td>
</tr>
<tr>
<td>Total</td>
<td>146</td>
<td>45</td>
<td>5</td>
<td>9</td>
<td>25</td>
<td>4</td>
<td>9</td>
<td>28</td>
<td>21</td>
</tr>
</tbody>
</table>

The means of the groups within the three groups are shown below. The numbers within parentheses represent only one subject.

### TABLE XI
**MEANS FOR GRAVES DESIGN JUDGMENT TEST AND APPLIED DESIGN TEST WITHIN GROUPS**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ap'D</td>
<td>EE</td>
<td>44</td>
<td>14.70</td>
<td>15.00</td>
<td>16.12</td>
<td>17.83</td>
<td>18.00</td>
<td>17.00</td>
<td>14.00</td>
<td>17.00</td>
</tr>
<tr>
<td>EEA</td>
<td>44</td>
<td>15.75</td>
<td>17.50</td>
<td>16.12</td>
<td>17.83</td>
<td>18.00</td>
<td>16.89</td>
<td>16.12</td>
<td>18.00</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>58</td>
<td>18.83</td>
<td>19.00</td>
<td>17.83</td>
<td>18.00</td>
<td>17.00</td>
<td>16.12</td>
<td>18.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gr'D</td>
<td>EE</td>
<td>44</td>
<td>60.95</td>
<td>59.00</td>
<td>81.00</td>
<td>62.11</td>
<td>58.67</td>
<td>58.67</td>
<td>47.00</td>
<td>73.00</td>
</tr>
<tr>
<td>EEA</td>
<td>44</td>
<td>65.00</td>
<td>63.50</td>
<td>81.00</td>
<td>58.67</td>
<td>58.67</td>
<td>75.12</td>
<td>73.00</td>
<td>75.00</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>58</td>
<td>70.50</td>
<td>78.50</td>
<td>78.50</td>
<td>75.12</td>
<td>73.88</td>
<td>75.00</td>
<td>75.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Self-Rating on Art-Centered Tasks

The subjects within the three groups were asked to rate themselves on performing the tasks of (1) designing classroom displays, (2) arranging bulletin boards, (3) choosing a wardrobe and (4) selecting well designed household goods. The four-place evaluations were called "poor," 1, "fair," 2, "good," 3, and "excellent," 4. The ratings are recorded below.

TABLE XII
GROUPS' SELF-RATING ON ART TASKS BY PERCENTAGES

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>1st Task Rating</th>
<th>2nd Task Rating</th>
<th>3rd Task Rating</th>
<th>4th Task Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>EE</td>
<td>44</td>
<td>9 57 30 4</td>
<td>9 43 43 5</td>
<td>2 18 70 11</td>
<td>2 18 68 11</td>
</tr>
<tr>
<td>EEA</td>
<td>44</td>
<td>2 50 48 2</td>
<td>0 48 50 2</td>
<td>0 4 75 20</td>
<td>0 36 61 2</td>
</tr>
<tr>
<td>A</td>
<td>58</td>
<td>2 41 52 5</td>
<td>2 41 43 14</td>
<td>24 2 47 47</td>
<td>24 8 72 16</td>
</tr>
</tbody>
</table>
Name ___________________________ Art 135___ 136___

Name, if results of test are desired ________________________

Sex M F Class Fresh Soph Jr Sr Hometown ________________________

ART EXPERIENCE

Grade Level ____________________ Yes No No. of Years

Elementary School
Junior High School
High School
College or University
Private Instruction

Poor Fair Good Excellent

1. How would you rate your ability to plan attractive displays for the classroom?

2. How would you rate your ability to arrange interesting bulletin boards for the classroom?

3. How would you rate your score on the Applied Design Test?

4. How would you rate your score on the Graves Design Test?

5. How would you rate your ability to choose your own wardrobe?

6. How would you rate your ability to select well designed household goods?

7. If you have completed Art 135-136 how would you rate your growth in art during that course?

8. If you have completed Art 135-136 what three activities would you suggest as those most helpful to you?
SECOND TESTING OF THIRTY-SIX OF THE EE GROUP

Thirty-six of the forty-four subjects from the elementary education, (EE) group were tested at the end of a six weeks summer session. The following tables show their change:

TABLE XIII
SECOND TESTING STATISTICS FOR THE GRAVES TEST

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Standard Devi.</th>
<th>df</th>
<th>Fisher t</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE</td>
<td>36</td>
<td>57.5555</td>
<td>14.6807</td>
<td>70</td>
<td>1.8254*</td>
<td>0.075 approx.</td>
</tr>
<tr>
<td>EE1/2A</td>
<td>36</td>
<td>63.8888</td>
<td>14.3445</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


TABLE XIV
SECOND TESTING STATISTICS FOR APPLIED DESIGN TEST

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Standard Devi.</th>
<th>df</th>
<th>Fisher t</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE</td>
<td>36</td>
<td>14.1944</td>
<td>2.1962</td>
<td>70</td>
<td>1.9458</td>
<td>0.06 approx.</td>
</tr>
<tr>
<td>EE1/2A</td>
<td>36</td>
<td>15.3333</td>
<td>2.6770</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
BIBLIOGRAPHY

Books


Article


Report


Publications of Learned Organizations


Unpublished Materials


Bulletin

Bulletin of North Texas State University, 1964, Denton, Texas.