DOCUMENT RESUME

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TITLE Zoo Project for Handicapped Children. Final Project Report.

INSTITUTION California State Dept. of Education, Sacramento. Bureau of Program Planning and Development.; San Diego Unified School District, Calif.

SPONS AGENCY Bureau of Elementary and Secondary Education (DHEW/OE), Washington, D.C.

PUB DATE 14 Jul 72

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DESCRIPTORS Educational Facilities; Exceptional Child Education; *Language Arts; Language Development; *Learning Disabilities; *Mentally Handicapped; *Program Evaluation; Recreational Facilities; *Zoos

IDENTIFIERS Elementary Secondary Education Act Title III; ESEA Title III

ABSTRACT

Presented is the final report (1971-72) of San Diego's Zoo Project for Handicapped Children, designed to increase the language arts skills of 870 trainable or educable mentally handicapped or educationally handicapped children through the use of animals as motivating devices. The program included a teacher training program enabling teachers to make full use of the zoo experience, an in-zoo program which utilized the zoo setting and animals, an in-school program in which the project coordinator took animals to classrooms; and an evaluation phase. The report contains statistical data on such program features as staff development and project products (a handbook of materials, techniques, and procedures); a program narrative report which analyzes such facets of the program as its historical background, parent community involvement, and evaluation procedures; and a final evaluator's report. Among project findings are data showing measurable improvement in language skills of participating students, although arbitrarily set percentage goals were not reached in many instances; and teacher reports of unexpected gains in behavior that included improved social interaction and increased self-image and confidence. (GW)

FINAL PROJECT REPORT

ZOO PROJECT FOR HANDICAPPED CHILDREN

No. 37-68338-24-0197-0

Submitted by

San Diego Unified School District

July 14, 1972

Final Year of Normal Funding

TABLE OF CONTENTS

California State Department of Education
721 Capitol Mall
Sacramento, California 95814

Bureau of
Instructional
Program Planning
and Development

ESEA TITLE III STATISTICAL DATA
Elementary and Secondary Education Act of 1965
(P.L. 89-10 as amended by P.L. 90-247)

THIS SPACE FOR STATE USE ONLY →	County	District Code	Project #	Type	

SECTION A - PROJECT INFORMATION

1. REASON FOR SUBMISSION OF THIS FORM (Check one)

a. [ ] INITIAL APPLICATION FOR TITLE III GRANT OR RESUBMISSION
b. [ ] APPLICATION FOR CONTINUATION GRANT
c. [XX] Final Proj. Report

2. IN ALL CASES EXCEPT INITIAL APPLICATION, GIVE ASSIGNED PROJECT NUMBER
37-68338-24-0197-0

3. MAJOR DESCRIPTION OF PROJECT (Check one only)

A. [X] INNOVATIVE C. [ ] ADAPTIVE
B. [ ] EXEMPLARY

4. TYPE(S) OF ACTIVITY (Check one or more)

A. [ ] PLANNING OF PROGRAM
B. [ ] PLANNING OF CONSTRUCTION
C. [ ] CONDUCTING PILOT ACTIVITIES
D. [X] OPERATION OF PROGRAM
E. [ ] CONSTRUCTING
F. [ ] REMODELING

5. PROJECT TITLE (5 Words or Less)

ZOO PROJECT FOR HANDICAPPED CHILDREN

6. BRIEFLY SUMMARIZE THE PURPOSE OF THE PROPOSED PROJECT AND GIVE THE ITEM NUMBER OF THE AREA OF MAJOR EMPHASIS AS LISTED IN SEC. 303, P.L. 89-10. (See instructions)

To improve the communication skills and self-concept of handicapped students through the use of animals and other resources of the San Diego Zoo as motivating devices.

ITEM NUMBER

7. NAME OF APPLICANT (Local Education Agency)	8. ADDRESS (Number, Street, City, State, Zip Code)	
San Diego Unified School District	4100 Normal Street San Diego, California 92103	
9. NAME OF COUNTY	10. CONGRESSIONAL DISTRICT	
San Diego	35, 36, 37	
11. NAME OF PROJECT DIRECTOR	12. ADDRESS (Number, Street, City, State, Zip Code) (Bus.)	PHONE NUMBER (Bus.) 298-4681 AREA CODE 714
Gerald F. Lamb	4100 Normal Street San Diego, California 92103	
13. Name of Authorized Agent	14. ADDRESS (Number, Street, City, State, Zip Code) (Bus.)	PHONE NUMBER (Bus.) 298-4681 AREA CODE 714
Howard Crofts	4100 Normal Street San Diego, California 92103	

15. POSITION OR TITLE

Deputy Superintendent for Administration

Signature of Authorized Agent

DATE SUBMITTED
JUL 14 1972

SECTION A - Proposed

16. LIST THE NUMBER OF EACH CONGRESSIONAL DISTRICT SERVED	17A. TOTAL NUMBER OF COUNTIES SERVED	18. LATEST AVERAGE PER PUPIL ADA EXPENDITURE OF LOCAL EDUCATION AGENCIES SERVED
35, 36, 37	1	$ 816.95
	B. TOTAL NUMBER OF LEA'S SERVED: 5	San Diego Unified
	C. TOTAL ESTIMATED POPULATION IN GEOGRAPHIC AREA SERVED: 730,000 City of San Diego '71	

SECTION B - TITLE III BUDGET SUMMARY FOR PROJECT (Include amount from item 2c below)

		PREVIOUS GE GRANT NUMBER	BEGINNING DATE (Month, Year)	ENDING DATE (Month, Year)	FUNDS REQUESTED
A.	Initial Application or Resubmission		6/23/69	6/22/70	$ 36,199
B.	Application for First Continuation Grant		6/23/70	6/22/71	$ 38,639
C.	Application for Second Continuation Grant		6/23/71	6/22/72	$ 42,975
D.	Total Title III Funds				$ 117,813
E.	End of Budget Period Report				

2. Complete the following items only if this project includes construction, acquisition, remodeling, or leasing of facilities for which Title III funds are requested. Leave blank if not appropriate.

A. Type of Action (Check applicable box(s))

1 [ ] REMODELING OF FACILITIES 4 [ ] LEASING OF FACILITIES 3 [ ] ACQUISITION OF FACILITIES

2 [ ] CONSTRUCTION OF FACILITIES 5 [ ] ACQUISITION OF BUILT-IN EQUIPMENT

NA

B. TOTAL SQUARE FEET IN THE PROPOSED FACILITY	C. TOTAL SQUARE FEET IN THE FACILITY TO BE USED FOR TITLE III PROGRAMS	D. AMOUNT OF TITLE III FUNDS REQUESTED FOR FACILITY
NA	NA	$ NA

SECTION C - PROJECT ENROLLMENT, EMPLOYMENT, PARTICIPATION DATA AND STAFF MEMBERS ENGAGED

	PRE-KINDERGARTEN	KINDERGARTEN	GRADES 1-6	GRADES 7-12	ADULT	OTHER	TOTALS	STAFF MEMBERS ENGAGED IN IN-SERVICE TRAINING FOR PROJECT
A. School Enrollment in Geographic Area Served			13,628*	92,972*	88,709*	33,536*		
B. Persons Served			Not Known					
			816					
			2005					
			62					
Project Staff			128					
			Unknown					
			Unknown					
			Unknown					
			Unknown					

	PARENTS	BOARD	OTHER EDUCATION PERSONNEL	OTHER NON-PROFESSIONAL	TOTAL
Number of Persons Engaged in Project	563	112	6	189	870

*Includes San Diego Unified, Cajon Valley Union, La Mesa-Spring Valley and Chula Vista City School Districts

SECTION C - continued

3. RURAL/URBAN DISTRIBUTION OF PARTICIPANTS SERVED OR TO BE SERVED BY PROJECT

PARTICIPANTS	RURAL		METROPOLITAN AREA		
	FARM	NON-FARM	CENTRAL CITY	NON-CENTRAL CITY	OTHER URBAN
TOTAL NUMBER SERVED	- -	1	71	14	14

SECTION D - PERSONNEL FOR ADMINISTRATION AND IMPLEMENTATION OF PROJECT

1. PERSONNEL PAID BY TITLE III FUNDS

TYPE OF PAID PERSONNEL	REGULAR STAFF ASSIGNED TO PROJECT			NEW STAFF HIRED FOR PROJECT		
	FULL-TIME 1	PART-TIME 2	FULL-TIME EQUIVALENT 3	FULL-TIME 4	PART-TIME 5	FULL-TIME EQUIVALENT 6
A. ADMINISTRATION/ SUPERVISION	1					
B. TEACHER						
(1) PRE-KINDERGARTEN						
(2) KINDERGARTEN						
(3) GRADES 1-6						
(4) GRADES 7-12						
(5) OTHER						
C. PUPIL PERSONNEL SERVICES						
D. OTHER PROFESSIONAL						
E. ALL NON-PROFESSIONAL	1					
F. FOR ALL CONSULTANTS PAID BY TITLE III FUNDS →	(1.) TOTAL NUMBER RETAINED 0			(2.) TOTAL CALENDAR DAYS RETAINED 0		

2. PERSONNEL NOT PAID BY TITLE III FUNDS

TYPE OF UNPAID PERSONNEL	REGULAR STAFF ASSIGNED TO PROJECT			NEW STAFF HIRED FOR PROJECT		
	FULL-TIME 1	PART-TIME 2	FULL-TIME EQUIVALENT 3	FULL-TIME 4	PART-TIME 5	FULL-TIME EQUIVALENT 6
A. ADMINISTRATION/ SUPERVISION						
B. TEACHER						
(1) PRE-KINDERGARTEN						
(2) KINDERGARTEN						
(3) GRADES 1 TO 8		67				
(4) GRADES 7-12						
(5) OTHER						
C. PUPIL PERSONNEL SERVICES						
D. OTHER PROFESSIONAL						
E. ALL NON-PROFESSIONAL						
F. FOR ALL CONSULTANTS PAID BY TITLE III FUNDS →	(1.) TOTAL NUMBER RETAINED 0			(2.) TOTAL CALENDAR DAYS RETAINED 0		

SECTION E - PROJECT CLASSIFICATION

1. Project Subjects

- [X] - Language Arts (Development)
- [ ] - Fine Arts
- [ ] - Foreign Language
- [ ] - Mathematics
- [ ] - Science
- [ ] - Social Science, Humanities
- [ ] - P.E., Recreation, and Health
- [ ] - Vocational Education
- [ ] - Other

2. Handicapped Education

- [XX] - Mentally Retarded
- [ ] - Hard of Hearing
- [ ] - Deaf
- [ ] - Speech Impaired
- [ ] - Visually Handicapped
- [X] - Seriously Emotionally Disturbed
- [ ] - Crippled
- [ ] - Other Health Impaired

3. Guidance, Counseling, and Testing

- [ ] - Counseling with Handicapped
- [ ] - Group Guidance Activities
- [ ] - Group Counseling
- [ ] - Career Guidance and Counseling
- [ ] - Counseling with Special Problems
- [ ] - Use of Paraprofessionals
- [ ] - Parent Conferences
- [ ] - Follow-up and Drop-out Studies
- [ ] - Inservice Training
- [ ] - Use of Community Resources
- [ ] - Curriculum Development
- [ ] - General Counseling
- [ ] - Consultation with Teachers
- [ ] - Program Evaluation and Development

4. Grade Levels

- [X] - Preschool (indicate ages 3 or 4) 25
- [ ] - Elementary (indicate grades K-6) 845
- [ ] - Secondary (indicate grades 7-12) _____
- [ ] - Junior College (indicate grades 13-14) _____
- [ ] - Adult

5. Is your project an adoption or adaptation of another Title III project? [ ] Yes [X] No

If yes, name the agency operating the project: _____

COVER PAGE

for Component II

Data for U. S. Office of Education

(To be completed for all projects active for any period between July 1971 - Through June 30, 1972. Agencies having more than one project must prepare a report for each project.)

Enter information for items 1 through 7.

1. 37-68338-24-0197-0
Project No.

2. Zoo Project for Handicapped Children
Project Title

3. San Diego Unified School District
Local Educational Agency

4100 Normal Street

San Diego, California 92103
Address

4. Dr. Orville B. Aftreth
Name of school official responsible for this report

(914) 298-4681 Ext. 385
Phone No.

5. Gerald F. Lamb
Name of Project Director

234-6194
Phone No.

6. The 1971-72 school year has been .....

6.1 [ ] The first year of operation.

6.2 [ ] The second year of operation.

6.3 [X] The third year of operation.

6.4 [ ] A project which ended on or before June 30, 1971 but had a special extension to operate a period of time after July 1, 1971.

7. Enter the following ending dates:

Ending date for first year: June 22, 1970

Ending date for second year: June 22, 1971

Ending date for third and final year: June 22, 1972

Ending date for extension period if extension was granted: _____

The report should describe project staff development activities that took place during the period July 1, 1971, through June 30, 1972. If no project staff development activities occurred, write NONE in the first column. Staff development activities are those inservice efforts designed to improve competencies of the staff working full or part-time on the project. Enter the figures in columns two and three.

STAFF DEVELOPMENT ACTIVITIES OF ONE OR MORE DAYS DURATION 1971-72					
(1) Definition of Staff: (Staff includes all personnel assigned to work on the project full or part time, whether paid by the district or the project.)	(2) Total No. of participants (Unduplicated) in all activities.	(3) No. of workshops, conferences and seminars held by type of training			
		Dissemination to spread information about project	Evaluation to appraise progress	Combination of dissemination & evaluation	Other, such as in-service education. Specify (Use back of this page.)
					in-service
2 →	67 teachers 870 children				29 new teache 38 returning teachers

PART II - EXTENT OF ADOPTION/ADAPTION

1971-1972

The purpose of this section is to find out how many projects are being continued to some extent by the grantee or by other school districts after federal funds have expired.

The project should be limited to projects for which federal funds expired during the period July 1, 1971 through June 30, 1972. If the grantee district expects to continue the project to some extent during the next fiscal year, this should be reported by marking the box. The estimated extent of adoption or adaption by the grantee district should be shown by circling the appropriate percentage figure in the five point scale.

1. The project is being continued by the grantee in some form after federal funds expired. [ ] Yes [ ] No

   Being continued by additional grant as Diffusion Project.

2. If the answer is "Yes," draw a circle around the figure which represents your estimate of the degree of adoption/adaption of the project in your school district.

1 ——— 40% ——— 60% ——— 80% ——— 100%

3. Is the project being adopted or adapted by other school districts?

[ ] Yes [X] No

4. If the answer is YES, list the school districts by name and address:

4.1 _____

_____

4.2 _____

_____

4.3 _____

_____

4.4 _____

_____

4.5 _____

_____

4.6 _____

_____

4.7 _____

_____

4.8 _____

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4.9 _____

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4.10 _____

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4.11 _____

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4.12 _____

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4.13 _____

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4.14 _____

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4.15 _____

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4.16 _____

_____

4.17 _____

_____

4.18 _____

_____

4.19 _____

_____

4.20 _____

_____

Some agencies such as the Larue D. Carter Memorial Hospital, Indianapolis, Indiana; Mohawk Park Zoo, Tulsa, Oklahoma; Toranga Zoo, Sydney, Australia, have requested Zoo Project activities and materials for use in their programs. See body of this report for additional requests for materials and information.

PART III - EXTENT OF PARTICIPATION

1971-1972

The purpose of this part of the report is to find out the actual direct or indirect participation of public and private school pupils and adults in the project during the 1971-72 operational period.

Any participation should be reported only once. The count should be based on actual participation during the 1971-72 school year. The numbers are almost certain to be different from those anticipated in the project application.

The United States Office of Education definitions should be applied:

Direct Participation - Enter the number of different persons participating in activities involving face-to-face interaction of pupils and teachers (in case of in-service training, teachers and instructors) designed to produce learning, in a classroom, a center or mobile unit; or receiving other special services.

Indirect Participation - Enter the number of different persons visiting or viewing exhibits, demonstrations, museum displays; using materials or equipment developed or purchased by the project; attending performances of plays, symphonies, etc.; viewing television instruction in a school, a center, or home; or participating in other similar activities. Carefully prepared estimates are acceptable.

Elementary - For reporting purposes only, consider elementary as being Pre-Kindergarten through Grade 6.

Secondary - For reporting purposes only, consider secondary as being Grades 7 through 12.

Please supply the information requested for the project.

Item I

G. NUMBER OF PUBLIC AND NONPUBLIC SCHOOL STUDENTS, TEACHERS, AND COUNSELORS PARTICIPATING

SCHOOLS (a)	DIRECT PARTICIPATION: STUDENTS		TEACHERS		COUNSELORS		INDIRECT PARTICIPATION: STUDENTS		TEACHERS		COUNSELORS	
	ELEMENTARY (b)	SECONDARY (c)	ELEMENTARY (d)	SECONDARY (e)	ELEMENTARY (f)	SECONDARY (g)	ELEMENTARY (h)	SECONDARY (i)	ELEMENTARY (j)	SECONDARY (k)	ELEMENTARY (l)	SECONDARY (m)
PUBLIC	845		38						17			
NONPUBLIC	25		29									

Item II Indicate how many of the above students are from rural/urban areas. Totals should equal the figures above.

Rural areas 17
(Farm or cities under 2,500 pop.)

Urban areas 853
(Cities over 2,500 pop.)

The total of these must equal b, elementary, c, secondary, from Item I above.

PART IV

Information in Part IV is only for the past budget period.

Note: The total number of students in the following 3 charts must agree one with the other.

PROGRAM (a)	Check subject area covered	No. of students participating	Amount granted this past year
Reading			$
Environment/Ecology			$
Equal Educational Opportunity			$
Model Cities (Urban, Inner-City)			$
Gifted			$
Handicapped		870	$ 42,975
Guidance and Counseling			$
Drug Education			$
Early Childhood Education			$
Other Programs			$

NUMBER OF STUDENTS SERVED BY TARGET POPULATIONS (Figures may be duplicated)

STUDENTS (a)	PROJECT FOR INDIANS (b)	PROJECT FOR MIGRANTS (c)	PROJECT FOR DISAD-VANTAGED (d)	PROJECT FOR HANDI-CAPPED (e)	PROJECT FOR EARLY CHILDHOOD EDUCATION (f)	PROJECT FOR OTHER TARGET POPULATIONS (Specify) (g)
Number of Students				870		

Provide unduplicated counts of target population students by grade levels.

Levels	Pre-K	K	1	2	3	4	5	6	7	8-9	10	11	12
Public	25			Ungraded Special Education									
Non-public				Classes Total -845									

Provide number of professional staff directly involved in project. See Part III for definitions - directly/indirectly.

	Elementary Basic Skills		Secondary Basic Skills		Secondary vocational skills & attitudes	
Project for...	Under Half-time	Full Time	Under Half-time	Full Time	Under Half-time	Full Time
Handicapped	67	1				
Non-handicapped						

Provide number of non-professional staff directly involved in project.

Project for...	Less than half-time	Full time
Handicapped children		1
Regular elementary and secondary students		

Provide number of teachers who had training as a result of project and cost of training-count can be duplicated.

	Number	Cost of activity
Workshops (training meetings)	29	$ 1,130
Orientations	38	No cost

For the above number, indicate how many participated in workshops lasting more than four weeks. 29 teachers - 16 2-hr meeting

Provide number of schools in project.

Elementary 52
Secondary _____

Provide number of non-certificated personnel who received training from the project and cost of training.

Number: none Cost of Training: $ _____

Provide number of students participating in project activities in summer school in 1972 at the levels indicated.

None

Pre-kindergarten: _____
Kindergarten: _____
Other Elementary: _____
Secondary: _____

PART V - ABSTRACT

GRANTEE: San Diego Unified School District

PROJECT ABSTRACTS (ESEA, Title III)	STATE	TOTAL PROJECT PERIOD	FROM (Month and year)	TO (Month and year)	PROJECT NO.
	California		6-69	6-72	0197

NOTE: If project involves handicapped children and/or personnel working with handicapped children who are paid from Title III funds, complete the information on the back of this form.

TITLE OF PROJECT: ZOO PROJECT FOR HANDICAPPED CHILDREN

GRANTEE: San Diego Unified School District

PROJECTED FUNDING LEVEL FOR PROJECT PERIOD	19__ $	19__ $	19__ $	19__ $	19__ $	19__ $

TARGET POPULATION: 870 2,133 Educationally Handicapped and Mentally Retarded Children from 6 local districts and private schools, included pre-school and all elementary levels, and all ethnic and socio-economic backgrounds in established classes.

PARAGRAPH DESCRIPTION: The Zoo Project provided an extended educational program for target students using the facilities of the San Diego Zoo. It provided an innovative approach to the problem of motivating learning and behavior in these children through the use of animals. The program includes 1) a teacher training program enabling teachers to make full use of the zoo experience; 2) conducting the in-zoo program which utilized the zoo setting and animals; 3) conducting the in-school program in which the project coordinator took animals to the classroom to be used in various learning activities; and 4) a comprehensive evaluation to determine the effectiveness of the program.

MAJOR OBJECTIVES: To improve language arts skills including reading, oral and written communication of Educationally Handicapped and Mentally Retarded children through the use of animals and other resources of the San Diego Zoo as motivating devices as measured by:

- increase in verbal activity
- increase in linguistic attending
- increase in situationally relevant and task relevant behavior

ACTIVITIES TO ACHIEVE OBJECTIVES

1. Produce a handbook for using animals in teaching handicapped children.
2. Conduct in-service training for 29 teachers new to the project and 38 repeating teachers.
3. Conduct In-Zoo program using animals with children.
4. Conduct In-School program using animals with different classes.
5. Provide end of year evaluation of progress toward achievement of stated objectives.

EVALUATION STRATEGY: Random selection of six groups each of EMR, E.H. and L.D. and 3 groups of TMR classes. Two observers visit selected classes four times two weeks before the initial animal visit and four times after the final visit. Observations included collection of data for the language measures with a tape recorder and collection of behavior data with tally sheets. In addition, pictures and written assignments were collected from all classes. These were scored and data tabulated.

EVALUATION FINDINGS

The evaluator found improved language arts skills at all three levels of handicap, although anticipated percentage goals were not all reached. The EMR sampling showed the greatest growth. A non-statistical survey of teachers indicated considerable language growth by the students and marked improvement in various behavioral areas such as self image, concentration, social interaction and motivation.

HANDICAPPED PROJECT PARTICIPATION ONLY - ESEA TITLE III

1. HANDICAPPED CHILDREN SERVED, PERSONNEL PAID, AND IN-SERVICE TRAINING RECEIVED WITH ESEA TITLE III FUNDS

TYPE OF HANDICAPPED CHILDREN SERVED* (a)	NUMBER OF CHILDREN SERVED					FULL-TIME EQUIVALENCE OF PROJECT PERSONNEL PAID WITH TITLE III FUNDS				PERSONNEL RECEIVING IN-SERVICE TRAINING WITH TITLE III FUNDS			
	0-5 YEARS (b)	6-12 YEARS (c)	13-18 YEARS (d)	19 & OVER (e)	TOTAL (f)	TEACHERS (g)	TEACHER AIDES (h)	OTHER (i)	TOTAL (j)	TEACHERS (k)	TEACHER AIDES (l)	OTHER (m)	TOTAL (n)
(1) TMR	25	58			83					3			3
(2) EMR		254			254					7			7
(3) HH													
(4) DEAF													
(5) SI													
(6) VI													
(7) ED		26			26					1			1
(8) CR													
(9) LD		507			507					18			18
(10) OHI													
(11) TOTAL	25	845			870	1	1	1	3	29			29

2. NUMBER OF HANDICAPPED CHILDREN SERVED WHO ATTEND NON-PUBLIC SCHOOLS: 54

3. DISTRIBUTION OF ETHNIC GROUPS

POPULATION (a)	NEGRO (b)	INDIAN (c)	ORIENTAL (d)	SPANISH SURNAME (e)	WHITE (Other than Spanish surname) (f)	OTHER (g)	TOTAL (h)
Student Participants	112	5	7	182	563	?	870

4. CHILDREN RECEIVING SERVICES - DISTRIBUTION BY DEMOGRAPHIC AREA

CATEGORY	NUMBER
(1) Urban Areas (over 50,000)	
(2) Rural Areas (under 50,000)	
(3) Other Demographic Areas (i.e., 2,500-50,000)	
(4) TOTAL	

INSTRUCTIONS

1. **CHILDREN SERVED** – Enter in the appropriate columns b, c, d, and e an unduplicated count of children served by type of primary handicap *(in public and non-public schools)* and by age group who received direct instructional or related services with Title III funds. This count should include all handicapped children *(1)* who received direct services from personnel paid with Title III funds and/or *(2)* who received substantial benefit as a result of the purchase or projects equipment or the provision of significant in-service training of personnel with Title III funds. Do not include handicapped children who received only incidental services, such as preliminary vision screening or audiological testing, etc. Column f should equal columns b, c, d, and e.

   PROJECT PERSONNEL – Enter in the appropriate columns g, h, and i, by primary type of handicapped children served, figures representing an unduplicated count of the full-time personnel plus the full-time equivalency of part-time personnel paid from Title III funds. Full-time personnel are those persons who are assigned to Title III project activities 40 hours or more per week *(or the number of hours in a regular work week, as determined by the State or local education agency)*. They may be school year, summer program, or 12-month personnel. Column j should equal columns g, h, and i.

   IN-SERVICE TRAINING – Enter in the appropriate columns k, l, and m corresponding with primary type of handicapped children served an unduplicated count of all personnel who receive in-service training with Title III funds. Column n should equal columns k, l, and m.

2. **NON-PUBLIC SCHOOLS** – Of the total number of handicapped children served with Title III funds *(1, 11, 11, (f))*, indicate the number who attended non-public schools.

3. **DISTRIBUTION BY ETHNIC GROUPS** - Enter in the appropriate columns b, c, d, e, f, and g an unduplicated count of the handicapped children served with Title III funds by ethnic group membership. Column h should equal columns b, c, d, e, f, and g.

4. **DISTRIBUTION BY DEMOGRAPHIC AREAS** – Self-explanatory.

* TMR = [illegible] HH = Hard of Hearing, SI = Speech Impaired, VI = [illegible]
ED = [illegible] LD = [illegible] OHI = Other Health Impaired

PART VI - PRODUCTS OF PROJECT

I Product(s) Developed	II Date mailed to Title III	III Annotations
___ Curriculum guides ___ Teacher guides X Publication of materials, techniques, and procedures ___ Workbooks ___ Bibliography ___ Questionnaires - locally developed ___ Evaluation tests ___ Audio tape cassettes ___ Brochures, newsletters and information sheets ___ 16 mm films ___ 8 mm films ___ Filmstrips ___ Instructional workbooks, materials, ___ Tests - locally developed ___ Kits ___ Models ___ Microcards ___ Microfilm ___ Maps ___ Pictures ___ Posters ___ Records ___ Set ___ Slides/tape ___ Viewmasters ___ Video Tape ___ (Other)_____		**Using Animals as Teaching Tools** **Project No. 0197 - Special Education Elementary Teachers Handbook** **Looseleaf handbook of teaching suggestions, activities and materials teachers may select from in using animals as motivation for work in the regular school curriculum. Includes master pages for thermal copying.**

CONTEXT

The Locale

1. What is the locale of the program?
2. What is the density of the population?
3. What are the population trends?
4. What are the major occupations of people in the locale?
5. What is the unemployment rate or trend?
6. What proportion of families in the locale are receiving welfare assistance?

1. The program operated from the Otto Education Center of the San Diego Zoo. The program covered Elementary Educationally Handicapped and Mentally Retarded classes in the cities of San Diego, La Mesa, Spring Valley, Chula Vista and El Cajon. In addition there was some coverage in other small districts in San Diego County.

2. The population for the City of San Diego is 740,000 with an average household size (city wide) of 2.80/unit.

3. Population trends indicate growth upward.

April 1, 1970 population was listed at 697,027 and in
January 1972 was reported as 740,000
Population predictions are as follows:

April 1975	794,000
April 1980	895,000
April 1985	997,000
April 1990	1,100,000

4. Manufacturing is the major occupation in the San Diego Metropolitan area.

5. The unemployment rate is 6.5.

6. Not available.

1. What grade levels do the schools serve?
2. How many pupils are there in the school system? How many schools?
3. Are there any significant trends in the school system in enrollment, withdrawal, or transfer?
4. What is the per pupil cost of education in the school system?
5. What is the recent financial history of the school system?

1. The school districts involved in the Zoo Project are either Unified K-12 districts or Elementary K-8 districts.

2. In October 1971 the school district enrollment figures were

K-6	71,634
7-9	29,627
10-12	26,454
Cont./Adj.	914
	128,629

There were 157 schools.

3. None.

4. The 1970-71 per pupil cost of education in the school system was $816.95.

5. Expenses have been increasing more rapidly than income. This has necessitated program cutbacks.

Needs Assessment

1. What was the starting point for needs assessment?
2. How were the specific needs of the pupils identified?
3. What were these specific needs? Which were selected for the program?

At the time of the inception of this program, in 1969, there were close to four thousand children enrolled in programs for Educationally Handicapped and Mentally Retarded in the project area. These children had been identified through test data and teacher judgment as being in need of special attention. These children very commonly have their greatest difficulty in communication skills. As language, reading and verbal skills are the heart of the educational process, there is a need to stimulate this group in these areas.

A review of the literature and experience of local teachers revealed that certain learning needs common to these children must be met in their learning activities. These needs included:

- The need for direct experience rather than abstractions.
- The need for approaches that appeal to all the senses.
- The need to relate school activities to meaningful situations thus enabling children to transfer what has been learned into meaningful behavior.
- The need for meaningful repetition without over stimulation.
- The need for motivational experiences in which children are vitally interested.
- The need for behavior modification both passive and aggressive.
- The need for opportunity for developing relationships.

It was felt by the planning committee that a program using animals as a motivating force could take advantage of the fascination all humans have for living things and meet all the unique learning needs listed above.

Historical Background

1. Did the program exist prior to the time period covered in the present report?
2. Is the program a modification of a previously existing program?
3. How did the program originate?
4. If special problems were encountered in gaining acceptance of the program by parents and the community, how were these solved so that the program could be introduced?
5. Provide a brief history of planning. Indicate which planning efforts were successful or were not successful. Describe how non-profit private schools and other agencies were involved in the planning.

The 1971-72 phase of the program was a variation on the two previous years to show how the ZOO PROJECT approach could be adapted to any locality or school situation. As a part of the preplanning for the ZOO PROJECT in 1969, the 77 major zoos of the world were contacted requesting information on the effectiveness of their programs for mentally and educationally handicapped children. In addition, information was sought on use of the Zoo for motivation for learning other than about animals. Though many of the Zoos were enthusiastic and requested information, they indicated there was no program of this kind being carried on nor being contemplated anywhere in the world.

The 1969-70 year was a pilot study year in which 35 classes used our services for ten consecutive days. The 1970-71 year was an expansion year in which we were able to serve 68 classes by doubling up on the bus and alternating use of the facilities. Classes came for 10 days scattered over a month's time. The 1971-72 year was a generalization year in which we introduced the In-Zoo program emphasizing the adaptability of the ZOO PROJECT approach to other localities. Twenty-nine (29) classes used the zoo facilities for 8 days; 38 classes used animals in their own classrooms for 5 school weeks.

No special problems were encountered in gaining acceptance of the program by parents or community. We have been received with great enthusiasm and appreciation.

Planning was carried on by a Task Force Planning Committee composed of representatives from each of the Concerned districts, the Zoological Society, and the Supplementary Education Center. Representatives from local private and parochial schools who have specific classes for children with learning difficulties were invited to participate. Some of these have chosen to participate in the actual operation of the program, but none chose to participate in the planning and application.

During the initial stages of this project, the planning committee asked for a review of the literature concerning the use of Zoo facilities as motivation for learning activities with educationally and mentally handicapped children. The San Diego County Supplementary Education Center provided an annotated bibliography of material related to this topic. Study of this material indicated a lack of any program of this kind and indicated the values that such a program could provide.

Historical Background (Cont'd)

A survey of the present Zoo educational program revealed a rich program, but one that does not specifically meet the needs of Educationally Handicapped and Mentally Retarded children as listed in the objectives for this project.

The Committee developed a series of suggested activities a teacher might use to meet the individual needs of her class during the Zoo experience. A training workshop was outlined that would provide teachers with experience in handling animals, background information on the animals and other Zoo resources and ideas and activities which a teacher might use when working with the animals, background information on the animals and other Zoo resources and ideas and activities which a teacher might use when working with the animals.

Upon receipt of funding, this planning was put into action. The Task Force Planning Committee has continued during the three years of the project through the three phases of development.

PROGRAM

Scope of the Program

1. What numbers and kinds of participants were served by the program?
2. What were the specified objectives of the program?

870 children in 67 classes were served by the full program this year. These classes were made up of the following groups:

	In-Zoo Program		In-School Program	
	Classes	Children	Classes	Children
EH	14	164	23	369
EMR	12	148	10	106
TMR	3	27	5	56
	29	339	38	531

During the year legislation regarding the EMR program resulted in the development of transition classes for students in the 75-80 IQ range. This reduced the number of EMR classes participating in the In-School and In-Zoo programs and reduced the enrollment in the surviving EMR classes, leaving some openings in the visitation schedule of the project staff which could not be filled as the teacher training workshop was over. To fill these openings, County schools where distance prohibited full participation in the program were scheduled for full afternoon one time visits by a van full of Zoo animals under provisions of the "P.M." plan in the original application. Under this facet of the program 52 additional children in five additional classes were served.

Classes were selected from applications submitted by teachers on the basis of formulas established by the Planning Committee. Only volunteers were wanted due to the nature of the program. Classes were taken intact, in whatever manner they were established in their individual districts or schools.

The objective of this project was to improve language arts skills including reading, oral and written communication through the use of animals and other resources of the San Diego Zoo as motivating devices. The specific objectives were:

- To increase verbal productivity.
- To increase linguistic attending.
- To increase situationally relevant and task relevant verbal behavior.

Personnel

1. What kinds and numbers of personnel were added by the program?
2. What were their most important duties and activities?
3. How much time did each type of personnel devote to these responsibilities?
4. What special qualifications suited personnel to the requirements of their jobs?
5. What special problems were dealt with in recruiting or maintaining staff?

The Zoo Project has been able to operate with a staff of three:

The Project Coordinator plans the master schedule for classes, buses, and animals both In-Zoo and In-School, instructs the inservice training workshops, assists teachers in both programs, interprets the program to visitors and to outside groups, acts as liaison between the Zoo, the district and other districts and private schools, initiates all records and reports about the Zoo Project, is responsible for project equipment and use of loaned Zoo facilities, and is responsible for keeping within the project budget.

The Project Secretary serves as general office manager and assistant to the Project Coordinator; she assists teachers and visitors, maintains schedules, prepares masters for reproduction, maintains records, acts as receptionist and performs other secretarial duties.

The Animal Attendant is a Zoo employee whose salary was paid for out of Title III project funds. She is responsible for the daily feed and cleaning of animals, their daily handling and training, cleaning and maintaining the workroom and classrooms, maintains stock of animal supplies, assists teachers in their use of animals, is available as a resource person, accompanies classes in the Zoo and performs other related duties.

These personnel devoted their full time to the operation of the Zoo Project.

Other than the normal qualifications for these jobs, the positions require willingness to handle ALL kinds of animals, a willingness and ability to work with children who sometimes may have bizarre physical or behavioral characteristics, the ability to make decisions concerning the appropriateness of an activity for a particular situation in regard to the safety of animals and children involved.

Although these positions very often require irregular lunch hours, and unreimbursed overtime, we have had no problem in recruiting or maintaining staff.

Organizational Details

1. What is the period of time covered by your report?
2. How much of the entire program does this cover?
3. Where were program activities located?
4. What special physical arrangements were used in these locations?
5. What provisions, if any, were made for periodic review of the program?
6. What important decisions were made on the basis of such reviews?
7. What provisions, if any, were made for inservice training?

1,2,3. This report covers the 1971-72 school year. This was the third operational year of the Zoo Project. Program activities were located in the San Diego Zoo and in the classrooms of 43 In-School classes throughout San Diego County.

4. The San Diego Zoological Society has been most generous in providing physical facilities for the Zoo Project. They have provided an office and use of a reception area, shared their education department workroom and indoor classroom with us, and built us an outdoor classroom in a private corner of the Zoo where we don't bother Zoo visitors and they don't bother us. No special arrangements were needed in the schools for the In-School program.

5. The formal evaluation by the Bureau of Educational Research, San Diego State College, each year reviewed how closely the project was reaching its objectives each year. In addition, an informal survey of teachers was conducted each year by the project office, to determine new needs, unexpected benefits of the program, suggestions for change or improvement. The steering committee met annually to review the program, to consider modifying, and determined goals the following year based on the results of the current and preceding years.

6. Any needs for change pointed out by any of these means were changed immediately or were incorporated into plans for the following year.

7. Inservice training was a key part of this project. Each teacher knowing the group and individual needs of her class planned the kind and sequence of activities she would use, and did her own teaching aided by the project staff. In order to make her comfortable in the Zoo or In-School setting, a college credit workshop was provided that covered three main areas:

(1) Animal handling to help the teachers feel confident in working with animals that will be available for her class.
(2) Background information on animal groups and specific information about particular animals.
(3) Sharing and developing activities and materials that would meet the needs of her particular class.

The course was taught early in the fall, and included 29 teachers. All other teachers were repeating the program and attended one session to receive the project handbook and acquaint themselves with different procedures for the third year program.

In addition, a "Swap-Shop Workshop" session was held part way through the year including new and repeating teachers. Successful materials and ideas were displayed and exchanged.

Activities or Services

1. What were the main activities (or services) in the program?
2. How were these activities (or services) related to specified program objectives?
3. What methods were used in carrying out each activity (or service)?
4. What was a typical day's or week's schedule of activities for the children (or others) who received the program?
5. How were pupils grouped for the various program activities?
6. What were teacher-pupil ratios (or aid-pupil, or adult-pupil, and so on) in each of these groupings?
7. How did pupils (or others) receive feedback on their individual daily progress?
8. How did parents receive feedback on their child's progress?
9. What amounts and kinds of practice, review, and quiz activities were provided for pupils (or others) in the program?
10. What special provisions were made for motivating pupils (or others)?
11. If a comparison group was used, what were important differences in the activities and methods used in this group and the activities and methods used with the program group?

1. The main function of the project staff was to provide the services that would enable teachers to use animals as a teaching tool. This was accomplished through training the teachers, scheduling the classes and animals, and operating the In-Zoo and In-School programs.

2. The teachers then used the animals to motivate children to do work in the regular school curriculum with emphasis in the language arts including reading and oral and written communication which was the project objective.

3. The teacher training and staff activities were described in previous portions of this report. For the In-Zoo portion of the project, classes were brought two at a time to the Zoo. They came twice a week for four weeks. Classes would typically handle and work with an animal or group of animals and then go out and view related animals in the Zoo.

In-School classes were selected in clusters of 5-7. For five weeks they received a classroom pet along with appropriate cage, feed, directions and suggested activities on the first day of each week. In addition, an unusual Zoo animal was brought for an afternoon visit one afternoon of each of the five weeks. The teachers would use the animals in a variety of ways to motivate activities in reading, oral and written language, mathematics, art, music, science, health, social studies, responsibilities and self-image.

4. A typical lesson would involve the teacher introducing an animal such as the snake; talking about it, pointing out and explaining any actions or movements that might tend to be startling; demonstrating how to hold it and listing some particular things to look for on it. By this time the children would be eager to touch and hold the animal. It would be passed to every child but nobody would be forced to touch it who did not want to. (Almost always, after the elaborate introduction every child will take the animal.) One or more children would have a polaroid

picture taken with the animal. The group would then discuss the animal and summarize the items they had been directed to look for. An art lesson or written lesson might follow, or research for further information; or if in the Zoo, study of related animals in the Zoo. The polaroid picture would be used later for extending the experience, using it as the basis for a written story or oral language activities. In School the children would be responsible for reading directions and being responsible for the care of the animal. In most classes, after children became "expert" on an animal, they were allowed to report on and "share" the animal in other classrooms. Teachers reported that this activity produced marvelous positive growth in pupils' self-image.

5-6. The project did no grouping of pupils for various program activities. Teacher-pupil ratios were those normally established in their various schools or districts for Educationally Handicapped, Trainable or Educable Mentally Retarded or Learning Disability groups. If the teacher wanted additional help, and members of the staff were available, they would accompany groups in the Zoo. In addition, high school tutor guides from special education classes in one of the local high schools were available if the teacher chose to ask for them.

7-8-9. Feedback to parents or pupils was not an organized part of this program. It is dependent on the policy or practice of the particular school or district involved. As we were interested in motivation of pupils rather than accumulation of knowledge, practice review and quiz activities were not a part of this project, although individual teachers may have included them in their programs.

10. Motivation is the major goal of the Zoo Project. We believe that living things present a special fascination for children, and that teachers can take advantage of this fascination to teach school subjects. Animals provide a multi-sensory stimulation not filled by the standard school approach. We feel the animal experience breaks up the pattern of failure the child may have had from the standard school approach. It suddenly places the child in neutral non-school territory being stimulated by a completely different and unorthodox approach. Suddenly he finds a reason to do school type tasks; but they are his own realistic reasons, based on needs that he feels.

11. Through using the Recurrent Institutional Cycle Design, the control group for this project were established within the target sample itself. Because of the cyclical nature of both the In-Zoo and In-School programs, each class was able to serve as the control for other classes.

Instructional Equipment and Materials

1. Were special materials developed or adapted for the program? How and by whom?
2. What other major items of equipment and materials did the program require? In what amounts?
3. How were key aids and materials used in connection with the various program activities?
4. If a comparison is being made between program and nonprogram persons, were there important differences between these groups in kinds and amounts of materials provided, or in methods of use?

1. A Handbook of teaching activities and materials was developed during this year. The Handbook was compiled by the project staff from successful suggestions and activities submitted by teachers in the program. From time to time during the year supplements were distributed as teachers developed additional ways of using animals in teaching handicapped children.

A useful teaching aid, developed by the project staff out of a need expressed by teachers, is a series of slide sets. These include sets of animal slides, sets of Zoo sign slides, sets of situation picture slides, and sets of Zoo job slides. In addition, tapes of animal sounds are available. These are loaned to teachers in the program along with lesson plans and teaching suggestions.

2-3. Equipment, minor in cost, but major in importance are the cages and other animal equipment needed for the In-School program.

The slide camera and polaroid camera obtained during the first year of funding continued to be items of utmost importance. Every class received eight or more pictures of the children interacting with the animals for use in motivating language activities.

The project van leased during the year provided the necessary transportation needed for the In-School portion of the program.

4. There was no "outside" control group used in this project. See item #11 under Activities or Services above.

Parent-Community Involvement

1. What role, if any, did parents have in the program?
2. Were meetings held with parents? Why? How often?
3. What role, if any, did various community groups have in the program?
4. How was the community kept informed?
5. If problems with parents or the community affected the program, what steps, if any, were taken to remedy the situation?

1. No parents had a direct role in the program. Some accompanied classes to the Zoo at the request of the teacher. Several letters were received from parents. Some teachers distributed evaluation sheets to parents. All from whom we heard were very supportive of the program.

2. No parent meetings were held.

3. Community groups did not participate in the program.

4. One newspaper article was published about the Zoo Project, we were included in one television newscast, an article describing the project was published in "The Educator," a district publication. All invitations to speak to PTA's, service clubs, educational groups about the project were accepted by the project coordinator.

5. No problems with parents or the community were encountered.

Budget

1. From what sources were program funds obtained?
2. What was the total cost of the program?
3. What period of time was covered by these funds?
4. What is the per pupil cost of the program? What was the formula for computing this figure?
5. How does the per pupil cost of the program compare with the normal per pupil cost of the schools in the program?
6. Where can the reader get more detailed budget information?
7. Of the total cost of the program, give rough dollar estimates of developmental costs, implementation costs and operational costs.
8. Give the costs for the entire project period by budget categories (i.e., professional salaries, contracted services, etc.).

1. Project funds were obtained mainly through a Title III grant of $42,975. In addition, participating districts contributed the cost of transporting classes from outside the San Diego area. This contribution totaled $982.

2. The total cost of the program was $43,957.

3. These funds covered the period 23 June 1971 to 22 June 1972.

4. The per pupil cost of the program was $50.52. $\frac{\text{Total cost}}{\text{\# of pupils}}$

5. The latest average per pupil ADA expenditure was $694.78. This project however is a supplement rather than a substitute to existing programs.

6. More detailed information about the project may be obtained by contacting the San Diego Unified School District Budget office.

7. For the 1971-72 year -

Development costs were	$ 6,880
Implementation costs	718
Operational costs	33,976

8. Title III funds were expended in the following manner:

Professional salaries	$ 15,280
Non-Professional salries	6,060
Contracted Services	13,015
Other Instructional Expenses	2,211
Pupil Transportation	1,390
Operation of Plant	975
Fixed charges	1,925
Capital Outlay	718
	$ 41,579

Special Factors

For use of potential adopters of the program:

1. What modifications of the program are possible?
2. What are the suggested steps in adopting this program?
3. What are some things others should avoid in adopting this program?
4. Can the program be phased in, beginning on a small scale? How?
5. Can parts of the program be adopted without taking the whole program? What parts?

1. This program need not be limited to localities having zoos nor need it be limited to Mentally Retarded and Educationally Handicapped classes.

The program could be operated on an In-Zoo or In-School basis only, or individual teachers could adapt after having attended the teacher training workshop. All animals in the In-School program have been obtained through donations. Cages are readily available and all other necessary materials could be found in practically all school systems at a minimum cost. The basic approach to the In-Zoo program could be adapted to any zoo, animal shelter, farm, park, aquarium, etc.

2. The teacher training is the key step in this program. The teacher must be secure in working with the animals. If she is afraid, the children will sense it, and the whole point of the program is lost. She needs background on the animals and needs to have selected activities and materials to use with the animals. Start with either In-Zoo or In-School for a year, then expand to include both programs.

3-4. Use only volunteers. Don't assign teachers to the program. Don't try to operate either program without teacher training. Make sure animals are handleable and safe before allowing children to use them. Don't allow substitute teachers to try to carry on in the teacher's place.

4. To replicate this project a school could easily begin with what it has at hand and build activities around small, less expensive animals available in most communities, as well as substituting media and "one-shot" visits for part of the program. A large city zoo is very helpful, but many of the project ideas are applicable whether a full scale zoo is available or not. Using animals as motivation can occur in many other settings.

5. Yes, see #1 above.

Dissemination

Discuss how project information was disseminated during the past budget period.

1. Provide an estimate of the number of unsolicited requests for information from both within and outside the project area.

2. List the number of visitors from outside the project area.

3. Provide the cost of dissemination during the last budget period.

4. Provide the total cost of dissemination including prior budget periods (if possible).

Although dissemination of information outside the project area is restricted to the Title III office in Sacramento, information about the Zoo Project for Handicapped Children has been regularly circulated within the project area through existing publications of the participating agencies. These have included:

- The Staff Bulletin Board and San Diego Educator, weekly and monthly publications of the San Diego Unified School District.
- The Staff Newsletter, a monthly publication of the Chula Vista City School District.
- To the Staff, a weekly publication of the La Mesa-Spring Valley School District.

News releases have appeared in newspapers and local shopping papers from the areas of the county involved.

1. The project has been contacted for information from Baton Rouge, Louisiana; Columbia, Missouri; Knoxville, Tennessee; Chalmette, Louisiana; Phoenix, Arizona; Fountain Valley, California; Indianapolis, Indiana; Dallas, Texas, along with second requests from Sydney, Australia and Washington, D. C.

The project served as a model for the National Conference on Educational Innovation on October 19, 1971. Seventy-one State Title III chairmen visited the program and requested copies of the project handbook and brochures.

Project personnel were asked to prepare an illustrated article for the Journal of the President's Advisory Council on Education "Title III Quarterly Title III in Special Education." (January 1972).

The Project Coordinator has been requested to give a slide presentation and description of the program to two parent groups, two local business women's associations, four church-affiliated groups, four college classes, a school district in-service training program, a special education workshop from a local non-participating district, an Elementary Principals conference, and a PTA group. In addition, 19 individuals visited the project to learn about the program and see it in action.

Dissemination (Cont'd)

2. Of the visitors listed above, including the groups, 85 were from outside the project area.

3. There was no cost to the project for any of the dissemination other than the copies of the handbook mentioned above which cost roughly one dollar each to publish. Five hundred brochures describing the program were donated to the project.

4. There has been no cost of dissemination for all three years of the project.

EVALUATION

Choosing Participants

1. How were the children and the adults in the program chosen?
2. How was a comparison group (if any) chosen?
3. Were participants in the program involved in other programs?
4. How many participants left the program?
5. Which participants left?
6. Were participants added to the program to replace dropouts?
7. Were there many participants who did not receive the program often because of poor attendance?
8. Did participants attend voluntarily?
9. Was the evaluation group only a portion of the program group?

1. Classes were chosen for the program rather than children as individuals. Classes were selected from applications submitted by volunteers for the program. Applications were sent to all eligible classes. Classes were then chosen according to quotas established by the steering committee. These quotas determined representation for each district and type of class (EH, EMR, etc.) Within the districts classes were paired geographically to simplify transportation problems. Effort was made to include representation from all parts of the district.

2. Groups within the project served as comparison groups for other groups in the program. See item #11 under Activities or Services above.

3. Whether groups in this program were involved in other studies or not was not considered a factor in this project. It is unlikely, but possible that they were included in other programs. The project staff was not aware of any other studies involving these classes.

4. Some scheduled classes were unable to come for various reasons. One EH teacher died, one EH teacher was promoted to a new position, one EH teacher was in the hospital at her scheduled time, four EMR classes were closed out due to changes in state legislation. All these changes occurred too late to substitute other classes in their place. Four other EMR classes which were closed out occurred early enough for the replacing teachers to be trained, or teachers who had received training in previous years were able to fill in.

5. See above.

6. See above.

7. Teachers reported that generally the Zoo Project generated excellent attendance and improved punctuality - even during the flu epidemic. The project office did not keep records on attendance. One interesting side note might be that no class found it necessary to stay at school because of inclement weather.

8. We didn't take any teacher who did not volunteer. Parents of children in the classes signed permission slips allowing children to come to the In-Zoo program. No child refused to come.

9. See 2 above.

Describing Participants

1. Which participants received the program?
2. How many participants received the program?
3. What are the ages or grade levels of pupils in the program?
4. Did the program serve many more boys than girls, or vice versa?
5. What achievement scores were available before the program with which to describe the program group?
6. Are there other special characteristics you should mention in describing the program group?

1-2-3. All children in classes participating were included in the program. There were 870 children in the program this year. They covered children from pre-school through the elementary grades.

4. Classes were taken from established groups in the districts involved. The classes normally have many more boys than girls enroiled in them.

5. Achievement test scores were not obtained for participants in the Zoo Project.

6. No.

1. What measures were applied to find out whether the program's aims were achieved?
2. How were the measures matched to the objectives?
3. How were the measures matched to the pupils' capabilities?
4. Were observers specially trained?
5. How much time elapsed between testings?

1. The evaluator used a variety of measures for each project aim. These included measures of (1) increase in verbal productivity, (2) increase in linguistic attending, increase in situationally relevant and task relevant behavior. Measures varied according to the type of class (EMR, TMR, EH). Particular measures, along with means of collection and percentage goals for type of class are listed in detail in the evaluator's final report, attached (See Appendix A.)

2. The measures operationally define the program aims. Selection of the measures was based on (Importance to cognitive and affective growth in an educational setting, (2) Known susceptability to change in an educational setting, (3) Applicability to the classroom.

3. Measures used are not normative. They are behavioral indicators of competence. To some educators the measures used are signs of incompetences which signal diagnosticians to label certain children as educatable or trainable, bright or exceptionally bright. The mode of measuring occurrences of these behaviors, a portable tape recorder in a back pack was selected after much trial and error as most reliable and least subject to hawthorne effect.

4. Several observers were used. Training of all observers consisted of orientation to the measures and to the instrumentation. Inter observer reliability (.75 - .92) on nearly all measures indicate that training appreciably increases the agreement among them.

5. An average of slightly less than five weeks separated pre and post tests. Each participant whose in class performance was observed was selected randomly (blocking on classes). Each class was selected randomly (blocking on the two programs, in-Zoo and in-School program). Observations were made the week before the Zoo animal experiences and the week following the Zoo animal experiences.

Presenting Data

1. What data were obtained from the measures applied?
2. What measures of central tendency were used?
3. What measures of dispersion were used?
4. Include graphs and/or tables which present data more clearly.

1. Data obtained consisted of quantitative counts (Different Words Written and Oral, Quantity Words Written and Oral, Animal Words Written and Oral, Length of Response to Direct Questions), frequency or rate counts (Language Production, Words per Hour, Questions per Hour), qualitative judgements (Task Attentiveness, Picture Drawing -detail proportion, dimension, coordination, technique, movement, Verbal Relevency, Positive-Neg ative Contact), physical measures (Response Latency).

2. The intra-individual mean was obtained across daily pre and post test observations. Most performance criteria were in terms of percent increase. While this practice is endemic, it is also meaningless per se. A better way to express this data is in terms of magnitude and rate of change. Pre and post test Z-scores are compared across measur While this is not asked for, it is hardly a trivial addition. Scores are considered as derived from typical measures chosen from a population of measures.

3 Since changes are expressed in terms of percentages, the average (mean) change and distance from the average (standard deviation) for persons is used. Some Z-score differences across measures are also used to express "typical" performance.

4. The project Evaluator has presented all sections of the third procedural objective and the specific behavioral objectives signifying their achievement as a part of his final report. This report, including charts, is attached as Appendix A to this report.

Analyzing Data

1. What analyses were undertaken of the data?
2. What was the basis for judging the progress of the program group?
3. What comparisons were drawn for subsamples?
4. What evidence is there that those who attended more gained more from the program?

1. Data were analyzed in terms of their performance constituents (e.g., is the datum accurate, reliable, recordable, influenced by irrelevant factors, and so forth). Data consisted of several individual (randomly selected) response protocols tabulated and categorized, not standardized test data. Ordinary inferential statistics are not appropria to this data unless the performance tasks are considered as samples from a population.

2. Group progress is judged by whether or not the group met the objective as specified in the proposal. No inferential decision making system was used to estimate the achieve of goals since several of the specific performance goals were designed to measure the same general performance outcomes. Decisions about each specific performance may be additive and may not Therefore, whether or not a statistic is used, the resulting conclusions (deductions) are still an estimation.

3 By definition the EMR, TMR, EH and LD groups are, for purposes of this program, samples. These groups are divided into in-school and in-zoo programs. No further subsampling of measured characteristics was undertaken.

4. Attendance records were not made available for analysis.

Procedural Objectives and Findings

1. What were the procedural objectives of the program?
2. State the findings in ordinary language for each objective.
3. Indicate clearly success or failure for each objective.
4. Can the findings be generalized, or are they applicable only to the group served by the program?
5. What were the causative factors for unmet objectives?
6. What are the other important findings which were not anticipated?

1. The procedural objectives were (1) to produce a handbook that would contain activiti- lesson plans and teaching suggestions for using animals in teaching handicapped children (2) to train teachers so that by the end of the workshop all participants would indicate their ability by holding selected animals and plan eight or more activities to use with their classes in the Zoo Project, (3) Given eight or more periods of exposure to animals using materials and activities selected by the teacher, students were to show growth in language arts skills of the indicated percentage as measured by the specified project evaluation procedure.

2. (1) The Handbook was produced and distributed to all participants. Most of these used it and rated its utility between high and very high on all sections except the evaluation section which was rated high. Teachers rated all sections between appropriate a very appropriate except evaluation which was rated only moderatly appropriate. Approximately two thirds of the teachers shared their Handbooks with others. On an average, these teachers shared their Handbooks with about three other teachers. This indicates approximate dissemination of 200-300 teachers outside the project. The Handbook has been supplemented throughout the year, increasing its general utility.
(2) Teachers were asked to submit a list of activities they would use before during and after their animal experiences. Sixteen teachers did so. All met or exceeded the required eight or more activities. Most had nearly twice this number.
(3) The formal evaluation showed the following results:

-To increase verbal productivity

TMR -Growth in verbal productivity achieved but arbitrarily set percentage goals not reached on most measures.
EH -General increase in verbal productivity but arbitrarily set percentage goals not reached on most measures.
EMR -Showed most increase in verbal productivity. Many, but not all percentage goals achieved at least in part.

-To increase linguistic attending

TMR -Objectives not achieved
EH -Increase in linguistic attending. Arbitrarily set percentage goals achieved i attentional area but not in picture drawing.
EMR -Strong growth in linguistic attending. Percentage goals achieved in attention- areas but not in picture drawing.

-To increase situationally relevant and task relevant behavior

TMR -Data unreliable - No decision by evaluator
EH -Data unreliable - No decision by evaluator
EMR -Ratio of relevant behavior to irrelevant behavior improved by over 100 percent Percentage goals achieved.

For a more complete breakdown of measures for each procedural objective see the full Evaluator's report Appendix A.

4. All classes showed growth in all areas measured. EMR children showed the greatest growth The artificial arbitrarily set percentage goals were set too high. Comparing the formal evaluation with the midyear nonstatistical informal survey of teacher reaction we find some disagreement Teachers reported that language skills were greatly extended by the animal experiences Relevant behavior and attentioaal factors were very positivly changed according to the teachers.

5 All objectives were met, although the formal evaluation does not in all cases prove this. In some instances data was unreliable due to difficulty of judgemental decisions by observers, too many tasks required of observers, teachers not collecting data, reorganization of classes, dropping of some data gathering by the Evaluator. (See Evaluator's Report - Appendix A)

Project Objectives and Findings

1. What were the project objectives of the program?
2. State the findings in ordinary language for each objective.
3. Indicate clearly success or failure for each objective.
4. Can the findings be generalized, or are they applicable only to the group served by the program?
5. What were the causative factors for unmet objectives?..
6. What are the other important findings which were not anticipated?

1. The project objective is to improve language arts skills including reading, oral and written communication through the use of animals and other resources of the San Diego Zo as motivating devices Successful achievement of this objective is expressed in terms of increase in (1) Verbal Productivity, (2) Linguistic Attending, (3) Situationally Relevant and Task Relevant Behavior.

2. The findings of the formal project evaluation are shown in the Procedural Objectives section of this report and in the complete Evaluator's Report in Appendix A. They show improvement in areas of language skills measured, although arbitrarily set percenta goals in many instances were not reached. Teachers, when surveyed by the project staff in March indicated that language arts skills showed considerable growth at all levels of learning handicap as a result of the Zoo Project experience. These included: greater retention of writing and spelling vocabulary, greater interest in reading, research, signs, news, increase in general ability to converse and tell facts about experiences, better enthusiasm for writing sentences and stories, motivation for using library references and home resources.

3. Answered above. For detail for each measure see the Evaluator's report Appendix A

4. The formal findings of the evaluator might or might not be replicated by another simi'ar group The project staff is confident that the non-statistical findings could be duplicated anywhere, with or without a formal zoo, in handicapped or non handicapped populations. In addition see item six below.

5. The project objective of "increasing language arts skills including oral and written communication through the use of animals as motivation" was achieved. The arbitrarily set percentage goals were not reached on all measures. Perhaps they were set too high. Nevertheless measured growth occured in the three measurement areas of verbal productiv liguistic attending, and relevant behavior at all three levels of learning handicap.

6. The formal Evaluator reported no unanticipated factors in his formal findings. Th project staff in a midyear non-statistical survey of teachers' reactions to the project found a broad array of growth in language skills (discussed in item 2 above) plus some unexpected bonuses in behavioral growth. These included positive attitudinal growth, increased concentration and attentivness to the task, sharpened powers of observation, improved social interaction as demonstrated in personal relations, increased self image and confidence, increased sense of responsibility, improved attendance and punctuality, and general classroom behavior improvement which in some cases carried over after the animal experience.

EVALUATION

ZOO PROJECT FOR HANDICAPPED CHILDREN

1971-72

Submitted to:
SAN DIEGO UNIFIED SCHOOL DISTRICT

Submitted by:
EDUCATION EVALUATION CONSULTANTS

Measures for each program aim are listed after the aim and by the administrative category of people used (EMR, TMR, EH).

1. Measures Applied

TMR Activities

1. To increase verbal productivity

1.1 Words per hour
Totalling of number of words spoken by student over a period of one hour.
Counted from typed transcription.
Goal: Is the student increasing his amount of talking?
Student will speak 500 words per hour with a 40% increase in production.

1.2 Different words
A breakdown of the different words used by the student in order to determine the range and/or level of his vocabulary.
Counted from typed transcription.
Goal: Is the student's vocabulary increasing?
Student will use 225 different words with a 45% increase.

1.3 Quantity Words
The cardinal and ordinal numbers, words of quantity, of quantitative relations, and measure, and their relationship to each other.
Counted from typed transcription.
Goal: Are they used together, forming more complex ideas?
Student will use 5 quantity words with a 40% increase.

1.4 Animal Words
Different animal words when mentioned are recorded.
Counted from typed transcriptions.
Goal: Do the children talk more about animals after the animal experience?
Student will use 10 animal words with a 50% increase.

1.5 Language Production
Corrected number of words produced per hour; corrected for blanks in tape, etc.
Counted from typed transcription.
Goal: Is the language volume increasing?
Student will speak for four minutes of the total hour with an increase of 35%.

1.6 Length of response to direct questions
Number of words student uses in his answer to a direct question.
Counted from typed transcription.
Goal: Is the student able to elaborate on an answer rather than just give a yes or no?
Student will respond to direct questions with 6 words and an increase of 50%.

2. To increase linguistic attending

2.1 Questions per hour
How many questions does the student ask of his fellow students and his teacher?
Goal: Is the rate of curiosity increasing?
Student will ask 18 questions per hour with an increase of 35%.

2.2 Response latency
Amount of time which elapses between the teacher finishing a question and the commencement of the observed student's answer.
Goal: Does the student respond more readily?
Student will respond to direct questions within 2.0 seconds and show a 45% decrease in response time.

2.3 Task attentiveness
Charted on graph paper where the level of attentiveness is determined by the goal set in the classroom during each time period and the student's adherence to that goal.
Taken at 30 second intervals - graphed vertically for attentiveness and horizontally for inattentiveness.
Goal: Does student pay more attention to task being undertaken at that time in the classroom after the animal experience?
Student will be attentive to the assigned task of 65% of the time, with an increase of attentiveness of 50%.

2.4 Picture Drawing
Pictures will be scored by the degree of sophistication and attention to detail. By looking at the major anatomical features of each pet and judging them for the correct number, proper proportion of animal parts, increased credit coordination, shown by connection and completion of lines, special techniques such as shading, and the demonstration of movement, that is, does it look like it can move? Most important, is it recognizable as a "favorite pet"?
These criteria are tallied on a point basis only.
Goal: Are student's motor skills and conceptualization of animals improved?
Anatomical detail - student will increase the amount of detail in his drawing by 45%.
Proportion - Student will have 35% more of his drawing in proper proportion.
Dimension - Student will use three dimensions instead of two 35% of the time.

Motor Coordination - Student will show an increase in control of his drawing tool of 30%.
Technique - Student will use some sketching or modeling techniques 25% of the time.
Movement - Student will show in his drawing freedom of movement of the animal 20% of the time.

3. Increase situationally relevant and task relevant behavior

3.1 Response groups (verbal relevancy) Situationally-task relevant.

A categorizing of each section of transcription that are covering particular topics.

Goal: What relevance does each portion of the student's talking have with the task assigned for the class at that time? Is it task relevant, situationally relevant, situationally irrelevant, or circumstantially irrelevant.

Student will respond relevantly to the task in ratio to the situation with 1.5 as many situationally relevant responses as task relevant. This ratio is a decreasing ratio, showing an increase of situationally relevant responses during the post observation, with a decrease of 40%. Student will respond relevantly when comparing task and situationally relevant responses to situationally irrelevant and circumstantially irrelevant responses in an increasing ratio of one or two; that is the relevant responses increase; the rate of increase being 40%.

3.2 Gestures: Situationally-task relevant

Student will replace verbal productivity with task relevant gestures in a ratio of one to three compared to using situationally relevant gestures, showing a decrease of task relevant gestures use of 40%.

Students will replace verbal activity with task and situationally relevant gestures in a ratio of four to one compared to using situationally and circumstantially irrelevant gestures, showing an increase of task and situationally relevant gestures use of 50%.

EH Activities

1. To increase verbal productivity

1.1 Words per hour

Totalling of number of words spoken by student over a period of one hour.
Counted from typed transcription.
Goal: Is the student increasing his amount of talking. Student will speak 850 words per hour with a 50% increase in production.

1.2 Different words
A breakdown of the different words used by the student in order to determine the range and/or level of his vocabulary.
Counted from typed transcriptions.
Goal: Is the student's vocabulary increasing?
Student will use 380 different words with a 45% increase.

1.3 Quantity words
The cardinal and ordinal numbers, words of quantity, of quantitative relations, and measures. And their relationship to each other.
Counted from typed transcription.
Goal: Are they used together, forming more complex ideas?
Students will use ten quantity words with a 50% increase.

1.4 Animal words
Different animal words when mentioned are recorded.
Counted from typed transcription.
Goal: Is the language volume increasing?
Student will use 20 animal words with a 70% increase.

1.5 Language Production
Corrected number of words produced per hour; corrected for for blanks in tape, etc.
Counted from typed transcription.
Goal: Is the language volume increasing.
Student will speak for six minutes of the total hour with an increase of 50%.

1.6 Length of response to direct questions
Number of words student uses in his answer to a direct question.
Counted from typed transcription.
Goal: Is the student able to elaborate on an answer rather than just give a yes or no?
Student will respond to direct questions with eight words and an increase of 70%.

1.7 Creative writing productivity
The four measures; total words, different words, quantity words and animal words are taken from the daily transcriptions. The creative writing papers are written without prompting from the teacher by student on topic "My Favorite Pet."
Goal: Total words - student will use 100 words per paper with an increase of 50%.
Different words - student will use 40 words per paper with an increase of 50%.
Quantity words - student will use 5 quantity words with an increase of 45%.
Animal words - student will use 10 animal words with an increase of 60%.

2. To increase linguistic attending

2.1 Questions per hour

Totalling of number of questions asked by student over a period of one hour.

Goal: Is the number of questions asked by student increasing?
Students will ask 40 questions per hour with an increase of 50%.

2.2 Response latency

Amount of time which elapses between the teacher finishing a question and the commencement of the observed student's answer.

Goal: Does the student respond more readily?
Student will respond to direct questions within 1.0 seconds and show a 20% decrease in response time.

2.3 Picture drawing:

Pictures will be scored by the degree of sophistication and attention to detail. By looking at the major anatomical features of each pet and judging them for the correct number, proper proportion of animal parts, increased credit for three dimensional rather than flat drawings, motor coordination, shown by connection and completion of lines, special techniques such as shading, and the demonstration of movement, that is, does it look like it can move? Most important, is it recognizable as a "favorite pet"?
These criteria are tallied on a point basis only.

Goal: Is student's motor skills and conception of animals improved?
Anatomical detail - Student will increase the amount of detail in his drawing by 55%.
Proportion - Student will have 50% more of his drawing in proper proportion.
Dimension - Student will use three dimensions instead of two 40% of the time.
Motor coordination - Student will show an increase in control of his drawing tool of 40%.
Technique - Student will use sketching or modeling techniques 40% of the time.
Movement - Student will show in his drawing freedom of movement of the animal 30% of the time.

3. To increase Situationally Relevant and Task Relevant Behavior.

1. Book Diary

A record kept by all students in the EH classes only. Recording is made of all books read, how many pages are read each day, and new vocabulary words.

Goal: Is more "extra" reading available because the students are reading better?
Students will show an average of 3 books for extra reading, with a rate of 20 pages a week, and an increase of 40% in the number of pages per week.

2. Positive-Negative Contact
   A tabulation of each of the positive and negative methods of contact.
   Goal: At what level is the student interacting with his environment?
   Offers to tutor - Student will offer to tutor at a rate of four times a week, with an increase of 35%.
   Loaning - Student will loan materials at a rate of ten times a week with an increase of 35%.
   Request of tutoring - Student will follow through after a request of tutoring 65% of the time.
   Tutor on Own - Student will voluntarily tutor 45% of the time.
   Courtesy - Student will show courtesy 55% of the time.
   Hitting - Student will show a decrease of hitting of 50%.
   Biting - Student will show a decrease of biting of 70%.
   Kicking - Student will show a decrease of kicking of 60%.
   Tipping chairs - Student will show a decrease of tipping his chair of 50%.
   Threats - Students will show a decrease of making threats of 55%.

3. Reference Utilization
   The whole class is tabulated daily by how many times the students (any students) go and use a reference book on their own.
   Goal: Are the students motivated to use outside information on their own, without prompting from teacher?
   Students will use references on their own as a class at a rate of five times per observation with an increase of independent use of 45%.

EMR Activities

1. To increase verbal productivity
   1.1 Words per hour
   Totalling of number of words spoken by student over a period of one hour.
   Counted from typed transcription.
   Goal: Is the student increasing his amount of talking?
   Student will speak 600 words per hour with a 40% increase in production.

   1.2 Different words
   A breakdown of the different words used by the student in order to determine the range and/or level of his vocabulary.
   Counted from typed transcription.
   Goal: Is the student's vocabulary increasing?
   Student will use 275 different words - with a 45% increase.

1.3 Quantity words
The cardinal and ordinal numbers, words of quantity, of quantitative relations, and measure, and their relationship to each other.
Counted from typed transcription.
Goal: Are they used together, forming more complex ideas?
Student will use 7 quantity words with a 45% increase.

1.4 Animal words
Different animal words when mentioned are recorded.
Counted from typed transcription.
Goal: Do the children talk more about animals after the Zoo?
Student will use 15 animal words with a 60% increase.

1.5 Language Production
Corrected number of words produced per hour; corrected for blanks in tape, etc.
Counted from typed transcription.
Goal: Is the language volume increasing?
Student will speak for four minutes of the total hour with an increase of 40%.

1.6 Length of response to direct questions
Number of words student uses in his answer to a direct question.
Counted from typed transcription.
Goal: Is the student able to elaborate on an answer rather than just give a yes or no answer?
Student will respond to direct questions with 6 words and an increase of 50%.

1.7 Creative writing productivity
The four measures; total words, different words, quantity words and animal words are taken from the daily transcriptions. The creative writing papers are written without prompting from the teacher by student on topic "My favorite Pet".
Goal: Total words; 75 words per paper with a 50% increase.
Different words, 25 with an increase of 45%.
Quantity words; 4 with an increase of 40%.
Animal words; 6 with an increase of 50%.

2. To increase linguistic attending
2.1 Questions per hour
How many questions does the student ask of his fellow students and his teacher.
Goal: Is the rate of curiosity increasing?
Student will ask 35 questions per hour with an increase of 50%.

2.2 Response latency
Amount of time which elapses between the teacher

finishing a question and the commencement of the observed student's answer.

Goal: Does the student respond more readily.
Student will respond to direct questions within 2.0 seconds and show a 30% decrease in response time.

2.3 Task attentiveness

Charted on graph paper where the level of attentiveness is determined by the goal set in the classroom during each time period and the student's adherence to that goal. Taken at 30 second intervals - graphed vertically for attentiveness and horizontally for inattentiveness.

Goal: Does student pay more attention to task being undertaken at that time in the classroom after the zoo experience?
Student will be attentive to the assigned task 70% of the time, with an increase of attentiveness of 40%.

2.4 Picture drawing

Pictures will be scored by the degree of sophistication and attention to detail. By looking at the major anatomical features of each pet and judging them for the correct number, proper proportion of animal parts, motor coordination, shown by connection and completion of lines, special techniques such as shading, and the demonstration of movement, that is does it look like it can move? Most important, is it recognizable as a "favorite pet"?

Goal: Is student's motor skills and conceptualization of animals improved?

These criteria are tallied on a point basis only.

Anatomical detail - Student will increase the amount of detail in his drawing by 50%.

Proportion - Student will have 40% of his drawing in proper proportion.

Dimension - Student will use three dimensions instead of two 40% of the time.

Motor coordination - Student will show an increase of control of his drawing tool of 35%.

Technique - Student will use some sketching or modeling techniques 30% of the time.

Movement - Student will show in his drawing freedom of movement of the animal 25% of the time.

3. Increase situationally relevant and task relevant behavior.

3.1 Response groups (verbal relevancy)

Situationally-task relevant

A categorizing of each section of transcription that is covering particular topics.

Goal: What relevance does each portion of the student's talking have with the task assigned for the class at that time?
Is it task relevant, situationally relevant, situationally irrelevant, or circumstantially irrevelent.

2. Matching Measures to Objectives

The measures operationally define the program aims. For example the aim "to increase verbal productivity" is defined by the measures words per hour, different words, quantity words, animal words, language production and length of response to direct questions. Selection of these particular measures was on the following criteria:

1. Importance to cognitive and affective growth in an educational setting. (They are signs of change. Alternately they are the aims of educators.)
2. Known susceptability to change in an educational setting.
3. Applicability to the classroom.

Measurement of change in each of these measures in an educational setting did not require testing time apart from learning time.

3. Matching Pupil's Capabilities

Measures used are not normative. They are behavioral indicators of competence. To some educators the measures used are signs of incompetences which signal diagnosticians to label certain children as educatable or trainable, bright or exceptionally bright.

The mode of measuring occurrences of these behaviors, a portable tape recorder in a back pack, was selected after much trial and error as most reliable and least subject to hawthorne effect.

4. Observer Training

Several observers were used. Training of all observers consisted of orientation to the measures and to the instrumentation. Inter observer reliability (.75 - .92) on nearly all measures indicate that training appreciably increases the agreement among them.

5. Pre-test -- Post-test Time Lapse

An average of slightly less than five weeks separated pre and post tests. Each participant whose in class performance was observed was selected randomly (blocking on classes). Each class was selected randomly (blocking on the two programs, in zoo and in school program). Observations were made the week before the zoo animal experiences and the week following the zoo animal experiences.

DATA PRESENTATION

1. Data Obtained

Data obtained consisted of quantitative counts, frequency counts, qualitative judgments, and physical measures:

I. Quantitative Counts

Different Words Written and Oral
Quantity Words Written and Oral
Animal Words Written and Oral
Length of Response to Direct Questions

II. Frequency or Rate Counts

Language Production
Words per Hour
Questions per Hour

III. Qualitative Judgments

Task Attentiveness
Picture Drawing - detail, proportion, dimension, coordination, technique, movement
Verbal Relevency
Positive-Negative Contact

IV. Physical Measures

Response Latency

2. Measures of Central Tendency

The intra-individual mean was obtained across daily pre and post test observations. Most performance criteria were in terms of percent increase. While this practice is endemic, it is also meaningless *per se*. A better way to express this data is in terms of magnitude and rate of change.

Pre and post test Z-scores are compared across measures. While this is not asked for, it is hardly a trivial addition. Scores are considered as derived from typical measures chosen from a population of measures. Note especially:

William Stephenson, The Study of Behavior.
Chicago: University of Chicago Press, 1953.
Chapter IV, "Samples and Their Structure." Pp. 62-85.

3. Measures of Dispersion

Since changes are expressed in terms of percentages, the average (mean) change and distance from the average (standard deviation) for persons is used. Some Z-score differences across measures are also used to express "typical" performance.

4. Graphic Presentation

All sections of the third procedural objective and the specific behavioral objectives signifying their achievement are listed in the order they appear in the proposal with the exact results for each pupil group and with the decision whether or not the specific performance objective had been met. These charts are reported as findings under the procedural objective section of the report.

Results of procedural objective two appear in summary chart form in the procedural objective section of the report.

1. Data Analysis

Data were analyzed in terms of their performance constituents (e.g., is the datum accurate, reliable, recordable, influenced by irrelevant factors, and so forth). Data consisted of several individual (randomly selected) response protocols tabulated and categorized, not standardized test data. Ordinary inferential statistics are not appropriate to this data unless the performance tasks are considered as samples from a population.

2. Group Progress

Group progress is judged by whether or not the group met the objective as specified in the proposal. No inferential decision making system was used to estimate the achievement of goals since several of the specific performance goals were designed to measure the same general performance outcomes. For example: linguistic attending was measured by questions per hour, response latency and picture drawing (a picture being considered as a communication), and verbal productivity was measured by words per hour, different words, quantity words, animal words, language production, and so forth. Decisions about each specific performance may be additive and may not. Therefore, whether or not a statistic is used, the resulting conclusions (deductions) are still an estimation.

3. Subsample Comparisons

By definition the EMR, TMR, EH and LD groups are, for purposes of this program, samples. These groups are divided into in-school and in-zoo programs. No further subsampling of pupils was undertaken. No further subsampling of measured characteristics was undertaken (note answer to question #2 of this section).

4. Attendance and Program Gain

Attendance records were not made available for analysis.

PROCEDURAL OBJECTIVES AND FINDINGS

1. Procedural Objectives

The procedural objectives were to produce a handbook that would contain activities, lesson plans, and teaching suggestions for using animals in teaching handicapped children. Teaching suggestions were to include language, mathematics, music, art, reading, geography and science activities.

By the end of the teacher training workshop in the fall of 1971, all participants were to hold selected animals and to select and plan eight or more activities to use with their classes in the Zoo Project.

Given eight or more periods of exposure to animals using materials and activities selected by the teacher, students were to show change of the indicated percentage as measured by the specified project evaluation procedure:

2. Findings

A. The Handbook

The Handbook was produced and distributed to nearly all of the participants. Most of those receiving the Handbook used it and rated its utility between high and very high on all sections except the evaluation which was rated high. Teachers rated all sections between appropriate and very appropriate except evaluation which was rated only moderately appropriate.

Approximately two thirds of the teachers shared their Handbooks with others. On an average, these teachers shared their Handbooks with about three other teachers. This indicates an approximate dissemination of 200-300 teachers outside the project.

The Project Director has incorporated many new activities into the Handbook increasing its general utility.

B. The Workshop

Teachers were asked to submit a list of activities they would use before during and after their zoo visit. Sixteen teachers did so. All met or exceeded the required eight or more activities. Most had nearly twice this number.

C. Student Findings

Student findings are listed in the order the objectives appear in the proposal on the following charts:

HANDBOOK FOR ZOO ANIMAL EXPERIENCES
IN SCHOOL PROGRAM

Percentage Used Section

	N	Received Handbook	Section I	Section II	Section III	Section IV
LD	2	1.00	.50	.50	1.00	1.00
EH	7	.86	.71	.86	1.00	.57
EMR	4	.75	.50	1.00	1.00	1.00
TMR	0	--	--	--	--	--

Mean Rated Utility of Section *

	Evaluation	Teaching Suggestions	School Activity Sheets	Zoo Activity Sheets
LD	1.	1.	1.	1.
EH	2.	2.	1.3	2.3
EMR	2.3	2.3	1.	1.8
TMR	--	--	--	--

Mean Rated Appropriateness of Section **

	Evaluation	Teaching Suggestions	School Activity Sheets	Zoo Activity Sheets
LD	1.	1.	1.5	1.5
EH	1.8	1.7	1.9	1.3
EMR	3.	1.5	1.	1.2
TMR	--	--	--	--

	Shared with Others	Average No. Sharing	% Using Binder
LD	100	1.5	50%
EH	71	4.6	100
EMR	75	3.3	100
TMR			

* 5 point scale 1 = highest utility
** 5 point scale 1 = most appropriate

Appropriate for In School Program

HANDBOOK FOR ZOO ANIMAL EXPERIENCES
IN ZOO PROGRAM

Percentage Used Section

		Received Handbook	Section I	Section II	Section III	Section IV
LD	3	67	1.00	.67	.33	1.00
EH	4	75	1.00	1.00	1.00	1.00
EMR	7	100	.85	1.00	.85	1.00
TMR	1	100	1.00	1.00	0	0

Mean Rated Utility of Section *

	Evaluation	Teaching Suggestions	School Activity Sheets	Zoo Activity Sheets
LD	2.	.67	.67	2
EH	2.8	2.3	2.5	1.8
EMR	1.6	1.1	1.3	1.
TMR	1.	1.	--	--

Mean Rated Appropriateness of Section **

	Evaluation	Teaching Suggestions	School Activity Sheets	Zoo Activity Sheets
LD	1.67	.67	.33	2.
EH	1.7	1.7	1.7	1.7
EMR	2.3	2.3	1.6	1.7
TMR	1.	1.	--	--

	Shared with Others	Average No. Sharing	% Using Binder
LD	.67	3.5	100%
EH	.33	1.	100
EMR	.71	3.6	100
TMR	1.00	2.	100

* 4 point scale 1 = highest utility
** 5 point scale 1 = most appropriate

Appropriate for In-Zoo Program

In School — THE INTERMEDIATE OBJECTIVES MEETING PROCEDURAL OBJECTIVE THREE

GOAL N=4	OUTCOME	DECISION
1.0 To Increase Verbal Productivity		
1.1 Speaks 500 words per hr. with 45% increase	Speaks 671 words per hour with 45% increase	Objective achieved.
1.2 Use 225 different words with a 45% increase	Uses 137 different words with 12% increase	Objective not achieved.
1.3 Use 5 quantity words with a 40% increase	Uses 13 quantity words with a decrease of 2.5 words	Objective partially met.
1.4 Use 10 animal words with a 50% increase	Uses 1.25 animal words with 36% decrease	Objective not achieved.
1.5 Speaks 4 minutes per hour with 35% increase	Speaks 44 minutes per hour with a 30% increase	Objective partially met.
1.6 Responds to direct questions with 6 words and a 50% increase	Responds to direct question with 2.7 words and a 68.8% increase	Objective partially met.

In school [illegible] PERFORMANCE OBJECTIVES MEETING PROGRAMMED OBJECTIVE CRITERIA

GOAL	OUTCOME	DECISION
2.0 To increase linguistic attending		
2.1 Asks 18 questions per hour with a 35% increase	Asks 8 questions per hour with a 3% increase	Objective not achieved
2.2 Responds to direct questions within 2 seconds and shows a 45% in response time	Responds to direct question within 2.2 seconds with a 48% decrease in response time.	Objective partly achieved
2.3 Attends to assigned tasks 65% of time with an increased attentiveness of 50%	Attends to task 100% of time with no increase (limited sample of data)	Objective possibly met
2.4 Draws pictures	Pictures not scored: Criteria could not be met in obtained protocols.	Unknown
3.0 Increases situationally and task relevant behaviors	data unreliable	Unknown

PRE-LD PERFORMANCE OBJECTIVES MEETING OBJECTIVE TYPE?

GOAL N=20	OUTCOME: a) School b) Zoo	DECISION
1.0 To Increase Verbal Productivity		
1.1 Speaks 850 words per hr. with 50% increase	a) Speaks 358 words per hour with 3% increase	Objective not achieved.
	b) Speaks 830 words per hour with 9% decrease	Objective achieved in part.
1.2 Uses 380 different words with 45% increase	a) Uses 165 different words with 16% increase	Objective not achieved.
	b) Uses 304 different words with 5% decrease	Objective not achieved.
1.3 Uses 10 quantity words with 50% increase	a) Uses 21 quantity words with 26% decrease	Objective achieved in part.
	b) Uses 76 quantity words with 30% decrease	Objective achieved in part.
	*a) Uses 12 different quantity words with 12% decrease	
	*b) Uses 28 different quantity words with 21% decrease	
1.4 Uses 20 animal words with 70% increase	a) Uses 6 animal words with 68% increase	Objective not achieved.
	b) Uses 12 animal words with 37% increase	Objective not achieved.
	*a) Uses 3.6 different animal words with 34% increase	
	*b) Uses 5.3 different animal words with 9% decrease	
1.5 Speaks 6 minutes with 50% increase	a) Speaks 2.6 minutes with 20% increase	Objective not achieved.
	b) Speaks 6.3 minutes with 8% increase	Objective achieved in part.
1.6 Responds to direct questions with 7 words and 70% increase	a) Responds to direct questions with 2.03 words and 48% decrease	Objective not achieved.
	b) Responds to direct questions with 5.16 words and 6% increase	Objective not achieved.

GOAL N=20	OUTCOME a) School b) Zoo	DECISION
1.7 Writes		
Uses 100 words per paper with an increase of 50%	a) Uses 36 words per paper with 2% increase	Objective not achieved.
	b) Uses 39 words per paper with 1% increase	Objective not achieved.
Uses 40 different words per paper with an increase of 50%	a) Uses 24 different words per paper with 21% increase	Objective not achieved.
	b) Uses 27 different words per paper with 14% increase	Objective not achieved.
Uses 5 quantity words with an increase of 45%	a) Uses 1.6 quantity words with no change	Objective not achieved.
	b) Uses 1.7 quantity words with 56% increase	Objective achieved in part.
	*a) Uses 1.2 different quantity words with 17% decrease	
	*b) Uses 1.4 different quantity words with 69% increase	
Uses 10 animal words with an increase of 60%	a) Uses 4.5 animal words with 18% increase	Objective not achieved.
	b) Uses 4.6 animal words with 5% decrease	Objective not achieved.

*Additional data not required by proposal

PH-LD PERFORMANCE OBJECTIVES MEETING OBJECTIVE THREE

GOAL N=20	OUTCOME a) School b) Zoo	DECISION
2.0 To Increase Linguistic Attending		
2.1 Asks 40 questions per hour with 50% increase	a) Asks 9.8 questions per hour with 100% increase b) Asks 19.4 questions per hour with 4% increase	Objective achieved in part. Objective not achieved.
2.2 Responds to direct question within 1.0 seconds with a 20% decrease in response time	a) Responds to direct questions within .48 seconds with 56% decrease in response time b) Responds to direct questions within .78 seconds with 21% decrease in response time	Objective achieved. Objective achieved in part.
2.3 Draws picture to demonstrate increased motor skill		
Increases detail in drawings by 55%	a) Increases detail in drawings by 5% b) Increases detail in drawirgs by 5%	Objective not achieved. Objective not achieved.
Increases portion of drawing in proportion by 50%	Data not reliable	No decision.
Uses 3 dimensions instead of 2 40% of time	a) Uses 3 dimensions instead of 2 14% of time b) Uses 3 dimensions instead of 2 50% of time	Objective not achieved. Objective achieved.
Increases control of drawing tool by 40%	Data not reliable	No decision.

EH-LD PERFORMANCE OBJECTIVES MEETING OBJECTIVE THREE

GOAL N=20	OUTCOME a) School b) Zoo	DECISION
Uses sketching or modeling techniques 40% of time	Data not reliable	No decision
Shows his freedom of movement by drawing 30% of time	Data not reliable	No decision

EH-LD PERFORMANCE OBJECTIVES MEETING OBJECTIVE THREE

GOAL N=20	OUTCOME a) School b) Zoo	DECISION
3.0 To Increase Situationally Relevant and Task Relevant Behavior.		
3.1 Averages three books for extra reading with a rate of 20 pages per week and an increase of 40% in number of pages read per week	Data not reliable	No decision.
3.2 Positive-Negative Contact		
Offers to tutor four times per week with an increase of 35%	Data not reliable	No decision.
Loans materials at a rate of ten times a week with an increase of 35%	Data not reliable	No decision.
Follows through after request for tutoring 65% of the time	Data not reliable	No decision.
Voluntarily tutors 45% of the time	Data not reliable	No decision.
Shows courtesy 55% of the time	Data not reliable	No decision.
Shows a 50% decrease of hitting	Data not reliable	No decision.
Shows a 70% decrease of biting	Data not reliable	No decision.

LH-LD PERFORMANCE OBJECTIVES MEETING OPERATIVE CRITERIA

GOAL N=20	OUTCOME a) School b) Zoo	DECISION
3.2 Continued Shows a 60% decrease of kicking	Data not reliable	No decision.
Shows a 50% decrease of tipping his chair	Data not reliable	No decision.
Shows a 55% decrease of threat-making	Data not reliable	No decision.
3.3 Reference Utilization Uses references on their own as a class at a rate of five times per observation with an increase of independent use of 45%	Data not reliable	No decision.

EMR PERFORMANCE OBJECTIVES MEETING OBJECTIVE THREE

GOAL	OUTCOME a) School b) Zoo	DECISION
1.0 To Increase Verbal Productivity		
1.1 Speaks 680 words per hour with a 40% increase in production	a) Speaks 807 words per hour with an 8% increase b) Speaks 792 words per hour with an 85% increase	Objective achieved in part. Objective achieved.
1.2 Uses 275 different words with a 45% increase	a) Uses 254 different words with a 1% increase b) Uses 242 different words with a 49% increase	Objective not achieved. Objective achieved in part.
1.3 Uses 7 quantity words with a 45% increase	a) Uses 151 quantity words with a 36% increase b) Uses 44 quantity words with a 271% increase *b) Uses 13 different quantity words with a 43% increase	Objective achieved in part. Objective achieved.
1.4 Uses 15 animal words with a 60% increase	a) Uses 33 animal words with a 27% decrease b) Uses 9 animal words with a 5% increase *b) Uses 5.2 different animal words with 15% increase	Objective achieved in part. Objective not achieved.
1.5 Speaks four minutes per hour with a 40% increase	a) Speaks 5.88 minutes per hour with a 22% increase b) Speaks 5.55 minutes per hour with a 35% increase	Objective achieved in part. Objective achieved in part.
1.6 Responds to direct questions with six words and an increase of 50%	a) Responds to direct questions with 3.5 words and an increase of 30% b) Responds to direct questions with 4.3 words and an increase of 27%	Objective not achieved. Objective not achieved.

*Additional data not required by proposal

GOAL	OUTCOME a) School b) Zoo	DECISION
1.7 Writes Creatively		
Writes 75 words per paper with a 50% increase	a) Writes 36 words per paper with a 10% increase b) Writes 35 words per paper with a 5% increase	Objective not achieved. Objective not achieved.
Uses 25 different words with a 45% increase	a) Uses 23 different words with a 12% increase b) Uses 24 different words with a 5% increase	Objective not achieved. Objective not achieved.
Uses 4 quantity words with a 40% increase	a) Uses 1.7 quantity words with a 73% increase b) Uses 1.3 quantity words with a 19% decrease.	Objective achieved in part. Objective not achieved.
Uses 6 animal words with a 50% increase	a) Uses 4.6 animal words with a 2% decrease b) Uses 2.5 animal words with an 18% increase	Objective not achieved. Objective not achieved.
2.0 To Increase Linguistic Attending		
2.1 Asks 35 questions per hour with an increase of 50%	a) Asks 17 questions per hour with a 104% increase b) Asks 29 questions per hour with a 147% increase	Objective achieved in part. Objective achieved in part.
2.2 Responds to direct questions within 2.0 seconds and shows a 30% decrease in response time	a) Responds to direct questions within .7 seconds and shows a 39% decrease in response time	Objective achieved.

EMR PERFORMANCE OBJECTIVES MEETING OBJECTIVE THREE

GOAL	OUTCOME a) School b) Zoo	DECISION
2.2 Continued	b) Responds to direct questions within 1.03 seconds and shows a 12% decrease in response time	Objective achieved in part.
2.3 Attends to assigned task 70% of the time with a 40% increase	a) Attends to assigned task 80% of the time with a 6% decrease b) Attends to assigned task 83% of the time with a 19% increase	Objective achieved in part. Objective achieved in part.
2.3 Draws a wild animal		
Increases detail in drawing by 50%	a) Decreases detail in drawing by 1% b) Decreases detail in drawing by 2%	Objective not achieved. Objective not achieved.
40% of drawing in proper perspective	a) 10% of drawing in proper perspective b) 10% of drawing in proper perspective	Objective not achieved. Objective not achieved.
Uses three dimensions 40% of the time	Data not reliable	No decision.
Increases control of drawing tool 35% of the time	Data not reliable	No decision.
Sketches or models 30% of the time	Data not reliable	No decision.
Shows freedom of movement by animal drawing 25% of the time	Data not reliable	No decision.

EMR PERFORMANCE OBJECTIVES MEETING OBJECTIVE THREE

GOAL	OUTCOME a) School b) Zoo	DECISION
3.0 Increases Situationally and Task Relevant Behavior		
3.1 Decreases situationally relevant behavior by 45%	Decreases situationally relevant behaviors by 108% (combined)*	Objective achieved (combined)
3.2 Increases relevant responses by 50%	Increases relevant responses by 133% (combined)*	Objective achieved (combined)

*Data insufficient on either In-Zoo or In-School programs by themselves

4. Generalization of Results

Results this year are not unlike those of previous years. The question is, what is generalizable? The activities of the program are not consistent from class to class visiting the zoo. The controlling factor is the zoo visit. But the zoo visit conditions have not been operationalized. In so far as the pre-, during-, and post-zoo activities are a typical sample of activities to be done with EMR, TMR, EH, and LD youngsters with the zoo, it is likely that these activities do affect the educability of these children generally. All sub-measures do not show this and all sub-measures do not show this equally clearly. Also, it is not known how long-term are these effects. However, these are real and important behavioral changes relatively consistent from year to year, not artifacts of testing situations whose validity rests on some rather remote inferences about criteria they represent. No objections can be raised either about artificial prompts necessary to elicit responses or about representativeness of the test situation. These test circumstances are the material learning conditions of the pupils. The measures selected are in general those necessary to cope with education and society.

5. Unmet Objectives - Causative Factors

All objectives were at least met in part. Some of the performances signifying objective three had been met and which had been specified explicitly by teachers were not in fact the subject of data keeping by the teachers identifying them --- notably those measuring consumption of reading materials.

In some instances data was too unreliable for inclusion (noted in result sections). The decision not to include some data was based on infrequent occurance of the phenomenon and problems of data gathering leading to infrequent recording of phenomenon.

In some instances data was not collected. The decision to omit some data gathering of some phenomena was an arbitrary choice of the evaluator. He was dissatisfied with the probable pay-off and so discontinued the process unilaterally. In others, the choice was the teachers'. They unilaterally decided not to gather data. Who can say that these were more, less, or equally typical measures of the objectives than those phenomena about which information was gathered. In part, too many tasks were required of the in-class observer. Situationally-Task relevant behaviors are not easily agreed upon. It appears now that some observers do not want to categorize behaviors in this way.

PROJECT OBJECTIVES AND FINDINGS

1. The project objective is to improve language arts skills including reading, oral and written communication through the use of animals and other resources of the San Diego Zoo as motivating devices.

   Successful achievement of this objective is expressed in terms of increase in:

   1. Verbal Productivity
   2. Linguistic Attending
   3. Situationally Relevant and Task Relevant Behavior

2. Results are those reported for the third of three procedural objectives of this project. Note Findings under Procedural Objectives section.

3. Program Success

   Whether any program is a success or failure is an inference (conclusion) presumably resting on substantial data and a process for deriving inference from data. Before such a conclusion can be drawn, a clear criterion or model for any possible conclusion must exist. That is, the data generated to explore each pupil performance is not sufficient to warrant any conclusions per se about any program.

   Better you should decide what you will accept as a minimum standard for success for a specified performance based set of measures. This decision might best be made at the time the program is funded.

   The evaluators see both program successes and failures. If the question is, are kids probably better off in a way important to their lives especially in their educability skills and capacity for self improvement, then they are, to some extent, apparently better off as a result of the program as seen through the perspective of three years of data gathering.

   The measures used in this program are more like ultimate than intermediate criteria for success. Thus increased language flow (words, different words, animal words, quantity words) as fairly carefully sampled in this project, probably is important, especially to EMR students amongst whom decrements in language development is a sign of their behavioral deficiency.

   Goals as stated in percentages and absolute numbers for this project were arbitrarily set. Too little is known even now of children's language in an educational setting for realistic expectations. However, goal statements of this project are unusually clear for the most part, clearer and more removed from the immediate activities of the project.

4. Generalizations about the Program

Doubtless, similar results over several years make conclusions about the program more reliable. One caution, however. Generalizations are only as powerful as the program definition underlying them. The more clearly are tasks seen as related to goals and task and goal statements made operational, the more important and reputable are generalizations about the program. The clearer the tasks and goals, the more powerful the program to effect change in a district. This is a fundamental condition of social science. All programs should be replicable. The conditions under which they might be replicable should be stated in advance and taken by the evaluators as directives for determining evaluation goals, measures, and data handling methods.

It seems likely that this program is powerful enough to replicate itself year after year with similar groups under similar conditions. Some language changes have been recurrent over the past three years, notably language production.

5. Unmet Objectives and Causative Factors

It is not fully known whether the third criterion for project success was met due to measurement failure. Some measures of productivity also were not taken. Therefore, in part, the first criterion is not fully explicated.

Specific measures which were signs that the three criteria had been met were not taught by the teachers (no one intended they should). Many teaching activities as listed in the proposal and Handbook seem not to be related to the project goal which is to improve language arts skills, however.

6. Important Findings Not Anticipated

None.