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AUTHOR Hine, Frances D.; And Others
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ABSTRACT

Using 144 nine- and 10-year-old children from diverse communities with various ethnic and socioeconomic backgrounds, this research project studied evaluation methods related to the development of visual awareness in the field of art education. Three types of visual studies--walking tours, classroom art work, study trips to an art museum--and a group of related art concepts served as an organizing framework for teachers in planning curriculum and instruction. A new approach to evaluation of art through the use of photography was developed and tested. Each child was asked to take three shots of an object during the school year to see if learning would carry over and influence what they did in the way of selecting and positioning objects they chose to photograph. Results indicated that the use of photography as an evaluation technique is sound, and is of particular value for children who have had limited environmental enrichment. (A review of related research, study methods, 27 tables showing methods and results, and a brief bibliography are provided.) (MF)

FINAL REPORT
Project No. 9-I-073
Grant No. OEG-9-9-140073-0049(057)

A PILOT STUDY OF EVALUATION METHODS RELATIVE TO THE DEVELOPMENT OF VISUAL AWARENESS IN THE FIELD OF ART WITH NINE- AND TEN-YEAR-OLD CHILDREN ATTENDING FOURTH GRADE

Dr. Frances D. Hine
Dr. E. George Sitkei
Mr. Earl P. Owens
Office of the Los Angeles County Superintendent of Schools

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United States Department of Health, Education, and Welfare

Office of Education, Bureau of Research

ACKNOWLEDGEMENTS

The richness that art brings to human experience is the qualities it liberates through personal involvement. Art inspires a spirit of adventure into new realms of discovery and enjoyment. In this research, involvement sparked the action. Throught the efforts of children, we learned more about art processes in human development.

The cooperative circle of classroom teachers, members of the Docent Council of the Los Angeles Museum of Art, and art consultants summoned a wealth of ideas and insights that made the learning opportunities stimulating and valuable to children. They brought a fresh aliveness to the action.

We are especially grateful to the following school districts for their interest and desire to share in this endeavor:

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Appreciation for assistance in programming and computer applications is expressed to the Socio-Behavioral Study Center for Mental Retardation at Pacific State Hospital, Pomona, California.

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SUMMARY

A deep concern for the improvement of learning as applied to children's art was the primary focus of this research project. Over a nine-month period, from September, 1969 to May, 1970, the Office of the Los Angeles County Superintendent of Schools acted as the sponsoring agency with five school districts within this county and in cooperation with the Docent Council of the Los Angeles County Museum of Art.

The purpose of this research was to study evaluation methods related to the development of visual awareness in the field of art education with nine- and ten-year old children. The experiment focused upon utilizing a variety of environments as sources of knowledge and inspiration to children. This approach presented a wide variety of common place and new settings that enabled the child to respond to visual art qualities as sources of ideas and feelings to express, appreciate, and enjoy.

Five school districts participating in this research were representative of diverse communities with various ethnic and socio-economic groups. These districts were selected because they provided an opportunity to study the effectiveness of an instructional program with children from diverse backgrounds and having different learning capabilities. Three types of visual studies and a group of related art concepts served as an organizing framework for teachers in planning curriculum and instruction. Each type of visual study was designed to perform interrelated functions leading toward the involvement of children in direct experiences with varied environments and art media.

Visual Studies, Type One, dealt with learning to see visual art data within selected environments. Environments explored included: walking trips within the immediate neighborhood of the school, and five study trips to Los Angeles Central City core, Century City, Watts Towers, Los Angeles Zoo, and the Huntington Gardens. Emphasis was placed on such behaviors as learning ways of observing the visual appearance of objects and events, studying form as it appears in nature and in man-made objects, and searching for examples of design as they appear in objects and events.

Visual Studies, Type Two, involved learning to use visual art data as sources of ideas and feelings in responding with art media. Learning opportunities in this group were carried on in the classroom. Children utilized their experiences from neighborhood walks and study trips as sources of ideas for responding with art media.

Visual Studies, Type Three, encompassed learning to see and respond to works of art. Learning opportunities in this group involved three study trips to an art museum. They were designed to introduce children

to recognized works of art by eliciting their responses, raising questions, and providing selected information.

The results of this study present a number of findings that have implications for curriculum development and evaluation. In comparing the academic achievement of the 144 children involved in the research and the 281 subjects used as the matched control group, it was found that the project pupils made significantly greater gains on a standardized reading achievement test in both reading vocabulary and comprehension. Greatest gains were noted for pupils attending schools from the lower socio-economic districts.

An analysis of the findings for the four perceptual type measures indicated that the project pupils generally made equal or higher gains on pre- to post-test scores when compared to a national norms sample. Some variations were noted for individual schools and when grouping by SES. For instance, the lower SES schools made a greater mean gain on the Guilford Figure Completion, but the higher SES schools produced a larger increase on the Guilford Figure Production Test. Results on the Primary Mental Abilities Perceptual Speed Test were in favor of the low SES but wer not as clear-cut and individual schools tended to show more variation because of individual class treatment.

A new approach to evaluation of art through the use of photography was developed and tested. Each child was asked to take three shots of a chosen object that was on the school grounds or in the neighborhood. These shots were taken during three different time intervals: November, March, and May. The purpose of this evaluation was to see if children's learning would carry over and have an influence on what they did in the way of selecting and positioning objects they chose to photograph.

A nine-point evaluation scale was developed to measure this growth. Three judges were asked to rate the children's slides. Intra-rater reliabilities were consistently high.

The findings indicated that the greatest growth occurred between the first and second time periods for children from high SES backgrounds, whereas children from the low socio-economic areas made the greatest growth during the second to third period. In addition, this group showed a greater amount of creativity in their photography than either the high SES or middle SES groups. The high socio-economic group appeared to level off after the second time period. No gain was evidenced by the middle group on the evaluation instrument.

These results seem to indicate that the use of photography as an evaluation technique is sound. It seems to be of particular value for children who have had limited environmental enrichments. Perhaps this is due, to some extent, to certain limitations that come from many vicarious, rather than direct, experiences with people, objects, and events. Opportunities for direct experience may enable children to feel visual imagery dramatically. Thus, the desire to learn is increased. The teacher and Docent's interest in an acceptance of children's efforts may have been additional factors contributing to

the learning situation.

As the study concluded, the emergence of two approaches in dealing with art learning was evident. In one approach, the art activities centered around teacher-generated tasks offering limited opportunities for choice in media and materials, a standardized use of media and a norm-referenced criteria for success. The second approach focused upon individualizing the art learning by saturating the child's sensory modalities. Since a child can only translate visual stimuli that he is able to receive, recognize, and interpret, the teacher's function becomes a facilitator of this process. Further research is warranted in both pre-service and in-service methods of intervention in dealing with this apparent dichotomy in the teaching of art.

INTRODUCTION

Considering all of the educational research of our time, it is doubtful if any one of them, or all, are able to provide most, or even a substantial part, of the information needed for the development of human potential in this country. At best, most research in education has concentrated on the most obvious, or surface problems--and the results of this research in turn have produced narrow and shallow answers to the real problems. In the present limited study of the effect of art project activities on visual awareness, a different approach to the researchable problem of how children learn and feel was explored. This experimental effort attempted to capture the child's power to observe and to relate what he sees and feels to visual art concepts as they appear in life experiences. A variety of environments was used as sources of knowledge and inspiration for the child to develop his own sources of ideas and feelings to express, appreciate, and enjoy.

The Need

The field of art education is undergoing many new considerations that emanate from reflections by the profession and from other educational inquirers concerned with the nature and quality of children's learning. Criticism of the art curriculum is centered upon its failure to develop in children certain behaviors that are claimed as goals (Barkin, 1966). The area of art knowledge is singled out as being most crucial.

As a result of these concerns, several trends have become evident. Ideas encompassed in the term "aesthetic education" have become more prominent in the art curriculum literature and suggest a very real change in the definition and role of art education. Within this framework of thought, curriculum development and instruction in aesthetic education would seek to bring about a balance between art criticism, art history, and productive work with art media and processes.

Eisner (1968) describes other changes that emerge as a result of this new position. He points out that a new emphasis is placed upon the environment in shaping artistic aptitudes including aptitudes in both the production and appreciation of art. The importance of art concept development is also stressed.

These ideas and a whole cluster of other ideas have aroused much discussion and speculation (Mattil, 1966). The need for research in art appreciation becomes more crucial as a means of bringing about necessary clarification and direction to this field.

Efforts to assist teachers with art curriculum development and instruction at the school district level have posed many problems and needs. Frequently, teachers mention an inability to make application of art principles. Extending learning opportunities beyond those identified in curriculum guides has also been a problem. These problems often are attributed to lack of understanding and knowledge of art.

The dilemma of the teacher can readily be understood since many of the required art courses for the State Elementary Credential concentrate upon activities suggested for different age levels of children and the use of various art media and processes. Little attention appears to be placed upon helping teachers to grasp the broad dimensions of this field or to inquire into the nature of and conditions for this type of learning as a prerequisite for determining selection of content or methodology.

The work of Krathwohl, Bloom, and Masia (1966) presents a continuum for art learning that has relevance to this problem. By establishing receiving behavior; e.g., awareness, willingness to receive, and selected attention at the beginning level in the internalization process, they imply a need for rethinking some of the traditional methods described in curriculum guides and other materials. In addition, they highlight the need to use evaluation as a means of continually assessing the teaching-learning situation.

Many of these issues, along with others, have become prominent through the cooperative work of agencies within the Los Angeles County. The Docent Council of the Los Angeles County Museum of Art and art consultants from the Office of the Los Angeles County Superintendent of Schools have studied educational programs in art for children and youth at the Museum for the past several years.

Evaluation of these programs has been a constant concern of this group. Such informal procedures as Docent observation reports of children's interaction with works of art have been one method of securing data. Another source of data has been children's written responses. Each of these procedures has provided some clues relevant to children's interest and enjoyment of these experiences. They have also been useful in redesigning exploratory experiences. However, these exposures are limited to some extent by a lack of knowledge of how the teacher uses preparatory materials provided by the museum or to what extent these experiences are followed up in the classroom.

In many of the elementary schools within this County, the broad range of learning opportunities in art tends to be organized around working with art media and processes. Less attention seems to be placed upon helping children learn to see so that they go beyond the usual cognitive categorizing to visualize the details and relationships as they respond to people and art objects that may have aesthetic qualities. This kind of learning induces an emotional reaction to sensory data that generates a deeper critical probing into ideas and feelings. It deviates from learning that follows a linear model which teachers seem to use more frequently.

Recognition of these problems and those at the national level has led to some hypothesizing about what might be accomplished with children and teachers through the joint efforts of individual school districts, art consultants, and select Docent Council members. Such questions as: What are some ways to assist children in expanding their perceptions of and responsiveness to art? and How can teachers be helped to become more knowledgeable in the field of the visual arts? led to the design

of this study.

Review of the Literature and Related Research

Areas within the literature and research which seem related to this project included perception and perceptual training, teaching, and learning of art appreciation and concept development. The breadth of these writings precludes a synthesis of research in all fields. Therefore, only a few studies are cited to suggest some theoretical positions that have been researched in these specific areas.

Art experience depends heavily upon perceptual processes. The individual must first perceive the art object or event before he is able to respond. This percept must then become a concept by itself--an integrated perceptual gestalt. The work of Illelson and Cantril (1954) demonstrates that perception is a function of such complex relationships as the individual's prior experience, values, goals, style of perceiving, and immediate purposing. The process is highly selective and uniquely individual. Thus, there appears to be no common ground for what is perceived or how people, events, or situations are perceived.

McFee (1961) has been instrumental in interpreting the art education implications of the perceptual process in her perception-delineation theory. She postulates that the child's readiness to respond to things visually and his ability to express himself artistically differs in terms of his past experience and psychological environment. Since these differences are learned, more adequate means of handling visual information can be taught.

In an effort to test out this theory, Kensler (1965) experimented with perceptual training and perceptual drawing with seventh-grade students. He found no significant relationship between the variable and indicated that students' differing perceptual abilities may be a critical variable in the teaching of art which needs further investigation.

Attneave (1954) working from information theory maintains that the individual is able to handle excessive visual information by classifying like units, by random averages, and by adding parts to form wholes. His conclusion that visual information is concentrated along contours, especially at points of directional change, has been examined by Salome (1965) in an attempt to determine its implications for perceptual training in art. He found that perceptual training, including the use of visual cues along contour lines, did increase the amount of visual information that fifth-grade children included in their drawings.

Investigations related to the teaching of art appreciation suggest that much depends upon the teaching method. Brent (1966) found that fifth and sixth grade students' perceptions of painting could be altered significantly by carefully programming language and structuring experiences. He concluded that if the goal of broadening students' perceptions of art works is to be effectively achieved, other methods than those relating to working with art media need to be developed. On

the other hand, Annis (1964) working with college students found that those who were taught art appreciation by both discussion and work with materials made greater gains than those taught by the lecture method along. Brandon (1961) working with college students compared four methods of teaching art appreciation involving combinations of lecture, visual illustration and practicum. He concluded that his study supported the position of those who maintain that art appreciation cannot be taught.

Broudy (1964) introduces a new dimension into the study of works of art that may enable the teacher to develop more effective strategies in the teaching of art appreciation. He proposes four levels of aesthetic judgment on which the critical response can be made: (1) the vividness and intensity of the sensuous elements in the work of art; (2) the formal qualities of the object; (3) the technical merits of the object; and (4) the expressive significance of the object. Research based upon this framework will be necessary to assess its usefulness in providing an operational structure from which to work.

The importance and sequence of concept development have been under intensive investigation for some time. Piaget (1954), Bruner (1962), and others have defined many of the cognitive skills which are necessary for adequate learning. Inhelder (1958), following the work of Piaget, has shown that certain levels of development must be achieved in order that certain skills can be mastered.

Development of visual awareness is highly correlated with the attainment of cognitive skills. Percepts must be translated to concepts for meaningful learning to ensue. For example, research in the area of "conservation," an important developmental task, indicates that perceptual and visual attention and awareness must be present in order for children to gain insight into this phenomena.

In the development of curriculum, the selection of concepts is a critical issue for they become a structure for selecting and organizing subject matter content. In general, the use of art concepts in curriculum design has been less sharply focused than other subject matter fields. The development of a structural system for making decisions relevant to selection of art content can lead to more precise definitions in planning learning opportunities and strategies for teaching. Bingham (1968) differentiated art concept in such a way as to make them operationally useful. She divided them into three distinct realms: design or existential, natural phenomena, and relational concepts.

> Design concepts consist of line, shape, color, texture, and mass. These are conceptual separations of the "tools" of the visual arts.
>
> The concepts based on natural phenomena are space (the construct of the visual arts), light, mass, movement, and time.
>
> By interlocking the design concepts and natural

phenomena the relational concepts emerge: contrast, pattern, rhythm, balance, direction, variety, and unity.

....functional concepts...are interlocked with the structural and literally make structural 'work' by bringing feeling to form. They embody the affective realm of meaning, values, and emotion.

Statement of Problem

This pilot project was a study of evaluation methods related to the development of visual awareness in the field of art education with nine- and ten-year old children attending fourth grade. Underlying this study were some beliefs about children and learning which were basic to the treatment process. They included:

Learning opportunities in art must have some relationship to the child's reality--the world he knows, believes in, and values. His experience in art must be more than an exposure. He needs opportunities that enable him to examine ideas and feelings within a broad variety of varied settings (McFee, 1961).

The child's conceptual scheme for handling visual data and feelings accompanying these interactions is his organizing structure for extracting meaning. The purpose of learning opportunities is one of providing situations that enable him to operationally test out and integrate ideas and feelings into this system. Thus, the role of teaching is one of encouraging personal search and inquiry rather than one of telling the learner what to see and do, how to think and feel (Bruner, 1962).

The child's learnings in art are outcomes of his experience. He develops his own bank of knowledge by discovering ways of symbolizing ideas--by feeling them dramatically through visual imagery.

The child's emotional involvement is a basic source of satisfaction and motivation. His curiosity, interest, attitudes, prior experiences, imaginative play with ideas and feelings are more likely to influence the quality of his learning than an overload of prescribed knowledge and directives.

Research Questions

The following seven research questions which are related to the underlying rational were identified:

Will visual awareness designed to increase children's learning opportunities enhance aesthetic awareness?

Will there be any difference between and among the various groupings of children based on perceptual skills tests?

Will the art project have a differential effect upon girls than boys?

Can we measure changes in art abilities or proficiencies through the use of photography?

Can photography be used as a tool in testing out visual art concepts?

Will there be any evidence of change in teacher behavior?

Will the learning opportunities enhance the academic achievement in the experimental versus control groups and in differing socio-economic areas?

METHODS

Subjects

This study was conducted with nine- and ten-year olds attending fourth grade in five school districts within the Los Angeles County. These school districts were representative of diverse communities with a cross-sectional sample including various ethnic backgrounds and socio-economic levels.

School One was representative of a middle class community with a small percentage of ethnic minorities. Schools Two and Five were Anglo with high socio-economic backgrounds. School Three was predominately Black and representative of a low socio-economic level. The school district designated as Four was composed of two classes with a majority of Mexican children from a low socio-economic area. The economic backgrounds of the total sample as indicated by father's occupation using Hollingshead and Redlick (1958) Scale, present ranges from families on welfare (level 7) to corporate executives (level 1) as seen in Table 1.

TABLE 1
SOCIO-ECONOMIC STATUS OF FATHER'S OCCUPATION

SES		N	Sch. 1	Sch. 2	Sch. 3	Sch. 4	Sch. 5
1	(High)	22	3	8	-	1	10
2		23	7	5	-	1	10
3		15	2	3	1	2	7
4		18	8	-	1	9	-
5		30	5	-	1	23	1
6		19	3	-	9	7	-
7	(Low)	17	5	-	4	7	1
Totals		144	33	16	16	56	29

These districts were selected because they provided an opportunity to study the effectiveness of the instructional program with children from these diverse backgrounds and having different learning capabilities as measured by standardized test instruments.

Teacher Participants

Each of this stratified sample was represented by at least one experimental group and two control classes in the same school. Each school district, with the exception of School Four which had two participating classes, was represented by one fourth-grade teacher and a group of approximately thirty children working together in a self-contained classroom. The selection of the teacher was made by the school district. Criteria for selection included (1) interest in children's potential development in art, (2) desire to work on curriculum development and instruction in art education, (3) willingness to accept the commitment of additional time, and (4) personnel records indicated that the teacher had no special classes in art other than those classes required for a basic teaching credential.

A total of 144 children was involved in this project. Only students who were present for the duration of the study and with complete data were included in the final analysis. Thus, the total N was reduced from 175 to 144. The sex distribution for the sample is shown in Table 2 for each school and includes the comparable selection of two classes to comprise the control group from each school.

TABLE 2
SEX DISTRIBUTION FOR EXPERIMENTAL & CONTROL
BY SCHOOLS AND TOTAL

SCHOOL DISTRICT	EXPERIMENTAL		CONTROL		TOTAL	
	BOYS	GIRLS	BOYS	GIRLS	EXPERIMENTAL	CONTROL
School 1	15	18	22	23	33	45
School 2	9	7	21	21	16	42
School 3	10	6	19	17	16	36
School 4	25	25	48	53	50	101
School 5	15	14	23	34	29	57
TOTAL	74	70	133	148	144	281

Most recent intelligence test scores abstracted from student's cumulative records were based on the group testing program. Arrangements were made to obtain individual test scores for those with missing data. The mean IQ for the project participants was 104.38 (S.D. = 16.23). In Table 3, the mean and standard deviation of IQ's for each of the participating schools are presented.

TABLE 3
IQ BY SCHOOLS

SCHOOL	MEAN	STANDARD DEVIATION
1	105.85	12.93
2	116.38	13.71
3	90.50	16.06
4	99.50	14.14
5	112.17	15.13
TOTAL	104.38	16.23

Student Descriptive Data

A project-developed student information inventory was used with each of the experimental classes. It was designed on a pre- and post- basis to sample experiential backgrounds of the children as to the enrichment of their life-space. It was found at the beginning of the project that only 17% of the total sample had visited the Watts Towers, a notable work of art, and only 20% had visited the Music Center, a unique architectural and cultural center. Additional student information data may be found in Appendix A. This was for the total sample of 175 children disregarding school, sex, or social class. When asked if they had ever used a camera, 86.3% of the participants responded affirmatively and 55.4% indicated ownership. Whereas by the end of the project when student information inventory was re-administered, 70% of the children owned cameras.

Curriculum Development

The art curriculum was organized around three types of visual studies involving ideas from Bingham's (1968) structural system of art concepts and Broudy's levels of art appreciation learnings. Each type was designed to perform interrelated functions in the learning activities leading toward the achievement of desired outcomes. They were not planned as separate units but ran concurrently with the teacher's diagnosis of pupil needs. They were planned to involve children in direct experiences with primary art sources. They focused upon children's study of relationships rather than art techniques.

Visual Studies

The framework around which learning opportunities were organized consisted of the following three types of Visual Studies:

Type one: Learning to see visual art data within selected environments.

Environments explored included walking trips within the immediate neighborhood of the school and study trips (5) to Los Angeles Central City core, Century City, Watts Towers, Los Angeles Zoo, and the Huntington Gardens. Emphasis was placed on such behaviors as learning ways of observing the visual appearance of objects and events, studying form as it appears in nature and in man-made objects, and searching for examples of design as it appears in objects and events.

Children recorded their ideas and feelings at the site by sketching in booklets (written for specific study trips), taking photographs, and some by tape recording.

Type two: Learning to use visual art data as sources of ideas and feelings in responding with art media.

Learning opportunities in this group were carried on in the classroom. Children utilized their experiences from neighborhood walks and study trips as sources of ideas for responding with art media.

These studies focused upon such behaviors as experimenting with ideas using a wide variety of art media, developing personal ways of giving form to their ideas and feelings, and building criteria for making judgments about personal efforts. Children worked with such art processes as constructing, arranging, selecting, inventing, shaping, and evaluating.

Type three: Learning to see and respond to works of art.

Learning opportunities in this group involved study trips (3) to an art museum. They were designed to introduce children to recognized works of art by eliciting their responses, raising questions, and providing selected information.

These studies centered on such behaviors as becoming acquainted with the language of art, examining art media, materials, and tools used to produce various works of art, and formulating concepts related to the artist and processes he uses to create works of art.

Children viewed and discussed works of art with Docents and experimented with art media in the museum workshop following gallery visitations.

Art Concepts

The art concepts were drawn from four general categories involving design, natural phenomena, self-development, and the artist. They were not taught as isolated groups of ideas, but rather, they were interwoven into the learning opportunities. The four categories included the following:

Design concepts: line, color, shape, mass

Natural phenomena concepts: light, movement, volume, time

Self-development concepts: how I think and feel; why I like or dislike; what I learn from other people; how I perceive myself as an artist.

Artist concepts: how the artist views the world, his ways of communicating what he thinks and feels, his choice and use of art media and tools.

The Classroom Teacher

The classroom teacher had major responsibility for the development of curriculum as well as the implementation of procedures. They were asked to work from their perceptions of pupil need and to utilize study trip purposes as another key source for deepening and enriching the learning opportunities for children.

Some help was provided by art consultants and Docents on working with selected art processes during the in-service workshop sessions. Teachers also observed children working with art media following each museum visitation. However, emphasis was placed on providing situations in the classroom that enabled children to work with their ideas rather than to teach a technique in order to achieve an art product. Thus, the teacher was placed in the position of working along divergent directions. For example, after a study trip to the Inner City core, the teacher would use this experience as a central focus for a variety of art learnings that drew upon other areas of the curriculum. Making a design for a city with emphasis upon lines, shapes, color, patterns, and movement led quite naturally to questions related to "What makes a city?" "What goes on in a city?" The concept of city furniture intrigued the imagination and summoned need for vocabulary study and story writing. Recapturing the experience by viewing slides and sketches made while at the site, opened up many opportunities for linking visual and verbal imagery.

A broad variety of materials was provided and so designed as to illustrate ways of working with art concepts. Preparatory materials (in Appendix B) on each of the study trips was available to each teacher and contained such information as the time schedule, bus route, purposes, and related concepts along with suggested follow-up activities. Each teacher was asked to keep a record that contained a statement of purpose, a brief description of the learning activity and notes on children's reactions (in Appendix C). These records were periodically mimeographed and distributed to the entire project staff. In this way, each teacher had access to the various curriculum materials developed by other teachers and Docents.

At the close of the treatment each teacher was asked to respond to five questions regarding their perceptions and feelings. (See Appendix F).

Docent Council Participation

Initial thinking about this study developed in cooperation with members of the Docent Council. They voiced a need for sustained working relationship with children as a means of improving their educational services to children.

The Docent Council is composed of a group of women who volunteer their services to the Los Angeles County Museum of Art. These women represent broad educational backgrounds, particularly in the field of art, and many have leadership roles in other agencies and institutions within the expanded community. Among their services to the museum is the planning and conducting of educational programs for children and adults.

Thirteen Docent Council members volunteered to participate in this study. A team of Docents was assigned to each school district. They were selected out of a group of 85 women on the basis of the following criteria: (1) completion of an extensive two-year training program at the museum, (2) minimum of two years experience in conducting children's gallery tours, (3) demonstrated ability to use new ideas and approaches with children, and (4) expressed desire to participate in this project.

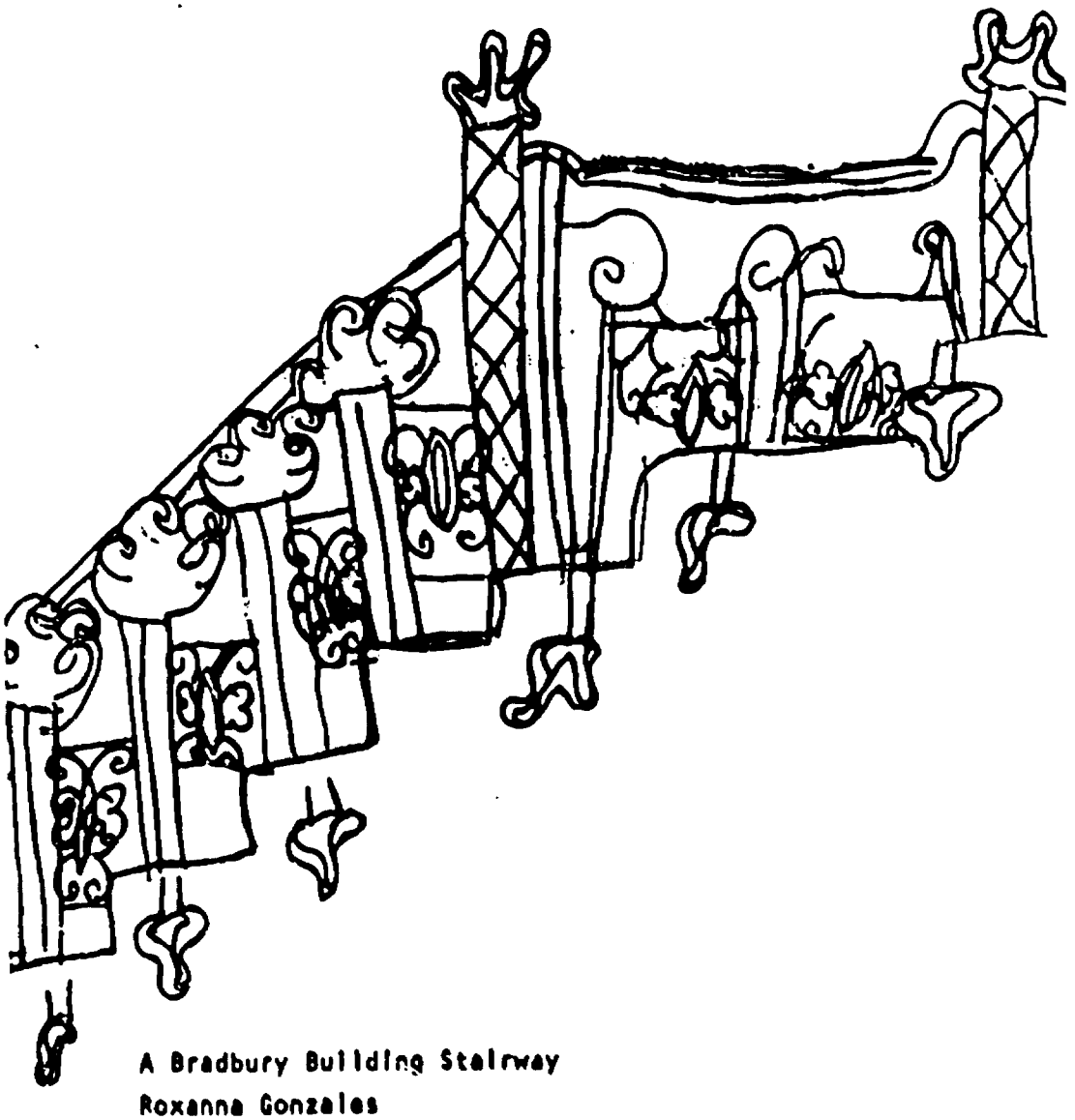
The Docent teams functioned as auxiliary resource teachers and worked with children in the classroom, on neighborhood walks, study trips, and at the art museum. They afforded children new sources of idea stimulation by sharing specialized art knowledge along with an enthusiasm for learning. They established a close working relationship that provided opportunities for children to become acquainted with people who were essentially interested in them.

Each Docent maintained a record (Appendix D) that described the purpose of the learning opportunity, a brief description of the activity, and observation of the children's reactions.

As a consequence of Docent members' interest in curriculum development,

City Impressions

Allan Mitchell



A Bradbury Building Stairway
Roxanna Gonzales

they prepared the following types of instructional materials:

booklets, especially written for three of the study trips, that contained very brief writings on unique ideas related to observations and the play of imagination. Space was provided in the booklet for children to respond by sketching their impressions and feelings;

a series of cards designed around the idea of a treasure hunt which contained questions related to examples of selected art concepts. Children would search out these examples in various museum gallery visitations, and on special cards words were also developed for selected study trips;

children become more conscious of differences in the way color is perceived;

collections of aculpture and other art objects along with slides of art reproductions organized for use in classroom discussions.

Art Consultant Resources

Art consultants from two of the school districts served as resources to the project staff. They prepared materials and introduced teachers to the use of selected art media during the project in-service and local district team meetings. In some instances, they accompanied children on study trips but did not work with children in the classroom.

Description of Test Instruments

During the last week in September, and again in May, each of the six classes was tested on a series of five tests measuring perceptual skills and a standardized reading test. Control groups for each experimental class were also given the reading test. The reading section of the Iowa Tests of Basic Skills (ITBS) was selected for this purpose. The authors indicate that this test was developed to measure the pupils' ability to use acquired skills in vocabulary and comprehension of printed material. Comparison of reading test scores administered prior to and after completion of the project provided the necessary data to measure the relationships between project involvement and reading success.

Only the experimental group was tested on a battery of tests designed to measure certain perceptual type skills of which three were standardized tests and two were experimental tests designed to measure certain elements of creativity. A description (See Appendix E for author and publisher data) of each of these is presented here:

1. The Progressive Matrices (PM) is a test composed of sixty problems using puzzle-solving type materials

to match designs or use reasoning by analogy to select the correct solutions. It is considered to be a non-verbal intelligence test to measure more directly "native" abstract intelligence. Some authorities consider the PM to be less culturally-biased than other typical verbal intelligence tests.

2. The Guilford Figure Completion (GFC) test measures the ability to close visually incomplete information. The subject is required to identify or give the names of pictures of objects that are only partially presented.

3. The Guilford Figure Production (GFP) measures the ability to creatively elaborate upon visual stimuli. The subject uses a pencil or crayon and adds to given lines in order to produce meaningful figures.

4. The Primary Mental Abilities Test (PMA) is composed of five factors of intelligence that, according to the author, appear to be most critical in school work. Of these five, only two were used in the current project; namely, the Perceptual Speed Test and the Spatial Relations Test.

   a. Perceptual Speed - The ability to recognize likenesses and differences between objects or symbols quickly and accurately. This is considered an important factor in acquiring reading skills for the younger child.

   b. Spatial Relations - The ability to visualize objects and figures rotated in space and the relations between them. Considered to be an important factor at all levels of the school years.

In addition, a project-developed student information form was used with each of the experimental classes. These testing procedures were repeated in May for the purpose of determining if the planned curriculum and related learning opportunities made any significant difference in the children's learning.

Photography, an Evaluation Tool

A new approach to evaluation through the use of photography was developed and tested. This aspect of the study was made possible by the generous loan of thirty 124 and five 134 Instamatic cameras. In addition, the project grant funding supplied six F 44 Instamatic cameras.

The purpose of this particular evaluation reflected the general purposes of this study. By using a variety of environments as sources of knowledge and inspiration, a child might be expected to use these learnings in responding with various art media, including a camera.

Experimental Procedures

In an effort to order this experiment, the following procedures were used with the total sample of children:

each of the six participating classes was given instructions in the use and limitations of a 124 Instamatic camera by a high school student or a teacher resource with a special interest in photography;

cameras were used by the children on study trips prior to initiating this experiment;

each child was asked by the classroom teacher to select something within the school or neighborhood environment that he liked--a favorite thing, something he enjoyed looking at;

a total of three shots of the chosen object was taken by each child during three time intervals scheduled in November, March, and May.

The Evaluation Scale

A nine-point scale was developed to determine if there was any measure of growth as evidenced by change in this aspect of the children's photography. The scale had five main categories with four intermediate categories. The latter was designed to give additional value to those photographic shots that were judged to be somewhat better than the assigned category. The categories emphasize position or viewpoint, camera range, and selection in framing subject matter. Rating number one was the least complex category involving a generalized distant view. At the upper end of the continuum, number nine encompasses greater attention to close range, selection and framing of subject matter, along with such unique qualities as positioning and dramatizing subject matter.

Preparation for Judging

Three slides for each child were numbered in the order of the scheduled time sequences; i.e., November (1), March (2), and May (3). The slides were then randomized by establishing all possible number combinations of 1, 2, and 3. Slides were placed in three Kodak Carousel reels according to this numbering system. One space was allowed between each slide to avoid error in activating each set of slides.

A scoring sheet was prepared for judges which listed each child's number. A numbering of 1, 2, and 3 was used to indicate a first, second, and third slide. These numbers had no correspondence to the original order of picture-taking sequence. Space for checking

each slide according to the nine-point scale was provided.

Three judges were selected to assist with this aspect of the study. The judges included an elementary school principal, an art consultant serving an independent school district within this county, and a retired art consultant. Each has worked with children over a long period of time and has had experience with photography.

Each judge was instructed on the use of the scale and method of recording his evaluations. The scale was discussed and a set of practice slides was used to illustrate each of the nine categories. Slides were presented by activating carousel 1, 2, and 3 on a large screen so that judges viewed the three slides simultaneously. This procedure was followed for each set of slides throughout the entire judging process. Three judges were asked to rate the complete sample of children's slides including those for which there was only one or two slides. However, only those subjects who had complete test data and three slides were included in the portion of the results.

RESULTS

Analysis of the Findings

Using a computer program to provide an analysis of variance one-way design statistical treatment, no significant differences were found between the total experimental (N = 144) and the total control (N = 281) groups when compared on reading vocabulary and reading comprehension raw scores, as seen in Tables 4 and 5.

TABLE 4

ANALYSIS OF VARIANCE FOR TOTAL EXPERIMENTAL VS TOTAL CONTROL ON READING VOCABULARY

PRE-TEST

DERIVED MEANS AND STANDARD DEVIATIONS

GROUP	N	MEAN	STANDARD DEVIATION
Experimental	144	18.243	10.42
Control	281	18.381	9.57

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F-RATIO	P
TREATMENT	1.806	1	1.806	.018	N.S.
ERROR	41196.749	423	97.392		
TOTAL	41198.555	424			

POST-TEST

DERIVED MEANS AND STANDARD DEVIATIONS

GROUP	N	MEAN	STANDARD DEVIATION
Experimental	144	23.722	10.025
Control	281	22.416	9.308

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F-RATIO	P
TREATMENT	162.356	1	162.356	1.778	N.S.
ERROR	38633.173	423	91.331		
TOTAL	38795.529	424			

TABLE 5

ANALYSIS OF VARIANCE FOR TOTAL EXPERIMENTAL VS TOTAL CONTROL OF READING COMPREHENSION

PRE-TEST

DERIVED MEANS AND STANDARD DEVIATIONS

GROUP	N	MEAN	STANDARD DEVIATION
Experimental	144	28.354	16.761
Control	281	28.762	15.258

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F-RATIO	P
TREATMENT	15.802	1	15.802	.063	N.S.
ERROR	105359.994	423	249.078		
TOTAL	105375.796	424			

POST-TEST

DERIVED MEANS AND STANDARD DEVIATIONS

GROUP	N	MEAN	STANDARD DEVIATION
Experimental	144	37.090	17.671
Control	281	35.693	16.596

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F-RATIO	P
TREATMENT	184.688	1	184.688	.642	N.S.
ERROR	121767.318	423	287.866		
TOTAL	121952.006	424			

Carrying the comparison one step further, when comparisons were based on gains for the subjects over a period of time, both groups did make significant gains on the reading tests, as seen in Table 6, but the gains for the experimental group tended to be greater overall. These differences were then tested for significance and the results tabulated in Table 7. An inspection of this table indicates that the experimental surpassed the control group at a significant level on both the verbal and comprehension subtests.

TABLE 6

COMPARISON OF PRE-TO POST-TEST
GAINS FOR THE EXPERIMENTAL AND CONTROL GROUP

EXPERIMENTAL N=144	MEAN PRE-TEST SCORE	S.D.	MEAN POST-TEST SCORE	S.D.	MEAN STUDENT'S GAIN	S.D.	t	p
Reading Vocabulary	18.24	10.38	23.72	9.99	5.47	5.64	11.600	.001
Reading Comprehension	28.35	16.70	37.09	17.61	8.73	10.77	9.694	.001
CONTROL N=281	MEAN PRE-TEST SCORE	S.D.	MEAN POST-TEST SCORE	S.D.	MEAN STUDENT'S GAIN	S.D.	t	p
Reading Vocabulary	18.38	9.56	22.42	9.29	4.03	5.93	11.369	.001
Reading Comprehension	28.76	15.23	35.69	16.57	6.93	9.51	12.202	.001

TABLE 7

COMPARISON OF READING GAINS
FOR TOTAL EXPERIMENTAL VERSUS TOTAL CONTROL GROUP

READING VOCABULARY

MEAN GAINS AND STANDARD DEVIATIONS

GROUP	N	MEAN	STANDARD DEVIATION	t	p
Experimental	144	5.47	5.64	2.908	.01
Control	281	4.03	5.93		

READING COMPREHENSION

MEAN GAINS AND STANDARD DEVIATIONS

GROUP	N	MEAN	STANDARD DEVIATION	t	p
Experimental	144	8.73	10.77	2.266	.05
Control	281	6.93	9.51		

Analysis of variance by schools of pre- and post-test scores indicated that School 2 (high SES) showed a significant positive gain in vocabulary (see Table 8) for the experimental group over the control group.

However, no differences were found for this school on the comprehension scores, as shown in Table 9.

TABLE 8

ANALYSIS OF VARIANCE FOR SCHOOL 2
EXPERIMENTAL VS CONTROL ON READING VOCABULARY

PRE-TEST

DERIVED MEANS AND STANDARD DEVIATIONS

GROUP	N	MEAN	STANDARD DEVIATION
Experimental	16	27.375	5.943
Control	42	24.429	6.844

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F-RATIO	p
TREATMENT	100.585	1	100.585	2.299	N.S.
ERROR	2450.036	56	43.751		
TOTAL	2550.621	57			

POST-TEST

DERIVED MEANS AND STANDARD DEVIATIONS

GROUP	N	MEAN	STANDARD DEVIATION
Experimental	16	32.500	4.427
Control	42	28.881	5.819

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F-RATIO	p
TREATMENT	151.750	1	151.750	5.130	.05
ERROR	1656.405	56	29.579		
TOTAL	1808.155	57			

TABLE 9

ANALYSIS OF VARIANCE FOR SCHOOL 2
EXPERIMENTAL VS CONTROL ON READING COMPREHENSION

PRE-TEST

DERIVED MEANS AND STANDARD DEVIATION

GROUP	N	MEAN	STANDARD DEVIATION
Experimental	16	43.688	15.192
Control	42	37.333	13.801

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F-RATIO	p
TREATMENT	467.798	1	467.798	2.325	N.S.
ERROR	11266.771	56	201.192		
TOTAL	11734.569	57			

POST-TEST

DERIVED MEANS AND STANDARD DEVIATIONS

GROUP	N	MEAN	STANDARD DEVIATION
Experimental	16	49.938	16.168
Control	42	47.405	12.196

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F-RATIO	p
TREATMENT	74.323	1	74.323	.415	N.S.
ERROR	10019.057	56	178.912		
TOTAL	10093.379	57			

The results for School 5 (high SES) were somewhat similar to the other high SES school, School 2, but here only a trend toward significance appeared for Vocabulary (Table 10), and actual significance was reached on the comprehension score comparisons for the experimental vs control group, as seen in Table 11.

TABLE 10

ANALYSIS OF VARIANCE FOR SCHOOL 5
EXPERIMENTAL VS CONTROL ON READING VOCABULARY

PRE-TEST

DERIVED MEANS AND STANDARD DEVIATION

GROUP	N	MEAN	STANDARD DEVIATION
Experimental	29	29.034	7.697
Control	57	27.930	7.050

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F-RATIO	p
TREATMENT	23.455	1	23.454	.443	N.S.
ERROR	4442.685	84	52.889		
TOTAL	4466.139	85			

POST-TEST

DERIVED MEANS AND STANDARD DEVIATIONS

GROUP	N	MEAN	STANDARD DEVIATION
Experimental	29	33.897	3.619
Control	57	31.158	6.976

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F-RATIO	p
TREATMENT	144.162	1	144.162	3.916	$>.05<.10$
ERROR	3092.269	84	36.813		
TOTAL	3236.430	85			

TABLE 11

ANALYSIS OF VARIANCE FOR SCHOOL 5
EXPERIMENTAL VS CONTROL ON READING COMPREHENSION

PRE-TEST

DERIVED MEANS AND STANDARD DEVIATIONS

GROUP	N	MEAN	STANDARD DEVIATION
Experimental	29	43.000	14.200
Control	57	44.632	12.459

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F-RATIO	p
TREATMENT	51.167	1	51.167	.299	N.S.
ERROR	14339.263	84	170.706		
TOTAL	14390.430	85			

POST-TEST

DERIVED MEANS AND STANDARD DEVIATIONS

GROUP	N	MEAN	STANDARD DEVIATION
Experimental	29	57.414	6.538
Control	57	52.877	10.850

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F-RATIO	p
TREATMENT	395.581	1	395.581	4.266	.05
ERROR	7789.175	84	92.728		
TOTAL	8184.756	85			

An interesting phenomenon was the finding that the experimental pupils in School 3 (low SES) scored significantly lower on the pre-test for both vocabulary and comprehension (see Tables 12 and 13), but improved enough through the year to match the scores of the control group on the post-test measures.

TABLE 12

ANALYSIS OF VARIANCE FOR SCHOOL 3
EXPERIMENTAL VS CONTROL ON READING COMPREHENSION

PRE-TEST

DERIVED MEANS AND STANDARD DEVIATIONS

GROUP	N	MEAN	STANDARD DEVIATION
Experimental	16	11.688	7.021
Control	36	20.056	8.162

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F-RATIO	p
TREATMENT	775.654	1	775.654	12.627	.01
ERROR	3071.327	50	61.427		
TOTAL	3846.981	51			

POST-TEST

DERIVED MEANS AND STANDARD DEVIATIONS

GROUP	N	MEAN	STANDARD DEVIATION
Experimental	16	20.125	6.869
Control	36	18.194	7.819

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F-RATIO	p
TREATMENT	41.284	1	41.284	.725	N.S.
ERROR	2847.389	50	56.948		
TOTAL	2888.673	51			

TABLE 13

ANALYSIS OF VARIANCE FOR SCHOOL 3
EXPERIMENTAL VS CONTROL ON READING VOCABULARY

PRE-TEST

DERIVED MEANS AND STANDARD DEVIATIONS

GROUP	N	MEAN	STANDARD DEVIATION
Experimental	16	7.750	3.624
Control	36	11.806	6.047

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F-RATIO	p
TREATMENT	182.188	1	182.188	6.169	.05
ERROR	1476.639	50	29.533		
TOTAL	1658.827	51			

POST-TEST

DERIVED MEANS AND STANDARD DEVIATIONS

GROUP	N	MEAN	STANDARD DEVIATION
Experimental	16	13.312	5.782
Control	36	12.500	7.315

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F-RATIO	p
TREATMENT	7.312	1	7.312	.154	N.S.
ERROR	2374.438	50	47.489		
TOTAL	2381.750	51			

In the two remaining Schools, 1 and 4 (shown in Tables 14 to 17), the relative differences in reading scores from pre- to post-test for experimental vs control were not significant. An inference could be made that the additional expenditure of time on the art project activities does not adversely affect scores on standardized reading tests and could be responsible for an actual increase in achievement.

TABLE 14

ANALYSIS OF VARIANCE FOR SCHOOL 1
EXPERIMENTAL VS CONTROL ON READING VOCABULARY

PRE-TEST

DERIVED MEANS AND STANDARD DEVIATIONS

GROUP	N	MEAN	STANDARD DEVIATION
Experimental	33	19.545	8.178
Control	45	17.911	8.259

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARES	F-RATIO	p
TREATMENT	50.853	1	50.853	.752	N.S.
ERROR	5141.826	76	67.656		
TOTAL	5192.679	77			

POST-TEST

DERIVED MEANS AND STANDARD DEVIATIONS

GROUP	N	MEAN	STANDARD DEVIATION
Experimental	33	23.879	8.309
Control	45	21.600	7.241

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F-RATIO	p
TREATMENT	98.864	1	98.864	1.664	N.S.
ERROR	4516.315	76	59.425		
TOTAL	4615.179	77			

TABLE 15

ANALYSIS OF VARIANCE FOR SCHOOL I
EXPERIMENTAL VS CONTROL ON READING COMPREHENSION

PRE-TEST

DERIVED MEANS AND STANDARD DEVIATIONS

GROUP	N	MEAN	STANDARD DEVIATION
Experimental	33	31.242	14.359
Control	45	26.556	13.525

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F-RATIO	P
TREATMENT	418.213	1	418.213	2.170	N.S.
ERROR	14647.172	76	192.726		
TOTAL	15065.385	77			

POST-TEST

DERIVED MEANS AND STANDARD DEVIATIONS

GROUP	N	MEAN	STANDARD DEVIATION
Experimental	33	35.909	14.597
Control	45	34.200	12.387

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F-RATIO	P
TREATMENT	55.611	1	55.611	.311	N.S.
ERROR	13569.927	76	178.552		
TOTAL	13525.538	77			

TABLE 16

ANALYSIS OF VARIANCE FOR SCHOOL 4
EXPERIMENTAL VS CONTROL ON READING VOCABULARY

PRE-TEST

DERIVED MEANS AND STANDARD DEVIATIONS

GROUP	N	MEAN	STANDARD DEVIATION
Experimental	50	11.560	6.759
Control	101	13.030	7.411

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F-RATIO	p
TREATMENT	72.239	1	72.239	1.392	N.S.
ERROR	7731.231	149	51.887		
TOTAL	7803.470	150			

POST-TEST

DERIVED MEANS AND STANDARD DEVIATIONS

GROUP	N	MEAN	STANDARD DEVIATION
Experimental	50	18.240	8.518
Control	101	18.693	6.990

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F-RATIO	p
TREATMENT	6.865	1	6.865	.121	N.S.
ERROR	8440.605	149	56.648		
TOTAL	8447.470	150			

TABLE 17

ANALYSIS OF VARIANCE FOR SCHOOL 4
EXPERIMENTAL AND CONTROL ON READING COMPREHENSION

PRE-TEST

DERIVED MEANS AND STANDARD DEVIATIONS

GROUP	N	MEAN	STANDARD DEVIATION
Experimental	50	18.380	9.098
Control	101	20.327	10.358

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F-RATIO	P
TREATMENT	126.744	1	126.744	1.277	N.S.
ERROR	14783.998	149	99.221		
TOTAL	14910.742	150			

POST-TEST

DERIVED MEANS AND STANDARD DEVIATIONS

GROUP	N	MEAN	STANDARD DEVIATION
Experimental	50	27.400	12.811
Control	101	28.040	12.610

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F-RATIO	P
TREATMENT	13.682	1	13.682	.085	N.S.
ERROR	23943.842	149	160.697		
TOTAL	23957.523	150			

A step-wise regression analysis program was applied to all experimental variables considered relevant to the criterion of reading success. The subtests of the reading section of the ITBS; i.e., vocabulary, and reading comprehension, were the dependent variables.

Initially, all variables related to the pre-test measures were introduced and a multiple R obtained for thes.. A tabulation of these results for vocabulary is presented in the upper half of Table 18; the lower portion of the same table indicates the heirarchy in terms of prediction and the resulting multiple R for each variable on the post-test. At the inception of the project, the variable SES appeared to carry the greatest prediction (.60) for the dependent variable vocabulary, with the Raven test, GFC, IQ, and GFP adding slight increments (.71, .74, .76, .77) to the prediction score. On inspection of the post-test relationships, it was found that the Raven was now carrying the greater amount of this predictive relationship (.61).

TABLE 18

STEP-WISE REGRESSION ANALYSIS OF READING VOCABULARY AS DEPENDENT VARIABLE FOR EXPERIMENTAL GROUP

PRE-TEST

STEP	VARIABLE ENTERING	MULTIPLE R
1	Socio-economic Status (SES)	.60515
2	Raven Progressive Matrices (Raven)	.71494
3	Guilford Figure Completion (GFC)	.74528
4	Intelligence Quotient (IQ)	.76605
5	Guilford Figure Production (GFP)	.76678

POST-TEST

STEP	VARIABLE ENTERING	MULTIPLE R
1	Raven	.61577
2	IQ	.68167
3	SES	.72405
4	GFC	.73698
5	GFP	.73698

Prediction to a criterion of reading comprehension provided dramatic evidence of the effect of this project on perceptual ability. Table 19 indicates that on the pre-test, the generally accepted variables of IQ and SES were indeed the best predictors (.58 and .67), but an inspection of post-test scores provided evidence of an even higher predictive score obtained by the Raven PM (.66). In succession, IQ, SES, GFC, and Perceptual Speed added to the prediction score (.72, .75, .76, .768).

TABLE 19

STEP-WISE REGRESSION ANALYSIS OF READING COMPREHENSION AS DEPENDENT VARIABLE FOR EXPERIMENTAL GROUP

PRE-TEST

STEP	VARIABLE ENTERING	MULTIPLE R
1	IQ	.58394
2	SES	.67671
3	Raven	.71099
4	Perceptual Speed (perc.)	.72533
5	GFC	.73195

POST-TEST

STEP	VARIABLE ENTERING	MULTIPLE R
1	Raven	.66650
2	IQ	.72323
3	SES	.75809
4	GFC	.76686
5	Perc.	.76861

Since a major concern of this study was the effect of the project activities on visual awareness, five tests to measure various aspects of perceptual skill were selected for administration to the experimental group only. Pre- and post-testing generated the data for comparison as shown in Table 20.

TABLE 20

COMPARISON OF PRE-TO POST-TEST
GAINS ON PERCEPTUAL TESTS FOR THE EXPERIMENTAL GROUP

N = 144

	MEAN PRE-TEST SCORE	S.D.	MEAN POST-TEST SCORE	S.D.	MEAN STUDENT'S GAIN	S.D.	t	p
Raven's Progressive Matrices	30.34	11.34	34.88	10.91	4.54	7.37	7.367	.001
Guilford's Figure Completion	13.70	5.16	18.45	5.73	4.75	3.94	14.386	.001
Guilford's Figure Production	23.99	8.28	32.53	8.12	8.54	6.68	15.259	.001
Perceptual Speed	16.24	5.19	17.77	6.93	1.53	6.09	3.009	.01
Spatial Relations	8.87	3.64	9.17	2.90	.30	3.04	1.198	N.S.

The mean students' gain scores were in a positive direction for all tests. Only one test, the Spatial Relations Test, failed to show a significant gain for the school year. The gain raw score of 4.54 on the Raven PM was found to be more than two raw score points above that obtained by a comparable national norms sample. Gains on the SRA Perceptual Speed and Spatial Relations Tests were almost equivalent to the expected gains as indicated by a national norms table. The Guilford Figure Completion and Figure Production Tests, being experimental at this time, provided no comparative data on a standardized population.

As noted previously, gains on perceptual skills tasks were more evident for the Raven and Guilford Tests. The former, requiring the matching of designs and using reasoning by analogy, touches upon one of the most difficult and elusive skills of "native" intelligence so necessary for problem-solving situations. The divergent activities of the Guilford Tests tap the higher levels of intelligence commensurate with creativity and giftedness. An implication for consideration is the rethinking of many areas of curriculum and instruction that could systematically promote the development of these skills. Subject fields such as mathematics, the social sciences, and language arts often deal with abstract ideas that need the interplay of visual imagery with its overlay of feeling to illuminate thoughts and at the same time to raise the level of thinking.

A comparison of test scores achieved by boys and girls was made to determine if sex differences had an effect on vocabulary or comprehension. Table 1 indicated the distribution of sexes for this study. F ratios and levels of significance, as obtained from an analysis of variance, are presented in Table 21. No differences were noted for pre-test data on the experimental group but the post-test indicated a significant gain of girls over boys on the vocabulary test. A similar comparison, seen in the lower half of Table 21 for the control group, indicated a consistent significant difference between boys and girls on both verbal and comprehension tests from pre-testing to post-testing.

TABLE 21

ANALYSIS OF VARIANCE FOR SEX DIFFERENCES (BOYS VS GIRLS) ON READING FOR EXPERIMENTAL AND CONTROL GROUPS

EXPERIMENTAL GROUP

TEST	PRE/POST	SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F-RATIO	p
Read Voc.	Pre	Boys vs. Girls	300.60	1	300.60	2.80	N.S.
Read Voc.	Post	Boys vs. Girls	444.46	1	444.46	4.53	.05
Read Comp.	Pre	Boys vs. Girls	749.59	1	749.59	2.70	N.S.
Read Comp.	Post	Boys vs. Girls	809.84	1	809.84	2.62	N.S.

CONTROL GROUP

TEST	PRE/POST	SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F-RATIO	p
Read Voc.	Pre	Boys vs. Girls	861.40	1	861.40	9.69	.01
Read Voc.	Post	Boys vs. Girls	649.96	1	649.96	7.68	.01
Read Comp.	Pre	Boys vs. Girls	2208.08	1	2208.08	9.78	.01
Read Comp.	Post	Boys vs. Girls	2048.05	1	2048.05	7.61	.01

In the analysis of the experimental group, only the girls' superiority over boys' on post-test vocabulary proved to be a significant finding. In an attempt to relate this finding to treatment effect, one determination that has been considered was the use of female Docents from the art museum who worked with small groups of children. Often one Docent would work with a group of girls on a study trip and/or neighborhood walk. Perhaps the opportunity for girls to interact with a Docent in a very personal way was a contributing factor. These women also introduced fresh ways of communicating ideas with a vitality that heightened the learning situation for girls.

The selection of schools by stratified sampling of different levels of socio-economic status made it possible to do a comparative analysis of experimental vs control groups by high and low SES. Two schools comprised each of these two levels. Thus, as seen in Table 22, gain scores from pre- to post-testing on reading were tabulated for the vocabulary and comprehension subtests. The mean gain differences between the experimental and the control in the high SES level were found to be nonsignificant for both subtests. However, the gains experienced by the low SES of subjects of the experimental group significantly surpassed the gains of the control group on both vocabulary and comprehension. The gains made by this group (experimental low SES) in fact were great enough to reach a significant level of difference even when the high SES scores were added and comparisons made for the total group (refer to Table 22).

TABLE 22

TABLE OF RAW SCORE GAINS ON READING AND LEVELS OF SIGNIFICANCE FOR EXPERIMENTAL VS CONTROL BY SOCIO-ECONOMIC STATUS

READING VOCABULARY

HIGH SOCIO-ECONOMIC STATUS		LOW SOCIO-ECONOMIC STATUS	
EXPERIMENTAL	CONTROL	EXPERIMENTAL	CONTROL
N = 45	N = 99	N = 66	N = 137
Mean = 4.956	Mean = 3.747	Mean = 6.409	Mean = 4.358
S.D. = 5.876	S.D. = 6.130	S.D. = 6.113	S.D. = 5.669
t = 1.104		t = 2.342	
p = N.S.		p = .05	

READING COMPREHENSION

HIGH SOCIO-ECONOMIC STATUS		LOW SOCIO-ECONOMIC STATUS	
EXPERIMENTAL	CONTROL	EXPERIMENTAL	CONTROL
N = 45	N = 99	N = 66	N = 137
Mean = 11.511	Mean = 9.020	Mean = 8.879	Mean = 5.197
S.D. = 11.585	S.D. = 7.366	S.D. = 10.839	S.D. = 10.142
t = 1.546		t = 2.357	
p = N.S.		p = .05	

Analysis of gain scores on the five perceptual type measurement instruments was limited to the experimental group since these tests were not administered to the control group. Here, as seen in Table 23, high and low SES were compared and differences for all tests were found to be nonsignificant, except for Guilford Figure Production (GFP), where the high SES made the greater significant gain. The fact that low SES did as well as high SES on most of these nonverbal type tasks is consistent with other findings in the literature.

TABLE 23

TABLE OF GAIN SCORES AND LEVELS OF SIGNIFICANCE FOR EXPERIMENTAL BY SOCIO-ECONOMIC STATUS ON PM, GFC, GFP, AND SRA TESTS

PROGRESSIVE MATRICES (RAVEN)	PERCEPTUAL SPEED
HIGH SOCIO-ECONOMIC STATUS	HIGH SOCIO-ECONOMIC STATUS
N = 45	N = 45
Mean = 5.06	Mean = .68
S.D. = 7.78	S.D. = 7.19
LOW SOCIO-ECONOMIC STATUS	LOW SOCIO-ECONOMIC STATUS
N = 66	N = 66
Mean = 4.69	Mean = 1.57
S.D. = 7.98	S.D. = 4.90
t = .24	t = -.769
p = N.S.	p = N.S.
GUILFORD FIGURE COMPLETION	**SPATIAL RELATIONS**
HIGH SOCIO-ECONOMIC STATUS	HIGH SOCIO-ECONOMIC STATUS
N = 45	N = 45
Mean = 4.62	Mean = .22
S.D. = 3.71	S.D. = 2.84
LOW SOCIO-ECONOMIC STATUS	LOW SOCIO-ECONOMIC STATUS
N = 66	N = 66
Mean = 5.37	Mean = .46
S.D. = 3.99	S.D. = 3.33
t = -.991	t = .392
p = N.S.	p = N.S.
GUILFORD FIGURE PRODUCTION	
HIGH SOCIO-ECONOMIC STATUS	
N = 45	
Mean = 10.13	
S.D. = 7.24	
LOW SOCIO-ECONOMIC STATUS	
N = 66	
Mean = 7.34	
S.D. = 5.91	
t = 2.206	
p = .05	

Evaluation of Photography

Each of the three slides was summed, and intra-rater correlations were established for the 111 children. When comparing the total scores of the subjects by rater, the resultant correlation between Judge A and Judge B was .652; between Judge A and Judge C was .609; and between Judge B and Judge C was .514. Each of these correlations was significant at the .001 level. Thus, the raters tended to indicate a high degree of similarity in evaluating the children's slides using the 9 point rating scale.

Table 24 presents the ratings on slides 1, 2 and 3 by the Judges for each of the experimental classes, total sample, combined low SES group (Schools 3, 4A and 4B), and high SES group (Schools 2 and 5). The middle SES group is represented by School 1. It is interesting to note that the middle SES group initially began at the highest level, but, by May at the conclusion of the project, was below both the high and low SES groups. Figure 1 illustrates the directions taken by the 3 groups.

When comparisons were made between the low and high SES groups, the low indicated a significantly greater ability on the photography scale ($t = 2.268$; $p = .05$). There was a highly significant difference between the middle and high SES groups ($t = 3.338$; $p = .001$), but not between the middle and low groups ($t = 1.768$; $p =$ N.S.). However, when comparing the results at the conclusion of the study, the low SES group had demonstrated a highly significant gain over both the high SES group and the middle SES group ($t = 3.547$ and 4.702 respectively). There was no significant difference between the high and middle SES groups.

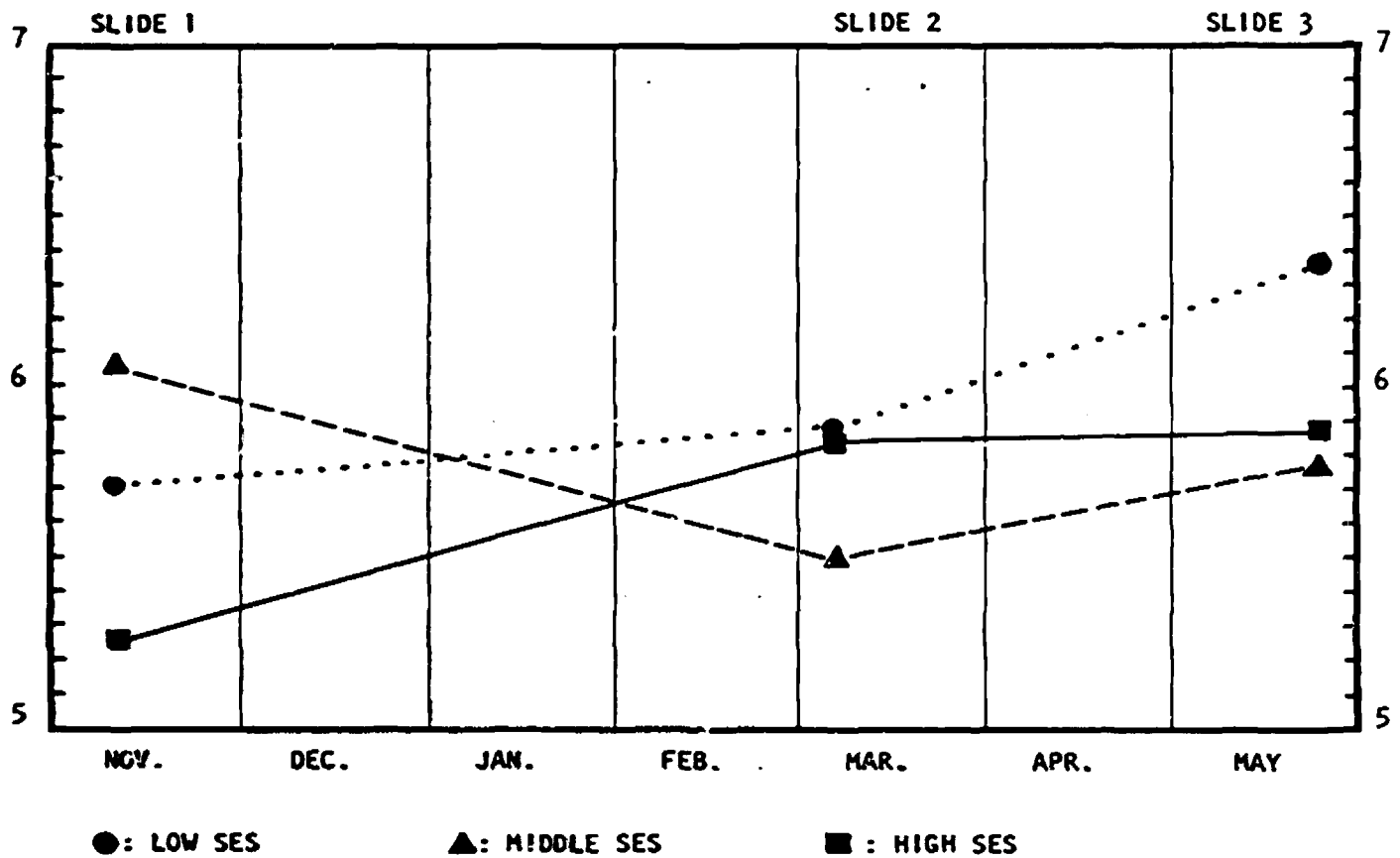
TABLE 24

COMPARISON OF THREE RATERS ON THE MEAN AND INDEPENDENT RATINGS ON THE PHOTOGRAPHY SCALE

SCHOOL	NO.	SLIDE 1 MEAN	SLIDE 1 S.D.	SLIDE 2 MEAN	SLIDE 2 S.D.	SLIDE 3 MEAN	SLIDE 3 S.D.
High SES	123	5.27	1.61	5.87	1.89	5.86	1.65
School 2	39	5.69	1.22	6.36	1.67	5.33	1.21
Rater A	13	6.31	1.03	6.62	1.56	5.23	1.48
Rater B	13	5.85	1.07	6.54	1.71	5.54	.97
Rater C	13	4.92	1.26	5.92	1.85	5.23	1.23
School 5	84	5.07	1.73	5.64	1.96	6.11	1.77
Rater A	28	5.54	1.32	6.29	1.36	6.25	1.48
Rater B	28	5.18	1.63	5.50	2.03	6.39	1.40
Rater C	28	4.50	2.08	5.14	2.29	5.68	2.31
Middle SES	60	6.07	1.30	5.45	1.51	5.77	1.56
School 1	60	6.07	1.30	5.45	1.51	5.77	1.56
Rater A	20	6.65	.75	5.95	1.43	6.55	1.32
Rater B	20	5.75	1.41	5.30	1.26	5.65	1.39
Rater C	20	5.80	1.51	5.10	1.77	5.10	1.71
Low SES	150	5.69	1.44	5.88	1.57	6.37	1.59
School 3	27	5.63	1.38	5.37	1.22	5.92	1.49
Rater A	9	5.78	.78	5.56	.89	6.44	1.33
Rater B	9	5.89	.78	6.11	.93	5.89	1.36
Rater C	9	5.22	.74	4.44	1.33	5.44	1.81
School 4A	51	5.26	1.20	4.94	.80	5.22	.94
Rater A	17	5.65	1.17	5.29	.77	5.71	.99
Rater B	17	5.53	1.18	5.00	.87	5.29	.77
Rater C	17	4.59	1.06	4.53	.62	4.65	.78
School 4B	72	6.00	1.54	6.74	1.63	7.36	1.37
Rater A	24	6.79	.93	7.25	1.22	7.71	1.12
Rater B	24	6.21	1.44	6.96	1.46	7.38	1.10
Rater C	24	5.00	1.64	6.00	1.96	7.00	1.77
TOTAL	333	5.60	1.51	5.80	1.69	6.08	1.64

FIGURE 1

SCHEMATIC OF SES GROUPS ON PHOTOGRAPHIC SCALE



When looking at the changes made by the groups and the schools (see Table 25), the greatest significant gain was made from November to March by the high SES group (t = 3.616). The low SES group, although making a slight gain during this same time period, did not achieve significance (t = 1.394). However, the middle SES group made a significant loss (t = -1.79). When disregarding SES status, the total group made a significant gain from slide 1 to slide 2 (t = 1.992).

TABLE 25

COMPARISON OF THE MEAN CHANGES FROM SLIDE ONE (NOVEMBER) TO SLIDE TWO (MARCH)

	N	MEAN DIFFERENCE	STANDARD DEVIATION OF DIFFERENCE
High SES Schools	123	.60	1.84
School 2	39	.67	1.36
School 5	84	.57	2.02
Middle SES School	60	-.62	1.79
School 1	60	-.62	1.79
Low SES Schools	150	.20	1.75
School 3	27	-.26	1.53
School 4A	51	-.31	1.13
School 4B	72	.74	2.01
TOTAL	333	.20	1.84

Upon observing the changes made from March (slide No. 2) to May (slide No. 3), the low SES group made the most highly significant gain (t = 3.786). Table 26 presents this data.

The middle SES group made a slight but not significant increase from the 2nd to the 3rd slide (t = 1.393). The high SES group made a slight loss, however not significantly (t = -.039). The total group made a significant gain (t = 2.634; p = .01).

TABLE 26

COMPARISON OF THE MEAN CHANGES FROM SLIDE TWO (MARCH) TO SLIDE THREE (MAY)

	N	MEAN DIFFERENCE	STANDARD DEVIATION OF DIFFERENCE
High SES Schools	123	-.01	2.28
School 2	39	1.03	1.75
School 5	84	.46	2.34
Middle SES School	60	.32	1.75
School 1	60	.32	1.75
Low SES Schools	150	.49	1.59
School 3	27	.56	1.66
School 4A	51	.27	.91
School 4B	72	.63	1.89
TOTAL	333	.28	1.91

When examining the patterns from the beginning of this project in comparison with the May conclusion, the total group made a highly significant gain (t = 4.976). Similarly, both the high and low SES groups were not significant (t = .14). However, the middle SES group evidenced a loss, but it was found to be nonsignificant. Comparison of these results may be seen on Table 27.

TABLE 27

COMPARISON OF THE MEAN CHANGES FROM SLIDE ONE (NOVEMBER) TO SLIDE THREE (MAY)

	N	MEAN DIFFERENCE	STANDARD DEVIATION OF DIFFERENCE
High SES Schools	123	.59	1.91
School 2	39	-.36	1.42
School 5	84	1.04	1.95
Middle SES School	60	-.30	1.52
School 1	60	-.30	1.52
Low SES Schools	150	.69	1.58
School 3	27	.30	1.94
School 4A	51	-.04	1.25
School 4B	72	1.36	1.35
TOTAL	333	.48	1.75

CONCLUSIONS

Art as a curriculum area has seldom been considered to have any real connections with the academic areas. The tendency has been to think of art in school as more of an activity for relaxation and fun rather than learning. One component of art education, the development of visual awareness, was selected for study with a diverse group of fourth-grade children. In light of above attitude toward art, this experimental effort also attempted to investigate the effects of the development of visual awareness upon another curriculum area, namely, reading.

In comparing the performance of the 144 children involved in the art project and the 281 used as a control group, it was found that the project pupils were able to make equal or higher gains on the Iowa Tests of Basic Skills. Greatest gains were noted for pupils attending schools from the lower socio-economic districts. The findings of this study indicated that the time spent on these efforts not only facilitated reading but provided many of the necessary experiences inherent in achieving academically.

In terms of reading achievement, persistent questions still arise regarding relationships between the teaching of art concepts within the context of the environment and the reading process. Did the art project teach children to perceive visual stimuli in such a way that they began to connect visual imagery with ideas presented through word symbols? Did exposure to the expanded environment effect a change in attitude toward learning? Would a similar pattern of influence occur in other academic areas of the curriculum?

An analysis of the findings of the perceptual type measures indicated that the project pupils generally made equal or higher gains on pre- to post-test scores when compared to scores obtained by a national norms sample. Some variations were noted for individual schools and for grouping by SES. The lower SES schools made a greater mean gain on the Guilford Figure Completion, but the higher SES schools produced a larger increase on the Guilford Figure Production Test. Results on the Primary Mental Abilities Perceptual Speed Test were in favor of the low SES but were not as clear-cut and individual schools tended to show more variation because of individual class treatment. In terms of these results, comparable data were not available on the classes serving as the control group. Thus, cross-comparative analyses could not be utilized in examining the effects of the treatment procedures.

In evaluating visual awareness through the use of photography, the Photographic Evaluation Scale proved to be a valid and reliable instrument. The very high intra-rater judgments were indicative of the instrument's reliability. The validity was measured by the overall gains made during the project's course. The finding that children from the high socio-economic areas made the most significant growth

during the first to second time period while children from low socio-economic areas made the most significant gain from the second to the third period raised the question of a differential learning effect. The loss as evidenced by the middle socio-economic group raises the same question, but in addition, there are indications that other variables may be present in this situation.

Since three photography sessions - November, March, and May - were utilized in this study, there is further need to isolate the process that is occurring between each of these intervals. Would increasing the number of sessions further isolate this process? Since the children were asked to take three shots of the same chosen object, additional exploration of the time variable as well as assessing a change in the child's subject matter need from the beginning to the conclusion of the time period would be studied. The child's initial subject matter may have been a tree, but as the art concepts developed, the bicycle rack may present a more stimulating challenge in his developmental process. These questions may best be answered through a longitudinal study in which the teacher and treatment variable are controlled.

Whenever a teacher is placed in the position of initiating curriculum, a whole series of questions arise regarding change in behavior. Does the situation mediate change in the teacher's attitudes or style in working with children and if so, what are the conditions that have altered or modified behavior?

In this study, the answers are still unclear. From the post-hoc teacher responses to a group of five questions, there were clusters of reactions which suggest a tendency for change in their own behavior. Of the six teachers responding, each alluded to personal areas of growth. Such statements as the following are perhaps indicative of this insight:

> Instead of appreciating the art around us intuitively, I began to look at art formally in terms of line, form, etc., and learned to appreciate it in this way.
>
> I myself was more observing.
>
> I also have personally become far more aware - I savor textures, colors, shapes, patterns, lines - everywhere. Even sounds and smells seem more interesting.

When asked what effect these experiences had on children, all teachers reported growth in the art area. One who had worked in a low SES school felt that her children were able to experience a new way of relating to people of different race and economic backgrounds. Another highlighted the innovative use of the camera as being a unique method of looking at visual stimuli. Still another viewed the study trips as a means of increasing abilities to verbally express feelings.

Recognition of differences in the style of teaching was mentioned in the

following statements:

> Have experienced more freedom in art expression. Used to teach art much differently - everyone doing the same thing at the same time - using the same materials, colors, etc., and the results were all the SAME. Now I realize that people have different feelings and emotions that can be expressed through the media of art.
>
> It has broadened my art experiences and given a new approach to the teaching of art. I really do believe now in the 'creative' facet of this field. Any aversion I had previously to the very structured approach has now been fully reinforced.
>
> I learned to give children far more choices and to be much more accepting of their choices. I gained enormous confidence in the creativity of children given the freedom and opportunity to use it. I think I have greater appreciation for each individual child.

Some of the difficulties initially expressed were the lack of time and feelings of pressure and/or frustration. This was further reported as the need for more definite structure; e.g., what to do and how to do it. Since teachers were not given the "how to's" of art or "what to use" but rather were asked to teach concepts underlying art development, the teachers were deliberately provided with the choice of making their own decisions regarding the types of activities that would facilitate this learning. Whether the Docent, teacher, or art consultant initiated an idea relative to what could be developed in the classroom, it was still the teacher who implemented the learning task.

The range of activities varied with each teacher. For one, a purposeful activity might be to view people and objects from different positions. On a neighborhood walk, children were encouraged to visually seek out differences and to use playground equipment to physically place themselves in different viewing positions. Thus, each child made his own observations and discoveries. Contrast this with another teacher whose activities center around a walk to see things in a different way by using an observation sheet. In the first instance, children became involved not only through use of sensory modality but also through kinesthetic involvements. Whereas, in the latter case, the visual mode was mainly utilized. This is not necessarily intended as a judgment of the efficacy of each teacher's purpose and activity. But rather, this is a different method of experiencing the art concepts and the ability to implement them. What was evident as the study concluded was the emergence of two methods of dealing with art learnings. One approach tended to be linear in nature. It was characterized by some manipulation of traditional art methods and techniques in teaching art concepts. The teacher

utilizing this approach frequently felt pressured and frustrated because of the lack of specific outcomes. Art activities centered around teacher generated tasks offering limited opportunities for choice in media and materials, a standardized use of media and a norm-referenced criteria for success. This approach is also characterized by need for an organized structure that specifically defined the sequence of classroom activities; e.g., the what, when, and how to do it.

A second approach was Gestalt by nature with the development of art concepts directed toward self-development. With this approach, the art concepts became a vehicle for enriching the child's life experience. There was no criteria for success since the child operated on what he perceived and felt and used this learning as a means of responding. Since a child can only translate visual stimuli that he is able to receive, recognize, and interpret, the teacher's function becomes a facilitator of this process. With this approach, the teacher had the opportunity to individualize learning at the child's particular developmental level. For the child with limited experience, the primary emphasis may be on reception with perhaps some interpretation of the visual stimuli. In other words, he must not only be able to see stimuli, but he must sense it through feeling. Thus, the teacher builds upon this seeing through feeling by emersing the child in feeling, seeing, touching, distorting, magnifying, exaggerating, comparing, and drawing similies, analogies and metaphores. She establishes conditions that saturate the child in all of the sensory modalities and is not afraid of taking risks to optimize the learning situation.

The implications for teacher training is readily observed at the pre-service and inservice levels. Intervention techniques to modify the behavior of the linear type approach appear to be indicated by virtue of this research. Similarly, administrators need to be appraised of accept g the behaviors utilized by the Gestalt approach as being in the best interest of the child's development.

There is need to study whether or not this same phenomena occurs with the Docent group working as auxiliary resource teachers. In this same light, further research is warranted on the effect Docent involvement has upon the gains evidenced by children. However, the interest in art that was evident by the Docents proved to be an ancillary source in the learning environment. They proved to be, in some cases, potential resources for teachers with little formal training in this area. Not only were they able to individualize the art concepts, they also enhanced the instructional process through their involvement. Further research is necessary in assessing the unique contributions offered by these women. Beyond this is the exploration of contributions that parent involvement might provide. If the child is allowed to perceive visual stimuli at school and this learning is supported by activities with parents in the home, will the child move toward placing increased value upon aesthetic experiences?

This research has served to point out possible directions for assessing

many aspects of art education and related curriculum. A greater emphasis on self-measuring instruments will require the development of pilot instruments for evaluating self-fulfillment goals and analytical appraisal of this growth. Hopefully, as children increase their ability to see and appreciate the visual arts, they will become more responsive to their own ideas and feelings and to those of other people.

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APPENDICES

APPENDIX A

STUDENT INFORMATION FORM

NAME_____

SCHOOL_____

1. Have you ever seen the Watts Towers? Yes__ No__

2. Have you ever visited the Music Center? Yes__ No__

   Name one thing you saw at the Music Center._____

3. Have you ever seen a Japanese garden? Yes__ No__. Where?_____

4. Have you ever seen a cactus garden? Yes__ No__

5. Have you ever visited Century City? Yes__ No__

   Name one thing you saw at Century City._____

6. Have you ever visited the Grand Central Market in Los Angeles?

   Yes__ No__

7. Have you ever used a camera? Yes__ No__ Do you own a camera?

   Yes__ No__

8. Do you ever look at something just because you enjoy its color?

   Yes__ No__. Name the object or thing._____

9. Name one thing that is man-made._____

10. If you make something with art materials, do you like to do it your own way___ or have someone tell you what to do___?

11. What helps you to know that something is old?_____

12. What helps you to know that something is new?_____

13. Name three things you expect to see when you visit an art museum:

14. When you are at school, what kind of art do you like to make?

15. Do you feel you are:

    Very good in art_____ Pretty bad in art_____
    Pretty good in art_____ Very bad in art_____
    Not too good in art_____

16. If an astronaut gave you a rock from the moon and asked you to tell him what the outside of the rock looked like, what are some things you would look for as you studied the rock?_____

17. Would you rather draw your own pictures__ or color in a coloring book___?

18. What's the best thing you can do with art materials?_____

19. Do you like to talk about art with grown-ups? Yes__ No__

20. Name some art materials you have at home.

21. Do you use these materials at home? Yes__ No__

22. What do you usually make with your art materials at home?

23. If you went to the center of a city, what are some things you would expect to see?_____

Would you call any of these things art? Yes__ No__

If your answer is Yes, name two things:

If your answer is No, name two things you call art:

24. Do you feel you can show your ideas pretty well in art? Yes__ No__

25. If an artist were talking to you about the design of your chair, what would he be talking about?_____

APPENDIX A

STUDENT INFORMATION FORM SUMMARY

1. Have you ever seen the Watts Towers?

	PRE		POST		PRE		POST	
	Yes	%	Yes	%	No	%	No	%
Boys	12	6.9	81	49.1	71	40.583	2	1.2
Girls	18	10.3	81	49.1	74	42.392	1	.6
Totals	30	17.2	162	98.2	145	82.8	3	1.8

2. Have you ever visited the Music Center?

	PRE		POST		PRE		POST	
	Yes	%	Yes	%	No	%	No	%
Boys	18	10.3	70	42.4	65	37.1	13	7.9
Girls	17	9.7	71	43.0	75	42.9	11	6.7
Totals	35	20.0	141	85.4	140	80.0	24	14.6

3. Have you ever seen a Japanese garden?

	PRE		POST		PRE		POST	
	Yes	%	Yes	%	No	%	No	%
Boys	29	16.6	77	46.7	53	30.2	6	3.6
Girls	45	25.7	79	47.9	47	26.9	3	1.8
	74	42.3	156	94.5	100	57.1	9	5.4

4. Have you ever seen a cactus garden?

	PRE		POST		PRE		POST	
	Yes	%	Yes	%	No	%	No	%
Boys	46	26.3	79	47.9	36	20.5	4	2.4
Girls	49	28.0	78	47.3	40	22.9	4	2.4
	95	54.3	157	95.2	76	43.4	8	4.8

5. Have you ever visited Century City?

	PRE		POST		PRE		POST	
	Yes	%	Yes	%	No	%	No	%
Boys	14	8.0	80	48.5	69	39.5	2	1.2
Girls	18	10.3	78	47.3	72	41.1	4	2.4
Totals	32	18.3	158	95.8	141	80.6	6	3.6

6. Have you ever visited the Grand Central Market in Los Angeles?

	PRE		POST		PRE		POST	
	Yes	%	Yes	%	No	%	No	%
Boys	21	12.0	82	49.7	62	35.5	1	.6
Girls	16	9.1	76	46.1	76	43.4	6	3.6
Totals	37	21.1	158	95.8	138	78.9	7	4.2

7. Have you ever used a camera?

	PRE		POST		PRE		POST	
	Yes	%	Yes	%	No	%	No	%
Boys	75	42.9	78	47.3	8	4.6	3	1.8
Girls	76	43.4	80	48.5	16	9.1	2	1.2
Totals	151	86.3	158	95.8	24	13.7	5	3.0

Do you own one?

	Yes	%	Yes	%	No	%	No	%
Boys	51	29.1	59	35.8	31	17.7	21	12.7
Girls	46	26.3	57	34.5	45	25.7	25	15.2
Totals	97	55.4	116	70.3	76	43.4	46	27.9

8. Do you ever look at something just because you enjoy its color?

	PRE		POST		PRE		POST	
	Yes	%	Yes	%	No	%	No	%
Boys	46	26.3	57	34.5	36	20.5	24	14.6
Girls	73	41.7	64	38.8	19	10.9	18	10.9
Totals	119	68.0	121	73.3	55	31.4	42	25.5

10. If you make something with art materials, do you like to do it your own way or have someone tell you what you do?

	PRE		POST		PRE		POST	
	Own Way	%	Own Way	%	Being Told	%	Being Told	%
Boys	69	39.4	70	42.4	11	6.3	7	4.2
Girls	68	38.9	72	43.6	21	12.0	10	6.1
Totals	137	78.3	142	86.0	32	18.3	17	10.3

17. Would you rather draw your own pictures or color in a coloring book?

	PRE		POST		PRE		POST	
	Draw Your Own	%	Draw Your Own	%	Coloring Book	%	Coloring Book	%
Boys	66	37.7	68	41.2	15	8.6	10	6.1
Girls	74	42.3	72	43.6	16	9.1	8	4.8
Totals	140	80.0	140	84.8	31	17.7	18	10.9

19. Do you like to talk about art with grown-ups?

	PRE		POST		PRE		POST	
	Yes	%	Yes	%	No	%	No	%
Boys	48	27.4	48	29.1	34	19.4	32	19.4
Girls	68	38.9	60	36.4	23	13.1	21	12.7
Totals	116	66.3	108	65.5	57	32.5	53	32.1

21. Do you use these materials at home?

	PRE		POST		PRE		POST	
	Yes	%	Yes	%	No	%	No	%
Boys	56	32.0	57	34.5	21	12.0	14	8.5
Girls	71	40.6	69	41.8	15	8.6	9	5.5
Totals	127	72.6	126	75.3	36	20.6	23	14.0

24. Do you feel you can show your ideas pretty well in art?

	PRE		POST		PRE		POST	
	Yes	%	Yes	%	No	%	No	%
Boys	56	32.0	66	40.0	22	12.6	13	7.9
Girls	72	41.1	66	40.0	17	9.7	15	9.1
Totals	128	73.1	132	80.0	39	22.3	28	17.0

APPENDIX B

ART PROJECT, WATTS TOWERS STUDY TRIP, FOURTH GRADE

Location	The Watts Towers are located at 1765 East 107th Street, just off Willowbrook Avenue. (See map attached to bus route)
Time	Departure time from school will depend upon location of school in relation to visitation site. Arrival time at Watts Towers -- 10:00 a.m. Departure time from Towers -- 12:00 noon, unless arrangements are planned for children to eat a sack lunch at the site. If these arrangements are planned, please notify your building principal before departure.
Bus Arrangements	In case of rain, the bus should be cancelled. Those school districts using charter buses will need to notify their company before their specified contract time or assume the cost of transportation.
Children's Message	On this trip, fourth grade children will be working in the out of doors with art media for two hours at the site. Tell the children to wear something warm and not to dress up.
Purpose Can Be Adventure	This trip will focus on the study of the work of the artist Simon Rodia. The activity is designed to bring children in direct contact with a work of art they can enjoy and explore through seeing from all kinds of angles and positions, touching all kinds of surfaces and especially through sensing their own FEELINGS. During the two-hour period, children's activities will include: time for observation to ...examine the wide array of shapes that make up these imaginative forms. ...enjoy the jewel-like quality of color, surface textures, pattern of light and shadow, the lace-like weaving lines. ...study the arrangement of ordinary materials, natural and man-made. ...delight in the use of open and closed space within the tower structures. ...sense and respond to their own feelings and those communicated by the artist.

time for photography to

...frame off the world and to use creative powers that can be recorded on film.

Note: Watch the shot numbers since it may be difficult to separate individual children's shots if they are out of order. Please do not take shots to finish off rolls; each film shot must be a child's shot.

time for working with art media to

...be alive and respond to your own feelings.

Involve children in the planning, organization, and clean-up of art materials so they will have some notions of how they will work at the site. Plan to bring as many of the following materials as you can without losing your mind!!!!

Provide Choice in Paper Size

Paper: colored construction (select colors that are greyed, bright, light, and dark)
yellow manila
white drawing
colored unprinted newsprint
the ad section of a daily newspaper

Provide Choice in Art Media

Paint: Liquid tempera paint with wax paper palettes (Have a small committee of children make 10 palettes using a size like 10" x 12" corregated board -- paper towel box. Staple 5 or 6 sheets of wax paper cut to size on the board.)

Include white and black in the selection of colored tempera paint

Water colors, 5 or 6 boxes

Colored chalks and/or pastels, 5 or 6 boxes

Colored felt pens, assortment of colors

Colored pencils

Crayons

Brushes, flat bristle and water color (20)

Chipboard for easels, if available

Masking tape to hold paper flat

Plenty of newspaper

Milk cartons for water

Two sponges for "accidents" with paint

Put materials in three small boxes so they will be easily accessible at the site. Have children group the materials in the boxes; i.e., (1) tempera paints, water color boxes, palettes, brushes; (2) colored chalks, pastels, crayons; and (3) felt pens, colored pencils.

Follow-Up Activity

Ann Wollen has prepared the enclosed worksheet on arranging some work centers that could extend the children's experience with art media in the classroom. We need more opportunities for children to try out their ideas individually, as well as in groups. (Visual Studies, type 2)

This is also a wonderful opportunity to work on the concept of the artist after seeing the Towers and responding with film and art media. (Basic concept)

To work on this concept, use slides children have taken at the Towers on the carousel, turn the tape recorder on, and raise some questions like:

> Think about your first sight of the Watts Towers. What caught your eye?
>
> How did you feel when you got inside the shapes?
>
> How do you suppose the artist felt while he was working on different parts of the Towers?
>
> Why do you suppose the artist used shapes like hearts, corn, a basket, a boot and his tools?
>
> Think about broken dishes, bits of glass, bottles, shells, mirrors, stones and the like. What do you suppose the artist thought and felt about these very ordinary materials to make them speak -- beauty?
>
> How did the artist work with the materials to show that he cared about how they looked?
>
> Where do artists get ideas for their work? What about your own ideas -- what starts you drawing, painting, or sculpting?
>
> How do you suppose people in the neighborhood felt about Simon Rodia building his Towers?

Attached is some teacher-Docent background material on the Watts Towers that you may find helpful. Talk with the Docents -- the more minds in orbit, the more ideas on the move!

APPENDIX C

TEACHER RECORD FORM

Teacher _____

School District _____

Description of Activity

Jan. 26, 1970 Purpose: Give experiences in "see through space" in preparation for the Watts Tower trip.
#1 Experience in "see through" or "open space."
Materials: easel boards, water colors, paper.
Subject: Gunco tree on school ground.
Procedure: 1. We talked about this tree and noticed all the leaves were gone except one. 2. Discussed the color, texture, shape, lines and feelings about it.
3. Painted tree with water colors.

Teacher Comments

Teresa's tree began to look like the "tree" she imagined. We began to really look at the tree and noticed that the branches were horizontal for just a short space and then they reached upward. Her second tree's branches reached upward.

Description of Activity

Jan. 27, 1970 Purpose: To give experience in working with the media to be used at the Watts Tower Study Trip.
#2 Experience in "open space."
Materials: Charcoal, paper, easel boards.
Subject: "monkey bars" on playground.
Procedure: Each child sat on black top and drew the "monkey bars" as he saw it from where he sat.

Teacher Comments

It was impossible or difficult to get every line but they were aware of the overlap of lines and the space between the lines or bars. They had a feeling of open spaces and see through space.

APPENDIX D

DOCENT RECORD FORM

Docent _____

School District _____

Description of Activity

Jan. 19, '70 Purpose: To reinforce museum sculpture experience.

Sculpture slides in classroom. Brought sculpture objects from home. Books from children's library.

Docent Comments

Slides from museum, selected according to what children had seen at museum. Passed objects around. Included bronze, wood, china, terra cotta, sea shells, coral, brass, lead, found objects, jade, etc. Objects represented many countries - Japan, Egypt, China, England Africa, America, Mexico, Alaska - time period - ancient to contemporary - useful to pure decorative also religious. Children handled each and discussed with us. Girls drawn to decorative English china bird. Boys to heavy objects. Showed about 20 slides - discussed with children on each slide. Kids sharp and with it.

APPENDIX E

Standardized Tests

1. Progressive Matrices Test by J. C. Raven, published by The Psychological Corporation, 304 East 45th Street, New York, New York 10017
   The Progressive Matrices (PM) is a test composed of sixty problems using puzzle-solving type materials to match designs or use reasoning by analogy to select the correct solutions. It is considered to be a non-verbal intelligence test to measure more directly "native" abstract intelligence. Some authorities consider the PM to be less culturally-biased than other typical verbal intelligence tests.

2. Guilford Figure Completion (GFC) and Guilford Figure Production (GFP) by J. P. Guilford, Aptitude Research Project at the University of Southern California, University Park, Los Angeles, California 90007
   The GFC measures the ability to close visually incomplete information. The subject is required to identify or give the names of pictures of objects that are only partially presented. The GFP measures the ability to creatively elaborate upon visual stimuli. The subject uses a pencil or crayon and adds to given lines in order to produce meaningful figures.

3. Primary Mental Abilities Test (PMA) by L. L. and T. G. Thurston, published by Science Research Associates, Inc., 259 East Erie Street, Chicago, Illinois 60611
   The PMA Test is composed of five factors of intelligence that, according to the author, appear to be most critical in school work. Of these five, only two were used in the current project; namely, the Perceptual Speed Test and the Spatial Relations Test.

   Perceptual Speed: the ability to recognize likenesses and differences between objects or symbols quickly and accurately. This is considered an important factor in acquiring reading skills for the younger child.

   Spatial Relations: the ability to visualize objects and figures rotated in space and the relations between them. Considered to be an important factor at all levels of the school years.

APPENDIX F

Teacher Statements at the Conclusion of the Project

The teachers involved in the project were asked to respond to five relatively open-ended questions. The exact quotations by each of the six teachers to the questions were as follows:

1. How did you feel when you started working on this project?

"At the beginning of the project, my main handicap was a lack of a complete picture of project activities (e.g., team meetings, photography of children's art products). My uncertainty over specific classroom art activities bothered me, but last year's teacher reports were a good aid. However, the most pleasing aspect of the project was the realization that many of the activities I had planned for the children this year could naturally be integrated into the project. For example, I had planned to use the camera in the classroom to develop appreciation for the surrounding area which would aid in the development of a healthy self-image. My main concern with these children was a development of a good, healthy self-image. Most of the activities that I had planned were with this objective in mind. The art project fit right in and was a source of information for related activities. I felt a bit uneasy with my little knowledge of art processes, but I don't feel that this handicapped me in the project. The art research project goals, of course, were not concerned with teaching children how to use watercolor. Also, I have great faith in art as a means for communicating other subjects to children. The project enhanced my opportunity and ability to use art as an instructional medium."

"A bit apprehensive. Wondered exactly what was going to happen. At the same time I felt elated that my class was selected. Felt like all of us should be really impressed, appreciative and thrilled to be involved in this program. I tried to express the second thoughts to my class (to be impressed, appreciative and thrilled)."

"First, pride at being chosen, delight at prospect of new art experiences, broadening my background, and consorting with others interested in art, especially those knowledgeable, experienced ones -- something might rub off!"

"I felt very enthusiastic about the project. I felt it was a good opportunity for the children to be part of such a project. I felt that I could learn more of what children might need to appreciate all fields of art. I felt it would widen their learning and help build their character."

"Quite enthusiastic, but very confused and needing direction. Guidance was better provided during the second year."

"I was excited about the program because I enjoyed working in it the previous year. Dr. Hine was very thorough and explicit in her instructions. She gave us plenty of time to complete projects. She was much more prompt in returning slides and materials than I was. Children benefited greatly by the program. It offered experiences a classroom would not normally experience. Knew this project would be an enrichment to the individual student, teacher, and entire school as we share ideas with each other."

2. What did the experience do or not do for you?

"I found the experience very valuable. Instead of appreciating the art around us intuitively, I began to look at art formally in terms of line, form, etc., and learned to appreciate it in this way. The project was a fantastic eye-opener. ...I was very surprised with the extraordinarily valuable and relevant teacher workshops. The greatest problem for me was the lack of time. Not only was there a lack of classroom time, but also very little time spent with the children because of my excessive illnesses. ...It would have been fantastic if I had started off the year with knowledge of the art project so I could incorporate it into my total organization earlier.... The considerations that needed to be taken for my group of children were taken in time. First of all, I needed to integrate the art project with other subjects because of the short day that I had with this group. You gave me some suggestions. Second, the children I had found it difficult, boring, etc., to work or be lectured to as an entire group. Small groups worked best and such was the case in tours and trips. However, I found it impossible to make all the things and prepare all the materials that were needed in the art project without help...."

"It did exactly what I expected the program to do. It made the class and myself more aware of our surroundings. It made myself and many in the class more involved in the details in everything made (the pattern, texture, color, etc.)."

"It did, as I hoped, give me many varied art experiences and contacts from whom I learned a great deal. I also gained confidences from trying new things and seeing them work. I learned to give children far more choices and to be much more accepting of their choices. I gained enormous confidence in the creativity of children, given the freedom and opportunity to use it. I think I have greater appreciation for each individual child. I also have personally become far more aware -- I savor textures, colors, shapes, patterns, lines -- everywhere! Even sounds and smells seem more interesting."

"This experience was a learning experience for me in that when I was with the children I myself was more observing. I was constantly looking for things to point out to the children. I did learn some areas in which I could widen their knowledge in this field. In other words, on a whole, I liked the project but: I was frustrated because I felt very pressured. I lost out on many important class periods. I did not know how the children were coming out. I needed to know their progress."

"It has broadened my art experiences and given me a new approach to the teaching of art. I really do believe now, in the 'creative' facet of this field. Any aversion I had previously to the very structured approach has now been fully reinforced."

"I am sure the experience did more for me than the children. A wise person said, 'When you teach, do you not teach yourself?' This was my experience. Have experienced more freedom in art expression. Used to teach art much differently -- everyone doing the same thing at the same time -- using the same materials, colors, etc., and the results were all the SAME. Now I realize that people have different feelings and emotions that can be expressed through the media of art. Visual awareness took on new meaning. Am sure my perception and visual awareness has been sharpened and strengthened through this project. I have so many ideas coming to mind that I cannot possibly fulfill them."

3. What do you think your children gained or lost from these experiences?

"I really can't find a severe loss that the children had -- they did miss reading class quite often but they were doing enough reading on the trips that was more meaningful to them. The gains were fantastic. They are as follows: The children were able to experience a new way of relating to people of a different race and economic background; as time continued the children matured through their experiences; it did wonders for self-pride and security (the children more easily encountered new situations with security and self-pride); and for some of the children a more formal view of art became a new way of looking at art."

"I feel they lost nothing and gained considerably. The use of cameras made them look at things differently because they knew they had to pick one thing to photograph. They learned many new art terms and all now feel a sense of worth when doing an art project."

"I think they added enormously to their storehouse of impressions and ideas. I think they also gained confidence from successfully 'doing their own thing.' Some of them, at least, became more aware and appreciative of the elements of art around them."

"They definitely did gain in art, ability to be selective, creative and even to be able to express opinions. They became observant. They lost ground in some school subjects such as Social Studies."

"They gained many new experiences and ways of looking at 'art,' and hopefully life around them. They were able to create, thus finding out more about their own abilities, and found that what they create is theirs and therefore acceptable. They lost some academic time, which can be recovered quite easily for these children."

"The horizon of art appreciation was surely broadening. Variety and use of art materials was explored. New dimensions in art such as 3-D designs, touch and feel -- then draw, photography (imaginative), nine study trips and neighborhood walks and many other experiences helped increase visual awareness and perception. After every study trip there was high motivation for language arts experiences -- writing and expressing our feelings."

4. What do you consider as strengths and weaknesses of this project?

"There is one point that I feel might be considered next time. If the control group teachers were more involved in what's happening in the project, there might be less inner hostility and more school support -- especially if the results are favorable. But even if the data is not favorable, the project had so very much to offer that perhaps a packet of ideas might be given to control teachers at the end of the experiment to motivate the teachers to use the ideas in their classroom. More teachers should be made aware of the possibilities for the use of art in the classroom, not only for art's sake (i.e., free time, as so many teachers consider it to be). Also, parents should be involved. All in all, I must honestly say that the research project was an enriching experience for me as well as the children."

"Strengths: 1. Use of cameras. 2. Variety of field trips. 3. Docents' and Dr. Hine's help. 4. Art appreciation -- to a much greater detail than average fourth graders.

"Weaknesses: 1. Could have used some good art films relating to patterns, colors, etc., so that they could be shown in color and not black and white on TV, or shown not at all."

"Strengths: Advantages of enriching experiences for the children, and emphasis on awareness and more freedom of expression.

"Weaknesses: The problem of valid testing -- and even what to test -- seems very formidable. The reading test seemed totally inadequate, especially since several of mine scored near the top in the beginning, and the sample of questions was too small."

"Strengths: Ability to have the opportunity. Ability to see all the things they did. I think the children could learn to keep some kind of a record of such a project. More definite results given out."

"Field trips -- art projects -- wonderful experiences for the children. It's a wonderful idea to try to have children (and adults) become observant and aware. One problem I had was trying to structure art lessons to fit in with the experience or field trip of the children. This was difficult and not always satisfying to the children -- sometimes it was too abstract for them. Scheduling and going on 'walking trips' was extremely difficult to do."

"The strengths were: increasingly visual awareness; patterns, designs, lines, colors, shapes, etc., took on new meaning and dimension; experience in using camera and taking imaginative shots was valuable; new learnings in projection and making a moving film was also experienced; experimenting with new materials was fascinating. Iowa test is inappropriate for these students."

5. React your own way!

"Gripes (that were taken care of): 1. Time allotted for field trips is not enough. By the time the bus arrives -- 10:00 -- to the time the children stop attending and enjoying because they're hungry, it is past 12:00. The children need more time to experience. 2. The fifth grade class seemed to need more activities on Inner City trip, Century City trip, and museum trips."

"I enjoyed, learned and respect a funded program dedicated to art. It takes a lot of hard work by a team and Dr. Hine followed through on everything. Maybe the Docents should be more clear by talking on the phone to follow up the assigned paper because I had two instances where they either didn't have anyone use the camera or make sketches and both were supposed to have been done. This phone call should be made the evening prior to the field trip."

BLANK

"Pressured and frustrated because I didn't have time for all that was expected of me."

"This was very time consuming; considering motivation, follow-up, reports, sorting slides, showing them, field trips, gathering art materials together, sorting individuals' pictures to hand in, and time taken away from other subjects, as well as upsetting the programs of other teachers with whom teaching of these children is shared. I have gained much from this project and feel I have increased my effectiveness as a teacher in art and other subjects, but I'm relieved that it's over."

"Didn't enjoy writing reports, but knew they were necessary for the project. Enjoyed the project as a whole. It was a tremendously enriching experience for teacher and student. Felt that testing would have been better if children would have been divided into small groups and put in separate rooms. Too much to distract with instructions being given at the same time another activity (test) was in progress. Timing was a little close. This project focused on the individual student. It offered many on-going activities and follow-up. Students reacted positively to more 'challenging' activities because they were motivated directly or indirectly by the project: Example: First experience in outlining came as the result of the City Core study trip -- 'What Makes a City?' Many on-going (follow-up) activities resulted from this one trip -- 1. Large city mural made from classified ads in newspaper. 2. Vocabulary study on city furniture and city activities in general. 3. Stories on cities. 4. Problem-solving activities relating to the city. 5. Making a design of a city -- even cities have 'lines,' 'color,' 'shapes,' 'pattern,' and 'movement.' 6. Language development -- oral reports, fun discussion and sharing the wealth of experiences received during a trip. Could integrate language arts, reading, social studies, music, art and every subject in this project. Multiply this by nine (trips) and one can understand the value of the entire project -- not to minimize the aesthetic values enhanced by the project. The many ideas shared by other teachers were a great help and inspiration to me. In addition, the help, inspiration, and contribution of the Docents was outstanding. It was a program of real team work."