Presented is an evaluation of a program in seven schools in New York City which provided 19 special classes for 174 doubly handicapped students—mentally retarded and severely physically handicapped—ranging in age from 5 to 21 years old. Among findings listed are that the 30 higher functioning Ss who were given the Wide Range Achievement Test did not achieve significant increases in reading and math, and that pre-reading readiness was significantly increased. Among recommendations discussed are that development of a corps of health aides to feed, toilet, and care for the severely handicapped would increase program effectiveness; that improved seating arrangements are needed; that extension of staff-parent interactions to include a behavioral psychologist would be helpful; and that physical facilities should be upgraded. (IM)
Program for Doubly Handicapped Children
School Year 1974 - 1975

Leonard Silverstein, Ph.D.

An evaluation of a New York City School District educational project funded under Title I of the Elementary and Secondary Education Act of 1965 (PL 89-10) performed for the Board of Education of the City of New York for the 1974-1975 school year.

Dr. Anthony J. Polomemi, Director
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Chapter I: THE PROGRAM

The classes for the doubly handicapped serve a population which is mentally retarded (low trainable to moderate retardation) and severely physically handicapped (cerebral palsy, muscular dystrophy, cardiac conditions, hydrocephalia, sickle cell anemia, spina bifida, tuberous sclerosis, and visual, speech and hearing deficits). Pupils range in age from five to twenty-one. One-third require wheel chairs. There were 174 students in nineteen classes, housed in seven schools located in each of the boroughs of New York City. These schools have provided special ramps, access for wheel chairs, and support rails for classrooms, bathrooms and corridors.

Those students in attendance from 9/30/74 to 5/30/75 were assessed in pre-reading, reading and math. The Inventory of Readiness Skills (IRS) determined the readiness of the non-reading pupil. Higher level students were assessed in reading and math with the Wide Range Achievement Test (WRAT).

Criteria for admission to the program were those who had never attended school although age eligible, children in private hospitals or schools, on home instruction and children whose school placement was inappropriate because of health related reasons. Although admissions standards describe children with a double handicap (IQ under 75 and a physical handicap) all of the pupils were, in fact, multiply disabled. Severe impairment of one or more sensory-motor channels was readily observable and therefore a single medical-educational
tional diagnosis does not reflect the actual extent of the deficit. For the severely handicapped, large amounts of custodial care and other supportive services are necessary to maintain the child in the school situation.

Educational project objectives included individual tutoring, small group instruction and prescriptive teaching methods using a team approach. Class size varied from six to thirteen. Depending on the degree of physical involvement the program was also required to meet the intellectual and physical needs of the child. The children were two or more years retarded in reading and math as determined by standardized tests. Inability to perform on one of these instruments, however, did not prevent acceptance into the program. In the final analysis, the main criteria was the humane consideration, "Could the handicapped child benefit from the program?" The program operated from 9/1/74 to 6/30/75.

Chapter II: EVALUATIVE PROCEDURES

The evaluation objectives, instruments and method of data treatment in the evaluation design were as follows:

1. As a result of participation in the Doubly-Handicapped program the reading grade of students who are able to read will show a statistically significant difference between the real post-test scores and the anticipated test scores as measured by the Wide Range Achievement Test (WRAT).

2. As a result of participation in the program, the prereading readiness of non-reading students will show a statistically significant difference between the pre and the post test score as measured by the Inventory of Readiness Skills Test (IRS).
3. To determine the extent to which the program as actually carried out, coincided with the program as described in the project proposal.

The response to this portion of the evaluation component required the following:

A. The psychologists' time should be spent in providing diagnostic information to teachers regarding attainable educational goals.

B. Increased use of family worker para-professionals in medical aspects of the program.

C. The resource teachers' role will be to provide remediation in reading and mathematics to individuals, small groups and participate as team members in close support of other disciplines.

D. Expansion of program in areas of greatest need.

E. Limit enrollment of classes of younger age to eight students and older more mobile age groups to ten students.

F. Expansion of one elementary school program by one hour.

G. Revise evaluation procedures to place more emphasis on individual goals and how attained, rather than on group standardized testing.

The evaluation procedure for the first two goals was clearly set forth in the design. However, the analysis of the extent the third goal and the sub goals in the program proposal were met was not explicitly defined. The program as actually carried out required the adoption of a model that would obtain with the most objective measures available. To this purpose an evaluation model was developed to ascertain whether
meaningful programmatic improvements in pre-reading, reading and math skills were provided. Basically there were four dimensions or categories of measures that appeared to estimate program worthiness. The first type enumerates the resources used by the program (effort). Effort is a statement of fact about the amount and kinds of program activities used to reach program objectives. It refers to changes in curriculum, individualization of teaching, multi-media and modality, and allocation of staff time.

The second type of measure estimates effectiveness by how well the objectives of the program were met. Also a statement about how well program individualization functioned to meet program objectives. Has the program changed functional behaviors of pupils or academic performance? Have pupils been rehabilitated sufficiently to function in CRMD or other suitable programs? In other words, how has the program changed pupils behavior or performance?

The third type of variable is that which related to program efficiency. Efficiency is a rate that is produced when effort (staff time, ancillary services, and program expenditures) is compared to program output. Can the same program output be achieved by reducing the effort or by choosing less costly alternatives, or by emphasizing other actions?

Quality is the fourth type of variable measured by the methodology chosen herein. It is a judgmental statement made about professional competence, based on level of training.
and acceptability of services. It answers the questions of "How well did you do what you did?" or "How well did you use the knowledge you had?"

Many of the terms which are frequently used when referring to program evaluation are specific methodologies or mathematical techniques used in estimating program implementation. For example statistics such as frequency distributions, pre-post test scores and improvements in functional self-help skills would be ascertained. Finally, in the course of evaluation, the data which suggests new methods of attacking problems of the Doubly/Multiply Handicapped will be presented.

Chapter III: FINDINGS

Many of the students in the program were previously homebound, hospitalized or otherwise suffering from debilitative disease. Therefore, prior to participation in this program the years of schooling were zero or unknown. Consequently, the use of historical regression analysis was inappropriate, since the assumption that a school years worth of progress would be made in a year was completely unfounded. Instead a pre-post test for related measures was used. With regard to objective one, students measured on the reading and math subtests of the WRAT obtained no significant difference in performance. However, a small upward mean increase of two to four months was noted, although not statistically significant.

Measures for twelve students were obtained for the WRAT after having previously obtained IRS scores of 85 or above.
In many ways this represents a change in the quality of the child's response. This finding may be an indication of even more progress than was attributed to the IRS alone because of the "ceiling effect" when using standardized instruments. The size of the sample and the few teachers involved makes it difficult to assess the 85 criterion score (IRS) as a criteria for passing on to the WRAT, or more difficult prescriptive teaching demands.

For objective number two, there was a statistically significant difference for pupils measured on the IRS (df=100, t=8.449, p<.001), at the beginning and end of the program. The program has provided significant increases in pre-reading readiness in 77% of the children tested.

Students whose performance decreased at the end of the school year based on the standardized tests used in the evaluation were analyzed using medical diagnosis as a criteria for predicting the decrease. No significant relationship between lowered score and chronic debilitative disease was found. The subjective report of the staff regarding the degree of impairment of either input or output of information was more reliable as a predictor of performance.

The determination of the extent to which the program coincides with the description in the proposal was the third objective of the evaluation. As part of this effort, the total program, service delivery, curriculum development, cross reference to other programs, in-service training, special programs, community relations, feedback development and physical facilities
were evaluated. A discrepancy analysis was provided where it applied. The remaining findings concern the program as actually implemented.

I. Total Program

a) Effort

1. Annual no. of children served.................. 174

b) Effectiveness

1. Transferred to other programs.................. 17
2. Absent or ill.................................. 6
3. In hospital.................................... 4
4. Late registration................................. 4
5. Untestable....................................... 12
6. Pre-Post Test (WRAT)............................. 30
7. Pre-Post Test (IRS)............................... 100

   Total............................................. 174

c) Efficiency

   Total personnel services........................ $ 276,071.00
1. Cost per pupil for personnel only............. 1,586.61

   Total project cost
   (including supplies and materials)............. 315,232.90
2. Total cost per pupil per-annum................ 1,811.68

d) Quality

   Adherence to regulation...

   All children selected for the program meet the criteria of severe physical handicap (written medical opinion) and psychological evaluation within three years of admission to program (IQ below 75).
e) Discrepancy analysis

Program proposal calls for 300 students. There were 73 students screened and approved and 94 students needing additional data at the end of the school year. Possible total additions for next year's program is 167.

II. Service Delivery (Psycho-Social Unit)

a) Effort

(1) Psychologist (1) Social Worker
(1) Guidance Counselor @ $20,000 each ...$60,000.00
(3) Family Assistants ...................... 15,568.00
Total Cost ................ $75,568.00

b) Effectiveness

Total individual prescriptions ......................... 131
Total of families in therapy .......................... 174
Total therapy in cross referenced programs ........... 110
All individual and family services ............ 415

c) Efficiency

Total cost of therapies per annum ................... $182.09

d) Quality

All psycho-social personnel were highly qualified, a Ph.D in psychology, MSW in social work and M.S. in guidance. Two of the three family assistants held B.S degrees, while the third was a college senior.

III. Service Delivery (Special Education Unit)

a) Effort

Three teachers for small groups and individual instruction in reading and math. In addition, they prepared materials for classroom teachers, in support of on-going programs .......... $48,000

Three teachers for pre-language, speech and feeding therapy. Also provided demonstration lessons, to serve the
pre-reading and pre-math student population. Skills taught were those prerequisites necessary for cognitive learning.

$48,000,000

Total 6 Teachers $16,000 each $96,000.00

b) Effectiveness

Annual no. receiving individual remediation 174
(reading and math)
Annual number receiving some language training
Total 140 314

c) Efficiency

Total Cost...$96,000,000/Total Contacts...314
Annual average cost per contact $305.73

d) Quality

All hold M.S. degrees except one special education teacher (B.S.) who is currently enrolled in a masters level program.

IV Service Delivery (physical, speech and occupational therapy)

a) Effort

1. Annual cost per service none

b) Effectiveness

1. Total no. receiving free therapy 110
2. Total no. requiring free therapy 115

Effectiveness Ratio 96%

c) Efficiency

1. No. hours free therapy per week 110
2. Cost of transportation to and from therapy None

Total Efficiency 100%
d) Quality

All therapies arranged by program coordinator and supplied by accredited volunteer or private agencies.

Curriculum Development

a) Effort

Develop different interest centers based on multimedia or multi-modality approach, for 2-3 students in each class. Based on evaluator observation this effort was a success.

Evaluator Rating... 100%

Amount of individualization, based on number of prescriptive teaching programs written this year... 80%

Increased socialization using trips to anywhere in groups of 2-4. More humanistic since children do not travel by busload. 100%

b) Effectiveness

Number of staff using new approaches 100%

Number of pupils exposed to new curriculum 100%

c) Efficiency

Coordinator spent 50% of time in this effort

Total Management Cost $12,340.00

Cost per pupil 70.92

d) Quality

All schools used adapted curriculum routinely when observed by evaluator.

Program supervisor's rating... Outstanding

II. Curriculum Development

a) Effort

Adaptation of materials to input/output deficits arising from physical handicaps of pupils.

Evaluator Rating... Excellent
Use of peer learning with CRMD and BHI students.

Evaluator Rating... Excellent

b) Effectiveness

The effectiveness of "each one teach one" has been documented elsewhere. Evaluator Rating... Excellent

c) Efficiency

Most effective since 0 dollars were spent. Evaluator Rating... Excellent

d) Quality

Increased responsiveness noted in both tutor and pupil. Evaluator Rating... Excellent

e) Discrepancy Analysis

The use of criterion based testing with standardized instruments to determine changes in peer interactions is needed. No measures of this type were systematically obtained.

II Cross reference to other programs

a) Effort -- Annual Amount Spent...................... None

b) Effectiveness

1. Marymount Language Development Center... 15 pupils
2. Bronx Development Center...................... 21 pupils
3. Staten Island UCP Mini-Team................. 12 pupils
4. Graduate students in psychology ... (10) 30 weeks @ 6 hours per week
5. Undergraduates in psychology ... 30 weeks @ 2 hrs. per week

1. Motor Education Specialist (3 Schools)
2. Selective mainstreaming in art & music. (7 schools)

Efficiency Evaluator Rating... Excellent
Extremely efficient use of resources of the community.

d) Quality ... Excellent.

VII In-Service Training

a) Effort

Annual amount spent..... $3,947.82

Team approach to education... Total staff involvement.. 34

Total time- 2 hrs. per month... 1/2 staff time...... 1.43%

b) Effectiveness

Total % of teachers using new approach .......... 100%

c) Efficiency

\[
\text{Cost spent on training} = \frac{\$3,947.82}{34} = \$116.11
\]

No. of staff using materials

34

d) Quality

Program coordinator, pre-Ph.D Special Education, conducted the training sessions.

VII Special Programs

a) Effort

All classes participated in the following special activities:

Halloween party (first city wide function). Thanksgiving party. Annual picnic, Christmas - (decorate tree at central board). Yearbook of all programs, videotape special plays and daily activities, and first time in N.Y. State Special Olympics.

b) Effectiveness

Seven new events of different types were developed this year, at no additional cost to the program.

c) Efficiency

All events received favorable press/T.V. coverage. The events were covered by all N.Y.C. newspapers except the N.Y. Times and were seen on local T.V. stations.

d) Quality

15
Based on the subjective evaluator rating, all special events contributed to the sense of identity of the children and promoted acceptance of the pupil population in the community at large.

VII Community Relations

a) Effort

Started as only parent coffees. Cost in time and management personnel (Coordinator of Program, 2 hours per month) % Total Time......1.43%

b) Effectiveness

1. How to help child at home by following up on school activities.
2. Increase parent sensitivity to special needs of others.
3. Describe ancillary programs. (Saturday recreation, etc.)

c) Efficiency

Total Management Budget ... $24,680.00 x 1.43% .. $352.92

d) Quality

One of the most exciting and innovative programs. Based on expressed parent needs this program should be expanded to include child management principles under the supervision of a behavioral psychologist.

IX Feedback Development

a) Effort

number of exception reports (appropriateness of placement in the program for the doubly handicapped)............. 24

b) Effectiveness

Realistic selection criteria were set and obtained.

Evaluator Rating .... Excellent

c) Efficiency

16
Profile of inappropriate student who does not benefit from the program now possible. Evaluator Rating...Excellent
d) Quality

Development of even better screening using criterion based standards now possible. Evaluator Rating...Excellent

X: Physical Facilities

Physical facilities were found to differ widely, from a model showcase at P.S. 160 (Bx) to only minor adaptations at P.S. 33 (Man). At P.S. 160 a new building was built with preparation for integrating physically handicapped with regular school population. Separate rooms were provided for physical therapy and occupational therapy services. Handrails are found in corridors, in bathroom stalls, etc. Rooms are large enough for movement of wheelchairs within the room and outdoor play areas are accessible off each classroom exit. At the other end of the scale at P.S. 33 the only adaptation made was a concrete ramp built on school side entrance to allow ingress and egress. The other sites fall between these two extremes.

Chapter IV SUMMARY OF MAJOR FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

Summary

1. Evaluation objective no. 1 was not attained. The thirty higher functioning students who were administered the WRAT did not achieve significant increases in reading and math. Although highly speculative it is possible that comparison of pupil IQ score and grade level expectancy might reveal that they were already performing at their maximum levels. If this is true,
estimates of grade level achievements would provide a truer index of performance.

2. Evaluation objective no. 2 was meet. There was a significant increase in pre-reading readiness as measured by the IRS. Most probably this resulted from the enriched program of multi-media and modality, individual remediation and prescriptive teaching.

3. Based on the analysis of the program as actually conducted, objective no. 3 was meet with one exception. Namely, pupil enrollment of 300 was not achieved as projected in the proposal. Recommendations for the use of psychologist, social worker, guidance counselor and family assistants were accomplished. Availability of full time speech therapists to each school was also realized. Specific teaching objectives and curriculum practives replaced norm referenced tests. Innovative meetings with parents-teachers which began as just coffees were also observed.

Conclusions
1. In order to increase pupil enrollment from 174 to 300, acceptance of the more severely handicapped student would be required. This means an increase in child management and custodial problems. These problems include toilet training, feeding, transfer from wheelchair for physical activity, and other specific health services.

2. The use of volunteer and private agencies to deliver physical therapy and occupational therapy was outstanding and also very cost effective. However, educationally children were
poorly positioned such that their heads were in their laps. Therefore, it was felt that physical impairments should be habilitated with an emphasis on educational objectives.

3. The increased contact that began with just parent coffees should be extended. This will facilitate dealing with emotional and behavioral difficulties in a more systematic fashion.

Recommendations

1. It is felt that the development of a corps of health aides assigned to feed, toilet and care for the severely handicapped would increase program effectiveness. It would also enable staff to deal with the projected 300-350 pupils who would be selected from a more severely involved population than currently enrolled in program.

2. Improved seating arrangements would enhance educability of the severely physically involved student. A child that is seated upright can benefit from instruction essential to meeting individual needs. A therapy team of educators, physical and occupational therapists should be added to design, develop and make available devices that would increase learning potential and functional behaviors.

3. Extension of staff-parent interactions to include a behavioral psychologist to aid in child management programs for both school and home is highly recommended. With both parents and teacher coordinating efforts, problems such as toilet training might be reduced.

4. A functional inventory of educational skills should be developed as a basis for evaluating program effectiveness.
The use of criterion based measures, especially in the area of self-help skills is recommended. Alternatively, instruments such as the Pupil Achievement Record or the AAMD Adaptive Behavior Checklist would be helpful in assessing pupil progress.

5. Transportation for trips with small groups of no more than four to five students should be provided. It is inappropriate to go out into the community with the usual busload of handicapped children. Increased exposure to the local community of small groups of handicapped children is educationally productive. The positive reaction of both the children and the community can be increased by limiting numbers to be transported.

6. Physical facilities should be upgraded to include support rails and ramps in areas such as libraries, lunchrooms, auditoriums and toilets. In order to serve 300 students, additional classroom modification to provide support rails at blackboards, etc. is required. Access to playgrounds, gymnasiums, and ancillary facilities should be upgraded.

It is recommended that the program be increased to 300-350 pupils. The alternative is that such children will remain in their homes, hospitals, or other institutions which do not provide the excellent quality of education found in this program. In summary, this program is a highly desirable addition to New York City educational programs.
**1974-75 PROGRAM OF ACADEMIC SKILLS - READING AND MATHEMATICS FOR HANDICAPPED PUPILS IN SPECIAL EDUCATION CLASSES (Severely Handicapped - Mentally Retarded - Doubly Handicapped)**

Use Table 30C. for norm referenced achievement data not applicable to tables 30A. and 30B.

**30C. Standardized Test Results**

In the table below, enter the requested information about the tests used to evaluate the effectiveness of major project components/activities in achieving desired objectives. Before completing this form, read all footnotes. Attach additional sheets if necessary.

<table>
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<th>Component Code</th>
<th>Activity Code</th>
<th>Test Used/Year</th>
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<th>Level</th>
<th>Total N/Group ID</th>
<th>Number Tested</th>
<th>Pretest Score Type</th>
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<th>Pretest SD</th>
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<td>70.3</td>
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1/ Identify Test Used and Year of Publication (MAT-58; CAT-70, etc.)
2/ Total number of participants in the activity
3/ Identify the participants by specific grade level (e.g., grade 3, grade 5). Where several grades are combined, enter the last two digits of the component code.
4/ Total number of participants included in the pre and post test calculations.
5/ 1 = grade equivalent; 2 = percentile rank; 3 = Z Score; 4 = Standard score (publisher's); 5 = stanine; 6 = raw score; 7 = other.
6/ S.D. = Standard Deviation
In this table enter all data loss information. Between MIR, item #30 and this form, all participants in each activity must be accounted for. The component and activity codes used in completion of item #30 should be used here so that the two tables match. See definitions below table for further instructions.

| Component Code | Activity Code | (1) Group I.D. | (2) Test Used | (3) Total N | (4) Number Tested/ Analyzed | (5) Participants Not Tested/ Analyzed N % | (6) Reasons why students were not tested, or if tested, were not analyzed | Number/ Reason |
|----------------|---------------|----------------|---------------|-------------|-----------------------------|------------------------------------------|---------------------------------------|
| 60861720        |               | Pre-K to Grade | IRS-74        | 174         | 43                          | 24                                       | Transferred to other programs         | 17          |
|                |               | WRAT 74        |               |             |                             |                                          | Absent or ill                         | 6           |
|                |               |                |               |             |                             |                                          | In hospital                           | 4           |
|                |               |                |               |             |                             |                                          | Untestable                            | 12          |
|                |               |                |               |             |                             |                                          | Late registration                     | 4           |
|                |               |                |               |             |                             |                                          | Total                                 | 43          |

(1) Identify the participants by specific grade level (e.g., grade 3, grade 9). Where several grades are combined, enter the last two digits of the component code.

(2) Identify the test used and year of publication (MAT-70, SDAT-74, etc.).

(3) Number of participants in the activity.

(4) Number of participants included in the pre and posttest calculations found on item #30.

(5) Number and percent of participants not tested and/or not analyzed on item #30.

(6) Specify all reasons why students were not tested and/or analyzed. For each reason specified, provide a separate number count. If any further documentation is available, please attach to this form. If further space is needed to specify and explain data loss, attach additional pages to this form.