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ABSTRACT

The Supplementary Services for Previously Non-Public-School Institutionalized Students in New York City was designed to assist students who were formerly educated at state-operated or state-supported schools to adapt to public school education. The 1982-83 program served 1054 students in 367 sites, which included community schools, high schools, a special school for the deaf, special education schools, and approved work sites. Approximately 50 percent of the students were mentally retarded, 20 percent were emotionally handicapped, and the remainder had other disabilities. The age range was from 6 to 21. Analyses of data gathered to evaluate the program indicated that most of its objectives were largely or completely met. Students demonstrated positive growth in communication, reading, math, sensory and motor development, self-help and societal/community living skills, social interactions, and vocational competencies. Observations and interviews indicated that, for the most part, program services met the individual needs of the students and effectively supplemented basic instructional activities. However, all aspects of the program suffered from delays in funding approval. In addition, although program-eligible students were identified before the beginning of the program cycle, locating many of them in particular classes at particular sites was difficult. (CMG)

O.E.E. EVALUATION REPORT
August, 1983

P.L. 89-313 SUPPLEMENTARY SERVICES FOR PREVIOUSLY NON-PUBLIC-SCHOOL INSTITUTIONALIZED STUDENTS 1982-83

Division of Special Education
Edward Sermier, Chief Administrator

Reimbursable Programs Unit
Allison Tupper

Prepared by:
O.E.E./Special Education Evaluation Unit
Robert Tobias, Evaluation Manager
Christine Halfar, Evaluation Assoicate
Jerome Margolis, Evaluation Specialist
Milton Chaikin, Consultant
Irwin Goldstein, Consultant
Barbara Gottlieb, Consultant

New York City Public Schools
Office of Educational Evaluation
Richard Guttenberg, Director

A SUMMARY OF THE EVALUATION FOR THE 1982-1983 SUPPLEMENTARY SERVICES FOR PREVIOUSLY NON-PUBLIC-SCHOOL INSTITUTIONALIZED STUDENTS

This program, which was operated by the Division of Special Education of the New York City public schools under a P.L. 89-313 entitlement grant, was designed to assist students who were formerly educated in state-operated or state-supported schools adapt to public school special education. Materials and personnel services were delivered through two components and five subcomponents which were developed to meet the particular needs of these pupils as specified in their individualized educational plans.

The program served a total of 1,054 students in 367 sites, which included community schools, high schools, a special school for the deaf, special education schools, and approved work sites. Approximately 50 percent of the students were mentally retarded, 20 percent were emotionally handicapped, and the remainder had other disabilities; the age range was from six to 21.

In comparison with the 1981-82 program cycle, the 1982-83 cycle served approximately twice as many students and provided more than three times the quantity of supplementary materials and equipment. More than twice as many staff were involved in the 1982-83 cycle. In keeping with recommendations from the evaluation of the previous cycle, most of these were teacher trainers whose primary responsibilities were to provide consultations, in-class demonstrations, and workshops in the selection and effective use of program-purchased materials and equipment for individualization of instruction.

Analyses of data gathered to evaluate the components and subcomponents of the P.L. 89-313 program indicated that most of its objectives were largely or completely met. Students demonstrated positive growth in communication, reading, mathematics, sensory and motor development, self-help and societal/community living skills, social interactions, and vocational competencies. In addition, observations and interviews indicated that, for the most part, program services met the individual needs of the students and effectively supplemented basic instructional activities. All components and subcomponents suffered from delays in obtaining funding approval. In addition, in several subcomponents, although program-eligible students were identified before the beginning of the program cycle, locating many of them in particular classes at particular sites proved difficult.

The conclusions drawn from the findings of this evaluation lead to the following major recommendations:

--Efforts should continue to gain early project approval and delivery of supplies to ensure that services are planned and provided in a timely manner.

--Where the focus of program activities is on providing supplementary materials or equipment, efforts to involve parents should be expanded.

--The program should continue to emphasize field-contacts and site visits to ensure better rapport with school staff, disseminate information more effectively, and optimize direct implementation. Where possible, in-class demonstrations rather than workshops should be provided.

--Program coordinators should continue to request input from school-based personnel regarding the purchase of specific instructional aids to ensure the best match between student needs and program services.

TABLE OF CONTENTS

LIST OF TABLES

I. INTRODUCTION

This report presents an evaluation of the 1982-83 Public Law 89-313 program entitled Supplementary Services for Previously Non-Public-School Institutionalized Students. This program, operated by the New York City Public Schools' Division of Special Education (D.S.E.) under an entitlement grant, was designed to assist students formerly educated in state-operated or -supported schools adapt to local, public school settings. Program services were developed to supplement the basic instructional program in meeting the particular needs of these pupils as specified in their individualized educational plans (I.E.P.) and in accordance with such factors as unique learning style and functional skill level.

The program was comprised of two components and five subcomponents identified below:

Component 1.0. Regionalized Services
- --Subcomponent 1.2. Instructional Support Unit
- --Subcomponent 1.3. Placement and Referral Center for the Handicapped *

Component 2.0. Citywide Services
- --Subcomponent 2.1. Instructional Supplies and Equipment
- --Subcomponent 2.2. Computer Assisted Program of Instruction
- --Subcomponent 2.3. Hearing Education Services

Component 1.0 served P.L. 89-313 students in self-contained classes in community schools and high schools and Component 2.0 served eligible students in special schools and low-incidence programs operated by D.S.E.'s Office of Citywide Programs.

The program was evaluated by the Office of Educational Evaluation (O.E.E.) through the collection and analysis of quantitative data on pupil achieve-

*Subcomponent 1.1 was not approved and its students were served under Subcomponent 1.2 beginning in February, 1983.

ment and qualitative data on program implementation. Data on pupil achievement were collected on O.E.E.-developed data retrieval forms and, depending on the subcomponent, included information from two standardized tests, five criterion-referenced assessments, and direct pupil observations. Implementation data were gathered by O.E.E. field consultants during 75 site visits in which they conducted more than 200 classroom observations and staff interviews. Program records of staff development activities were also reviewed. Site selection was random but statified so that the sample was representative of the program subcomponents and students served.

Findings of this report are delineated in four chapters: Chapter II documents the overall level of program implementation focussing on facilities, staff, and levels of service provided; Chapter III presents an analysis of the qualitative and achievement data for each component with a focus on activities, materials, inhibiting factors, promising activities, and attainment of objectives; Chapter IV describes major conclusions, comparison with findings of evaluations of previous program cycles, and recommendations based on the results of the evaluation. In most sections of the report, the subcomponents are referred to by their numerical designation.

II. OVERALL LEVEL OF IMPLEMENTATION

This chapter describes the general level of program implementation in relation to that which was proposed. Across all components/subcomponents, a total of 1,054 students were served at 367 sites. Approximately 50 percent of these students were mentally retarded and 20 percent were emotionally handicapped, with the remainder distributed among the following disabilities: multiply-handicapped, austistic, deaf, hard of hearing, learning disabled, and orthopedically handicapped.

FACILITIES

The program served students in community elementary and junior high schools, high schools, a special school for the deaf; special education schools, and approved work-sites. O.E.E. observations revealed that these settings were appropriate for instruction, classrooms were well lit, furnishings were designed to accommodate students' special needs, and instructional areas were large enough for a variety of teaching activities. The facilities at the Placement and Referral Center (Subcomponent 1.3) were clearly superior as were those at schools housing pre-vocational skills units (Subcomponent 2.1). The organization of space at the Placement and Referral Center permitted a variety of education and training activities to be conducted individually, in small groups, and full classes. The circular arrangement of rooms made for easy access and bright lighting created a cheerful work atmosphere. The pre-vocational skills units were established in spacious classrooms or shops suitable for storage and use of program-purchased equipment.

STAFF

Staff consisted of 14 pedagogs, eight paraprofessionals, and three office workers. Interviews revealed that professional staff were highly experienced, with a minimum of ten years in teaching. All were certified as special education instructors and chosen on the basis of individual expertise as indicated by background and supervisory recommendations. Although some paraprofessionals were relatively inexperienced, they quickly acquired the skills necessary for their positions. Program staff indicated that the orientation and pre-program activities were more than sufficient to meet their training needs.

LEVEL OF SERVICE

The program supplemented instruction for the target students by providing staff or instructional supplies and equipment designed to assist their adaptation to the public school special education program. Subcomponent 1.2 (Instructional Support Unit) provided instructional supplies and teacher trainers for staff development and Subcomponent 1.3 (Placement and Referral Center for the Handicapped) provided professional staff, materials, and equipment. All subcomponentsd of component 2.0 were coordinated by one program-funded teacher-assigned coordinator. Subcomponent 2.1 (Instructional Supplies and Equipment) provided materials and equipment; Subcomponent 2.2 (Computer Assisted Program of Instruction) provided computer hardware and software; and Subcomponent 2.3 (Hearing Education Services) provided instructional supplies and equipment.

The actual levels of service varied among components. Subcomponents 1.2, 2.1, and 2.3 were fully implemented and offered all of the proposed

activities; however, in each component about one-third of the students did not begin to be served until the spring semester. Subcomponent 1.3 was fully implemented with few delays and was enthusiastically received by staff and students. Subcomponent 2.2 was also highly regarded by staff and participants alike and was seen as effective despite a substantial truncation of instructional time.

III. EVALUATION OF PROGRAM COMPONENTS

This chapter presents the evaluation findings for the individual subcomponents of the P.L. 89-313 project. Findings on program implementatio are presented with respect to activities, materials and equipment, promising activities, and inhibiting factors; findings on the attainment of objectives for each subcomponent are based on the analyses of pupil achievement data.

Findings on the two Regionalized Services subcomponments, 1.2 and 1.3, are presented first. All activities of these subcomponents were administered by the D.S.E. and operated under the direction of the deputy assistant superintendent for special education in each region. The increased responsibility of the six special education regions reflected the D.S.E.'s move to a regional structure in 1982-83.

The Citywide Services subcomponents, 2.1, 2.2,.and 2.3, which are presented next, were administered by the D.S.E. and operated under the direction of Office of Citywide Programs with the assistance of a program-funded teacher-coordinator.

SUBCOMPONENT 1.2 REGIONALIZED SERVICES INSTRUCTIONAL SUPPORT UNIT

Activities

Subcomponent 1.2 provided instructional materials and supplies and staff development to supplement the regular educational program of 389 students at 230 sites throughout the six D.S.E. regions. Over half (58 percent) attended elementary schools, about one fourth (23 percent) attended intermediate or junior high schools, and the rest (19 percent) attended high schools. Students' ages ranged from six to 21 years and

averaged 13 years. Handicapping conditions included mental retardation (38 percent), neurological impairment or learning disabilities (18 percent), orthopedic impairment (15 percent), and emotional handicap (11 percent); other students (12 percent) were classified as multiply handicapped, neurologically impaired and emotionally handicapped, or otherwise physically impaired.

Program staff were teacher trainers assigned to the six D.S.E. regional offices. The program began with one teacher trainer for each region with six more, (for a total of 12), added in February to serve additional students who were originally to participate in the unapproved Subcomponent 1.1 (Mathematics Management).

Service for Subcomponent 1.2 began with the location of program-eligible students and initial contact with their classroom teachers to identify the supplemental instructional materials to meet the students' special needs. Due to protracted approval negotiations and difficulties in locating target students the teacher trainers began to contact the classroom teachers in November of the project year. Service for nearly two-thirds (62.3 percent) of the students began in the fall semester; the others were added to this subcomponent after Subcomponent 1.1 was deleted in early spring. Curriculum areas covered included: communication and language development, independent living skills, sensory and motor development, readiness, reading, and math.

Primarily, the teacher trainers foccused their efforts on obtaining instructional materials and supplies to supplement the individual instructional programs of eligible students and on training classroom teachers to integrate these materials in daily lessons. (Staff training

in the effective use of program-purchased materials was a recommendation of the evaluation of the program's 1981-82 cycle.)

In most cases, following consultation with the classroom teacher or special education supervisor, the teacher trainers selected materials appropriate to the educational objectives stated in each student's I.E.P. and arranged for the materials to be made available to the classroom teacher either permanently or as a long-term loan. Two teachers reported that the teacher trainer involved parents in the selection of materials, a practice that should be encouraged. It is noteworthy that relative to last year (i.e. 1981-82) the classroom teachers reported greater involvement in the selection of materials. In addition, the teacher trainers provided staff training in the use of materials to the classroom teachers of P.L. 89-313 students who requested it. Finally, program staff visited sites with designated students and maintained records of materials which were supported by program funds and teachers' indications of their usefulness in meeting students' I.E.P. objectives. Relative to the previous cycle, O.E.E. observations found improvements in record keeping procedures and the documentation of materials use.

Services provided to students were documented in two ways: program development recording forms were used to document the activities of the teacher trainers and student data retrieval forms were used to document the specific services received by teachers of individual program students. According to program records the 12 Instructional Support Unit teacher trainers conducted 535 training sessions resulting in 1,288 contacts with teachers and other staff serving P.L. 89-313 students at 219

regional sites. Most of these (60 percent) were consultations, 37 percent were in-class demonstrations, and the remainder (3 percent) were materials workshops.

The content of the training addressed specific academic areas as well as general issues. Many of the contacts (43 percent) dealt with program procedures and concerns such as individualization of instruction, record keeping, and classroom management, and many others (21 percent) were concerned with general questions of choosing, ordering, and using materials. The remaining contacts dealt with specific curriculum areas including: mathematics (14 percent); reading (6 percent); daily living skills (6 percent); communication (4 percent); and other academic areas (4 percent). Although more than one-third of the contacts were in-class demonstrations, teacher interviews indicated that more classroom demonstrations of the effective use of program-purchased materials would have been helpful and preferable to workshop presentations.

Over 90 percent of the contacts were initiated by regional program staff and the others were requested by school staff. Most often the teacher trainers judged the success of their interventions by observation (84 percent) and in other cases by reviewing written records. All interventions were judged to be either totally (93 percent) or partially (7 percent) successful.

Documentation of staff training on individual student data retrieval forms showed that teachers of almost half the students received two or more kinds of training, about half received one, and about one-tenth did not receive any. Teachers of 62 percent of the P.L. 89-313 students received training in teaching mathematics, 57 percent received training

in general program procedures, selection, or use of materials, 22 percent had training in reading, and 12 percent received career education training. (See Table 1 for a listing of all services, including training and materials, received by teachers of program students.)

Materials/Equipment

According to interviews with 30 classroom teachers at 17 sites serving 62 program students, over three-fourths of the teachers were consulted concerning the ordering of program materials. About two-thirds of the orders were placed in the fall and one-third were placed in the spring semester. All but two of the teachers reported receiving program materials; one-third received materials during the fall semester, almost one-half received materials between February and April, and the rest received materials in May and June. It must be noted that roughly one-third of the students were added to this subcomponent at mid-year when deletion of Subcomponent 1.1 became final. Moreover, because of a special education classroom vacancy emergency all regional teacher trainers, including the program staff, were transferred to classroom positions as of April 30, which effectively discontinued the Instructional Support Unit Program.

Information on materials provided to teachers of program students, recorded on individual student data retrieval forms, indicated that teachers of 87 percent of the participants received some materials and nearly half (42 percent) received two or more items. Teachers of 60 percent of the students received mathematics materials, teachers of 49 percent received materials for teaching life skills, 11 percent received reading materials, six percent received career education materials, and

25 percent received materials not covered by these categories. (For a listing of all services, including materials and training, received by teachers of program students see Table 1.)

Promising Activities

The particular strength of Subcomponent 1.2 was the provision of specific supplementary materials and effective demonstrations of their use which together contributed to individualization of instruction in the least resrictive environment for program-eligible students. Teachers of nearly all participants (95 percent) received some materials or training and nearly two-thirds (62 percent) received at least three services.

Inhibiting Factors

Three major problems prevented optimal implementation of Subcomponent 1.2.: the addition of students at mid-year, delays in implementation due to protracted approval negotiations, and the effective termination of services when program staff were transferred to teaching duties. Nonetheless almost all (87 percent) of program-eligible students received appropriate supplementary materials and most (84 percent) teachers of program students reportedly had input in the selection and ordering of materials.

Achievement Data

Teachers chose from four criterion-referenced tests to measure student mastery of I.E.P. skills in response to supplementary instruction with program-purchased materials. On-going administration of selected strands of the criterion-referenced Behavioral Characteristics Progression (B.C.P.) measured progress in the following areas: communication and

Table 1
Numbers and Relative Percentage of
Materials and Training Provided
by Teacher Trainers, by Curriculum Area
(Subcomponent 1.2)

Curriculum Area	Type of Service		
	Materials (Percent)	Training (Percent)	Total (Percent
Mathematics	200 (39.1)	204 (39.4)	404 (39.2)
Reading	38 (7.4)	78 (15.1)	116 (11.3)
Life Skills	166 (32.4)		166 (16.1)
Career Education	25 (4.9)	41 (7.9)	66 (6.4)
Other	83 (16.2)	195 (37.6)	278 (27.0)
Total	512	518	1,030

.The curriculum area in which materials and training were were most often provided was mathematics.

language, strands 19, 20, 22, 46; personal hygiene and health care, strands 3-8 and 10; motor development, strands 15 and 16; societal/survival, strands 31-33 and 44; and affective behavior, strands 23, 24, and 26. Student achievement in career education was measured on the criterion referenced Prevocational/Career Education Assessment Inventory. Pupil growth in reading was measured by the Individualized Criterion Referenced Testing (I.C.R.T.) and in math the Instructional Management Program (I.M.P.) was used. Finally, I.E.P. objectives not covered by any of the four instruments were reported separately. The criterion for attainment of the program's objective was mastery of at least three skills, as measured by any of these methods, by 80 percent of the students.

To determine whether the objective was attained, frequency distributions of student mastery were prepared. These data, which are presented in the Appendix in Table A.1, indicated that 82.8 percent of the students mastered at least one new skill, 75.2 percent mastered two or more, and 54.4 percent mastered at least three. Accordingly, the objective was not attained which is attributable to the inhibiting factors mentioned above; that is, service for approximately one-third of the students did not begin until the spring semester, implementation was delayed, and all program staff were transferred to classroom positions as of April 30.

Further inspection of the achievement data showed that teachers of most of the students chose one method to monitor student growth. The most widely used was the B.C.P. on which nearly half (48.0 percent) of the students were assessed. Teachers recorded I.E.P. objectives for over one-third of the students (36.4 percent), and used the Mathematics

I.M.P. for about one-fifth (19.0 percent). One-tenth or fewer used the I.C.R.T. Reading and Career Education taxonomies.

SUBCOMPONENT 1.3: REGIONALIZED SERVICES PLACEMENT AND REFERRAL CENTER FOR THE HANDICAPPED

Activities

This subcomponent, which was a continuation and extension of the Placement and Referral Center Subcomponent of the 1981-82 program, provided pre-vocational training and career education to 47 handicapped high school students, 16 of whom also received supplemental supervised work experience at 16 job sites throughout New York City. The students, who ranged in age from 15 to 21 years, attended 30 high schools. Almost half (22) were classified as emotionally handicapped and 13 were learning disabled; the others were mentally retarded, neurologically impaired and emotionally handicapped, and hearing impaired.

Staff for this subcomponent included one teacher coordinator, an educatational paraprofessional, and a family worker. The teacher coordinator located program-eligible students, provided pre-vocational and occupational training, and assisted the tax-levy Training Opportunity Program (TOP) staff in the administration of the off-site work experience program. The educational paraprofessional assisted the teacher coordinator in assessment and instruction at the Placement and Referral Center and the family worker assisted in locating students, visited TOP work sites, distributed assessment instruments to TOP employers, and contacted parents as necessary. Two half-day pre-program staff meetings were held

with the director of the Placement and Referral Center which covered all relevant aspects of program implementation.

The TOP-supervised work-experience program began in October, 1982 with interviews and orientation of 16 students who had participated in the previous year's program (which was P.L. 89-313 funded) and elected to continue. At the orientation, students received their work assignments, payroll schedules, half-fare transportation application, key phone numbers, and training workshop schedules. Students were placed at 15 locations where they held positions of clerk, stockroom aide, dishwasher, hospital aide, maintenance aide, library aide, and laboratory aide. Students worked two or three hours a day after school and earned a tax-levy-funded stipend of $3.35 per hour, the minimum wage. The average number of hours worked for the year was 284 (S.D.= 125) and ranged from 33 to 475; all but one student had at least 140 hours of total work experience.

Supervision was provided on-site by the employers and TOP staff maintained ongoing contact with both students and employers; occasionally student-trainee attendance or adjustment problems required intervention by Subcomponent 1.3 staff. To assess TOP's impact on students' vocational competence work supervisors completed pre- and post-test ratings on the San Francisco Vocational Competency test (S.F.V.C.).

Program staff also participated in five workshops for work-experience students at the Placement and Referral Center which covered general employment-related issues such as completing job applications, reading and interpreting classified employment ads, preparing for and being

interviewed, and communication skills. Interviewing skills were stressed through videotaped mock interviews which formed the basis for developing more effective interview behavior.

Pre-vocational training and career education service began in the fall, 1982 with the identification and screening of potential participants. Criteria for selection included eligibility for P.L. 89-313 funding, need for training, availability and willingness to participate, teacher recommendations, demonstrated maturity and social skills, and attendance. Difficulties in locating students who had moved during the summer delayed the beginning of training until January, 1983 when students attended orientation meetings, completed social security applications, and submitted signed parent consent forms.

All students were assessed by the teacher-coordinator and the educational paraprofessional using the S.F.V.C. The Jewish Employment and Vocational Service (J.E.V.S.) program, an in-depth vocational instrument for special needs group in which students carry out tasks that simulate actual work experience, and the Apticom and Metro guide instruments were also used. (The latter two systems were tax-levy supported.)

Students attended two-hour training sessions twice a week at the Placement and Referral Center. Two series were provided, one in office skills and one in interviewing skills. Three tax-levy teachers taught mailroom and messenger skills, typing, and filing to groups of eight-to-ten students for 20 weeks, two hours a week. The teacher-coordinator and educational paraprofessional conducted the job-interview training,

which was also held for 20 weeks, two hours a week, for groups of eight-to-ten students. The job-interview training, which consisted of a series of [illegible]ti-media units, focussed on enhancing employability skills and raising students' awareness of their interests, abilities, and values. A major activity was the video-taping of mock job interviews which served as a basis for identifying, rehearsing, and improving appropriate interview behavior.

Program staff maintained contact with the students' schools, notifying classroom teachers and unit teachers of program schedules and student attendance. A year-end report was provided for each student including office skills acquired, Adkins' Life Skills interview ratings, S.F.V.C. rating, J.E.V.S. assessment results, and plans for participation in the summer youth employment program.

Individual folders were maintained for each student which contained, in addition to the materials included in the year-end summary sent to the schools, the parent permission statement, correspondence with the school, working papers and social security card, and, for work-experience participants, the TOP evaluation.

Materials/Equipment

Students were provided with personnel data sheets, half-fare transportation applications, job-interview-blanks, and a work-orientation booklet entitled Getting It Together. Teachers, unit teachers, and principals received copies of all relevant materials and also the Center brochure.

Tax-levy funds provided many of the materials and equipment that were central to the implementation of this subcomponent. These included the Adkins' Life Skills Employability Series with the necessary video- and audio-tape equipment, the J.E.V.S. Work Samples and office machines including a Xerox copier, Pittney-Bowes Postage Meter, an addressograph, an electric typewriter, and an electronic calculator.

Home Involvement

Program staff and, in particular, the family worker, maintained contact with families throughout the year. Students new to the program were interviewed with their parents when they enrolled and all students had signed parental consent forms. Parents received a year-end summary of students' activities including an overview of the training they had completed and summaries of test results.

Promising Activities

This subcomponent provided handicapped students with the opportunity to develop general vocational skills and self-awareness, introduced the requirements and routines of the workplace, and, for some, provided realistic supervised work experiences. The Adkins' Life Skills Program was seen by program staff as particularly effective and highly motivating to students.

Observations and interviews of TOP student participants and their work-site supervisors indicated that the program was quite successful. Students were seen performing their work conscientiously and appropri-

ately and relating well to their supervisors and co-workers. The supervisors stated that most students had improved in their performance over the year and all were dependable and trustworthy. Three students were hired for full-time work during the project year and the teacher-coordinator expected that all of the students who applied for the summer youth employment program would be hired.

Both the students receiving supervised work experience and those receiving prevocational training were pleased with the program and wanted to continue. Attendance data reflected this positive student attitude. Despite their having to travel sometimes long distances at the end of the school day, over half the students attended all their Adkins' Life Skills interview-training sessions (mean percentage attendance = 80.6 percent, S.D. = 27.9 percent, median = 100 percent) and most attended two-thirds or more of their prevocational skills training sessions (mean percentage attendance = 62.2 percent, S.D. = 36.2 percent, median = 67.5 percent).

As in the previous cycle, this subcomponent benefited not only the trainees who gained skills and experience but also the employers, job supervisors, and fellow employees of program participants who saw handicapped workers in a new light. A contributing factor to program success was the excellent working relationship between program-funded personnel and other staff at the Referral and Placement Center.

Inhibiting Factors

The training for new students was delayed until mid-year, largely as a result of difficulties in locating program-eligible students,

students, many of whom had transferred to different schools. The delay caused some truncation of service but the program was effective nonetheless

Achievement Data

To measure student development of general job skills in response to training (Objective 1.3.1), students were rated by their site supervisors or program staff on the S.F.V.C. at the beginning and end of program participation. This assessment consists of 30 items which measure job-appropriate behaviors such as punctuality, initiative, ability to read and follow directions, and response to criticism. The criterion for attainment of this objective was a statistically significant ($p < .05$) increase in scores. To determine whether the objective was attained, a t test for correlated means was applied to the data; complete data were reported for 35 students. Scores increased from a mean of 71.5 (S.D. = 21.5) to a mean of 85.4 (S.D. = 23.4), a gain (13.9) that was statistically significant ($t = 5.31$, $df = 34$, $p < .01$). Accordingly, the objective was met.

To measure students' mastery of job interviewing skills as a result of program participation (Objective 1.3.2), the Adkins' Life Skills Interview Rating Sheet was administered to the students at the beginning and the end of the program. This scale consists of 19 questions frequently asked on job interviews and ratings of the quality of responses. Pre- and post-test scores were available for 34 students. The criterion for attainment of this objective was mastery of at least two skills by all participants. To determine whether the objective was met a

frequency distribution of student mastery was prepared. These data, which are presented in the Appendix in Table A.3, indicated that 91 percent of the students mastered two or more skills and 76.3 percent mastered four or more. The mean number of skills mastered was 5.2 (S.D. = 2.7) and the median was 5.0. Accordingly, the objective was largely met.

SUBCOMPONENT 2.1 CITYWIDE SERVICES INSTRUCTIONAL SUPPLIES AND EQUIPMENT

Activities

Subcomponent 2.1 provided 519 students in 89 D.S.E. special schools with instructional supplies, equipment, and materials to supplement the individualization of instruction. Individual data retrieval forms were submitted for 471 students. This subcomponent was a continuation of a comparable subcomponent in 1981-82 which was successfully implemented and which exceeded its student achievement objective. As in the previous cycle, the target population was heterogenous, ranging in age from five to 21 years and exhibited a variety of disabilities including limited self-awareness, inappropriate behavior, delayed cognitive and social development, severe physical impairments, and mild to severe language or communication disorders.

The students received basic instruction in 11 different D.S.E. programs; 50 percent were served by Track IV, 20 percent by Centers for Multiply Handicapped Children, and 12 percent by the Program for Autistic Children. The remainder were distributed among the other Citywide Services programs. Targeted curriculum areas were activities of daily

living (A.D.L.), communication and language development, and pre-vocational training.

The program supported one special education teacher who was assigned to coordinate the provision of program equipment and supplies by screening the requests submitted by Citywide Services site personnel and making final selections according to individual pupil needs and budget allocations Central tax-levy funded personnel were responsible for the purchase and distribution of instructional materials.

Program records indicated that program-funded and tax-levy teacher trainers provided 35 consultations and two workshops to 93 Citywide Services teachers at 27 sites. The consultations dealt with general issues such as individualization of instruction, record keeping, classroom management, and selection and use of materials. The two workshops which were attended by 25 teachers, were on use of pre-vocational materials. In-service training in the use of certain pre-vocational materials was arranged by the teacher coordinator and conducted by company representatives for all classroom teachers receiving this equipment.

According to information of the individual data retrieval forms, service for nearly two-thirds of the students (64 percent) was initiated during the fall term; service for almost all of these began in November, December, or January.

Staff interviews and classroom observations at 22 Citywide Services sites serving 50 P.L. 89-313 students also indicated that the program was fully implemented although service for some students was delayed until spring semester. Each student's classroom teacher, or in a few cases the unit teacher, participated in the selection of materials to ensure that they were tailored to the I.E.P. Most materials were reportly in the classrooms by the end of the fall term, corroborating the information on the data retrieval forms. In 23 of the 27 classes visited, program materials were specifically mentioned in the students' I.E.P.s. Teachers assessed students' progress in the target curriculum areas through ongoing administration of the Behavioral Characteristics Progression (B.C.P.) or, for Track IV students, the Track IV InDepth Analysis Instrument.

Materials/Equipment

Over 1,000 different pieces of materials in 19 major categories were provided for participants. On average, supplies from two or three categories were used with each pupil. Table 2 presents a frequency distribution of the categories of materials and equipment employed by the program. The diversity of materials suggests that the program was again responsive to specific student needs.

Promising Activities

Subcomponent 2.1 was successfully implemented; program-purchased materials and equipment were appropriate for the students and supplemented

Table 2
Numbers and Relative Percentage of Materials/Equipment
Purchased for Citywide Services
(Subcomponent 2.1)

Categories	Number	Relative Percent
Pre-vocational/Vocational Supplies	372	35.7
Speech/Language Materials	126	12.1
Perceptual Motor Materials	91	8.7
Sensory Development Materials	72	6.9
General Supplies	53	5.1
Audio-Visual Hardware	53	5.1
Arts and Crafts Materials	44	4.2
Math Materials	41	3.9
Personal Hygiene Supplies	37	3.6
Records/Tapes	35	3.4
Other Materials or Equipment	29	2.8
Physical Education Equipment	24	2.3
Reading Program Materials	20	1.9
Office Machines and Equipment	12	1.2
Ditto Masters	10	1.0
Appliances	7	0.6
Music/Dance Equipment	7	0.6
Social Studies Materials	7	0.6
Guidance Materials	1	0.1
	1,041	100.0

•Nineteen different categories of materials were purchased suggesting that the individual needs of students were carefully considered.

their instructional program. Professional staff and pupils responded enthusiastically to the pre-vocational and life-skills materials, in particular the Attainment Kits, Ideal Vocational Kits, and the safety saw. All teachers interviewed noted improved pupil performance and behavior which they attributed to the program materials. About three-fourths cited improvements in students' ability to attend to and complete tasks; about half found students more sociable, cooperative, and motivated and about half reported progress in expressive or receptive language. On-going communication between program staff and classroom teachers contributed substantially to the smooth operation of the program.

Inhibiting Factors

The major problem in program implementation was the delay in delivery of materials attributable, in part, to late program approval. However, educational benefits were apparent despite the truncation of instructional time.

Achievement Data

To measure student growth in response to supplementary instruction employing program-purchased materials, the Track IV In-Depth Analysis or selected strands of the B.C.P. were administered on an on-going basis. The criterion for attainment of the program's objective was mastery of at least three new skills, as measured by either of these instruments by 75 percent of the students. Instruction and assessment focussed on activities of daily living, pre-vocational, and language/communication skills.

To determine whether the objective was attained, frequency distributions of student mastery were prepared. These data, which are presented in the Appendix in Table A.4, indicated that 91 percent of the students mastered at least one new skill, nearly 74 percent mastered two or more, and 54 percent mastered at least three. Accordingly the objective was not fully attained.

It must be noted that, as was true during the previous cycle, approximately one-third of the students did not receive program services until the spring semester. However, student achievement compared favorably with that of the previous cycle for which the program objective was mastery of one skill by 80 percent of the students.

Analyses of specific instructional objectives indicated that most of the skills mastered were pre-vocational, including improvement in abilities such as promptness, adaptive behavior, impulse control, interpersonal relations, and task completion. A total of 264 students (59.6 percent) mastered one or more such skills. Language and communication skills were mastered by 189 students (42.7 percent) and 109 students (24.6 percent) mastered at least one new skill in activities of daily living. The above findings are consistent with the categories of materials purchased with program funds (See Table 2), supporting the hypothesis that the students' educational program was appropriately supplemented by use of these materials.

SUBCOMPONENT 2.2 CITYWIDE SERVICES COMPUTER-ASSISTED INSTRUCTION

Activities

Subcomponent 2.2 supplemented the regular instructional program for 58 mentally retarded and multiply handicapped students through a computer-assisted functional reading and mathematics program. Participating students received their basic education in Occupational Training Centers (O.T.C.) or Adult Skills Training Centers (A.S.T.C.); over half were classified as trainable mentally retarded and about one-fifth each were educable mentally retarded or multiply handicapped.

The centrally-based Component 2.0 teacher coordinator acted as liaison with O.T.C. staff, ordered equipment, and arranged for training sessions for O.T.C. staff. Tax-levy, program, and vendor trainers conducted three workshops and provided 31 consultations for the teachers of the 58 targets students and their special education supervisors, for a total of 136 training contacts.

Service for Subcomponent 2.2 began with the purchase and installation of computers and appropriate instructional software at O.T.C. sites in each of the five boroughs of New York City. All were in place by the beginning of March, 1983. Students received instruction individually or in pairs. Session frequency and length varied from site to site ranging from one 30-minute session per week to two 45-minute sessions per week for each student. Instruction was provided by O.T.C. tax-levy staff.

Materials/Equipment

The program provided five Apple II computers, instructional software for reading and mathematics, the Fountain Valley Teacher Support System in Reading, and the KeyMath Diagnostic Test. Software programs included:

Clock; Money! Money!; Letter Recognition; Typing Tutor; Using a Calendar; Telling Time; Preschool I.Q. Builder; Using Money; Elementary Math Concepts; and Beginning Math Concepts.

Promising Activities

The program introduced P.L. 89-313 retarded and multiply handicapped students to the use of computers and provided individualized, programmed reading and mathematics instruction. Despite startup and scheduling problems, participating students, teachers, and administrators were quite positive, particularly in response to the high degree of individualization. All teachers wanted to see the program continue and many suggested that it be expanded to include more students.

Teachers reported that many of the handicapped students involved in the program improved behaviorally, socially, and academically. Behavioral improvements included lengthened attention span, increased concentration, and higher motivation to learn and attend classes. While most participating students showed some academic progress, the strongest gains were made by the educable mentally retarded students. The mathematics software was seen as particularly effective.

The teacher coordinator organized an effective training program to prepare the professional staff for program implementation. Staff members were eager to promote their computer skills and many enrolled in training courses on their own. Three were developing new reading software to better meet the specific needs of severely handicapped students.

Inhibiting Factors

Several factors hampered implementation of this subcomponent. First, as for the other subcomponents, delayed funding approval limited instructional time and caused scheduling and programming problems for teachers and students resulting in short and infrequent sessions. Since the program did not provide staff for computer instruction, school administrators had to schedule their regular staff for program implementation.

Second, teacher interviews indicated that computer instruction was most appropriate for the mildly to moderately mentally retarded O.T.C. students but less so for the more severely disabled A.S.T.C. pupils. For the latter, their ability to profit from computer instruction was hampered by disinhibition, hyperactivity, and distractibility.

Third, finding an appropriate space for computer installation was a problem, particularly in fully utilized schools. In two facilities the computer was located in a small office; in one it was installed in the general office.

A final problem was the paucity of appropriate and effective software. As indicated above, staff began to develop new reading software to better meet the needs of severely handicapped students.

Achievement Data

To measure student growth in reading and mathematics, as a result of program participation, two criterion-referenced tests were administered on an ongoing basis, the Fountain Valley Teacher Support System in Reading and the KeyMath Diagnostic Arithmetic Test. The criterion for

attainment of the program objective was mastery of two new skills in each area by 75 percent of the students. Nine students were transferred or discharged from the program; achievement data were reported for 49.

To determine whether the reading objective was met, a frequency distribution of reading skills mastered by O.T.C. and A.S.T.C. program participants was prepared. The results, which are presented in the Appendix in Tables A.5 and A.6, indicated that 60 percent of the O.T.C. and nine percent of the A.S.T.C. students met the criterion of mastery of at least two new skills. Accordingly, the reading objective was not attained by either group.

Analysis of specific objectives indicated that most of the reading skills taught were in the areas of vocabulary and comprehension, which together accounted for over 80 percent of the total; the rest were phonetic analysis skills.

To determine whether the mathematics objective was attained, a frequency distribution of mastery of mathematics skills was prepared for O.T.C. and A.S.T.C. students. The results, which are presented in the Appendix in Tables A.7 and A.8, indicated that 85.7 percent of the O.T.C. and nine percent of the A.S.T.C. students met the criterion of mastery of at least two new skills. Accordingly the mathematics objective was attained by the O.T.C. but not the A.S.T.C. students.

The mathematics skills taught to program students were largely in the functional areas of money (44 percent) and time (31 percent). About one-tenth each were in basic number concepts and computation and the remainder were in other areas including measurement.

Although neither objective was fully attained as proposed, substantial academic improvement was apparent, especially given the relatively brief period of program operation. Consistent with the teacher interviews, achievement data indicated that computer instruction benefited the O.T.C. students more than their A.S.T.C. counterparts. This discrepancy cannot be attributed to differences in instructional time since both the A.S.T.C. and O.T.C. students attended approximately the same number of computer-assisted sessions; the former attended a mean of 19.5 (S.D. = 6.7) sessions and the latter a mean of 17.6 (S.D. = 9.5). Accordingly, the findings support the conclusion that computer-assisted instruction, as implemented in Subcomponent 2.3, may be more appropriate for the less severely handicapped population. Perhaps the development of more appropriate software would enhance the effectiveness of computer-assisted instruction for severely handicapped students.

SUBCOMPONENT 2.3 SERVICES FOR HEARING-HANDICAPPED

Activities

Subcomponent 2.3 provided computer-assisted remedial reading and mathematics instruction to 17 hearing impaired students, ages 15 to 19, attending four magnet schools; supplementary reading and mathematics materials and equipment to 13 severely and profoundly hearing impaired students, ages seven to 19; and instruction in social development and gross motor skills to 11 students, age 17 to 19. In all, Subcomponent 2.3 served 41 students.

Service for students receiving computer-assisted instruction began with installation of the computers and individual training sessions for staff at the four sites; sessions took place in February and were conducted by a supervisor from the D.S.E. Office of Hearing Handicapped Services and a computer company representative. Students received instruction from tax-levy staff for about 40 minutes approximately three times a week. Amount of instruction for students using other purchased supplementary materials varied according to the nature of the materials.

Service for students receiving gross motor skills instruction began in December with the arrival of gymnasium equipment. Students worked with the materials in groups of three for three 30-minute periods per week. The tax-levy physical education teacher and paraprofessional directed the exercises.

Materials

Program-purchased materials included four Commodore Pet Computers, model 40-31, and reading and mathematics software packages; Reader's Digest Skill Builders, Top Picks, mysteries, and science fiction; Barnell Loft Cloze reading materials; overhead and opaque projectors; Polaroid film and flashbulbs; and calculators. Gross motor skills equipment was a Golbal Gym with eight exercise stations.

Promising Activities

Subcomponent 2.3 provided hearing impaired students with effective supplementary instruction and materials which resulted in far-reaching

student gains, both academically and socially. According to their teachers, students receiving computer-assisted instruction improved in reading comprehension and vocabulary; communicated more readily and more effectively with other teachers and with peers, including those using other modes of communication; and showed increased attention span and motivation. Students receiving gross motor skills training showed improved dexterity, strength, and stamina as well as improved self esteem, motivation, assertiveness, and control over extraneous movements.

Inhibiting Factors

Delays in delivery of program equipment limited the period of service somewhat. Nonetheless substantial benefits to students were apparent.

Achievement Data

To measure growth in mathematics and reading, students' scores on the April, 1982 citywide tests (i.e., California Achievement Test and an adaptation of the Stanford Diagnostic Mathematics test) were compared with their April, 1983 scores. The proposed criterion for attainment of the objective was an increase in normal curve equivalent (N.C.E.) scores in reading or mathematics by 70 percent of the students receiving computer-assisted instruction or supplementary materials. Because of apparent errors in recording the N.C.E. data, it was not possible to use these data and instead grade-equivalent scores from the 1982 and 1983 tests were compared. The new criterion, which calls for roughly equivalent

or somewhat greater amount of student growth, was for increases of more than one year in grade-equivalent reading or mathematics scores by 70 percent of the students.

To determine whether this objective was attained, frequency distributions were prepared of gains in grade-equivalent reading and mathematics scores for students receiving computer-assisted instruction and for students receiving supplementary materials and supplies. The data for the former, which are presented in the Appendix in Table A.9, indicated that nine of the 14 students (64.3 percent) for whom complete data were available had increased grade-equivalent scores of more than one year in reading or mathematics. One student showed a gain of exactly one year and the remaining four student showed modest gains or declines in their grade-equivalent test scores. All students received similar test modifications at pre- and post-testing; 12 students had extended time limits and a special location for testing and two, in addition to these modifications, had questions read to them. Given that computer-assisted instruction did not begin until the spring semester, the gains shown in grade-equivalent scores plus teacher reports of pupil growth can be taken as indication that the objective was largely attained.

Frequency distributions of grade-equivalent gains in reading and math for the students receiving supplementary materials and equipment indicated that six of the 11 students (54.6 percent) for whom complete data were available made gains of more than one year in reading or math (See Table A.9). One student gained exactly one year and the other four

made modest gains. Again, all students receiving supplementary materials and supplies were pre- and post-tested with similar test modifications. Five had extended time limits and special testing locations and the others had these two modifications plus one or two of the following: questions read to student, answers recorded for student, and use of calculator or abacus on math test. The objective for this group was also effectively attained.

To measure growth in gross motor skills, in response to supplementary physical education activities, students received ongoing assessment on B.C.P. strand 17, Gross Motor II. The criterion for the attainment of the objective was mastery of at least one skill consistent with their individual I.E.P.s by 80 percent of the students. To determine whether the objective was attained, a frequency distribution of student mastery was prepared. These data, which are presented in the Appendix in Table A.10, indicated that all 10 students for whom data retrieval forms were submitted mastered at least one new skill; eight students mastered three and two students mastered two new skills. Most students received instruction in arm-building and torso-building activities and some worked on leg-building and coordination activities as well. Accordingly, the objective was attained.

IV. CONCLUSIONS AND RECOMMENDATIONS

Analysis of data gathered to evaluate the components and subcomponents of the P.L. 89-313 program indicate that most of its objectives were largely or completely met. Overall, most of the 1,054 students served by the program demonstrated positive growth in communication, reading, mathematics, sensory and motor development, self-help and societal/community living skills, social interactions, and vocational competencies. In addition, observations and interviews indicated that, for the most part, program services met the individual needs of the students and effectively supplemented basic instructional activities.

In comparison with the 1981-82 program cycle, the 1982-83 cycle served approximately twice as many students and provided more than three times as many pieces of supplementary materials and equipment. More than twice as many staff were involved in the 1982-83 cycle. In keeping with recommendations from the evaluation of the previous cycle, most of these were teacher trainers whose primary responsibilities were to provide consultations, in-class demonstrations, and workshops in the selection and effective use of program-purchased materials and equipment for individualization of instruction.

Three of the subcomponents of the 1981-82 program cycle were replicated during 1982-83, allowing some direct comparisons between cycles. Subcomponent 1.2, Regionalized Instructional Support Unit, was a minor part of the previous cycle, serving only about 20 students; in the current cycle it served 389 program-eligible students attending regional schools.

Subcomponent 1.3, Placement and Referral Center for the Handicapped, was a replication and expansion of a previous component; in the previous cycle this subcomponent provided supervised work experience and some pre-vocational skills training and in the current cycle the pre-vocational skills training was expanded substantially to include students who were not yet ready to work. This subcomponent met its pupil achievement objective both years. The third replicated program, Subcomponent 2.1, Citywide Services Instructional Supplies and Equipment, provided supplementary equipment and materials to students attending Citywide Services programs in special schools. It served over twice as many students as it had the previous year and supplied over twice as many materials. Student achievement levels were similar but because of a higher criterion during the current year the objective was attained only for the 1981-82 cycle.

Overall, students achievement declined somewhat in comparison with that observed during the previous cycle (1981-82), but remained higher than that of the first program year (1980-81). Analysis of data for the 1980-81 program revealed that only 14 percent of the 514 target students mastered at least 75 percent of their short-term objectives; the comparable statistic for the 527 students served in 1981-82 was 70 percent; and in 1982-83 it was 58 percent. Analyses of these data by type of skill shows a similar pattern in some, but not all curriculum areas. In 1980-81 the 75-percent criterion was attained by nine percent, 26 percent, and seven percent of the students in affective and daily living behavior, academics, and pre-vocational and occupational education, respectively;

the comparable statistics for 1981-82 were 71 percent, 72 percent, and 62 percent; and for 1982-83 they were 59 percent, 54 percent, and 66 percent. Thus, student achievement increased for pre-vocational skills but decreased in other areas.

All components and subcomponents suffered from delays in obtaining funding approval. In addition, in several subcomponents, although program-eligible students were identified before the beginning of the program cycle, locating many of them in particular classes at particular sites proved difficult.

The conclusions drawn from the findings of this evaluation lead to the following recommendations:

--Efforts should continue to gain early project approval and delivery of supplies to ensure that services are planned and provided in a timely manner.

--Where the focus of program activities is on providing supplementary materials or equipment, efforts to involve parents should be expanded.

--The program should continue to emphasize field-contacts and site visits to ensure better rapport with school staff, disseminate information more effectively, and optimize direct implementation. Where possible inclass demonstrations rather than workshops should be provided.

--Program coordinators should continue to request input from school-based personnel regarding the purchase of specific instructional aids to ensure the best match between student needs and program services.

APPENDICES

Table A. 1

Frequency Distribution of Mastery
of Short-term Instructional Objectives
by Program Students
(Subcomponent 1.2)

Number of Skills Mastered	Number of Students	Percent of Population	Cumulative Percent
More than 10	4	1.2	1.2
9	4	1.2	2.4
8	10	3.1	5.5
7	7	2.1	7.6
6	34	10.4	18.0
5	19	5.8	23.8
4	30	9.2	33.0
3	70	21.4	54.4
2	68	20.8	75.2
1	25	7.6	82.8
0	56	17.1	99.9[a]
	327		

[a]Does not total 100 percent because of rounding.

.Over 80 percent of the students mastered at least one short-term instructional objective; over 75 percent mastered two or more.

Table A. 2

Numbers of Students
Assessed by Each Method
(Subcomponent 1.2)
N = 327

Assessment Method	Number of Students[a]	Relative Percent of Population
VORT B.C.P.	157	48.0
I.E.P. Objectives	119	36.4
Mathematics I.M.P.	62	19.0
I.C.R.T. Reading	34	10.4
Career Education	21	6.4

[a]Number of students showing mastery of one or more skills as measured by each method; achievement could be reported on more than instrument.

- The most widely used assessment technique for Subcomponent 1.2 was the VORT B.C.P.; nearly half the students were tested on this instrument.

- Teachers of over one-third of the students reported pupil mastery in terms of I.E.P. objectives.

Table A. 3

Frequency Distribution of
Mastery of Job Intervewing Skills
As Measured By The Adkins Life Skills Interview Rating Scale
(Subcomponent 1.3)

Number of Skills Mastered	Number of Students	Percent of Population	Cumulative Percent
11	2	5.9	5.9
10	1	2.9	8.8
9	1	2.9	11.7
8	2	5.9	17.6
7	3	8.8	26.4
6	3	8.8	35.2
5	8	23.5	58.7
4	6	17.6	76.3
3	4	11.8	88.1
2	1	2.9	91.0
1	2	5.9	96.9
0	1	2.9	99.8[a]
	34		

[a]Does not total 100 percent because of rounding.

.All but one student demonstrated mastery of at least one job interviewing skill; over 90 percent mastered two or more; and over three-fourths mastered at least four.

Table A. 4

Frequency Distribution of Mastery
of B.C.P. and Track IV InDepth Objective
(Subcomponent 2.1)

Number of Skills Mastered	Number of Students	Percent of Population	Cumulative Percent
9 or more	7	1.6	1.6
7	5	1.1	2.7
6	7	1.6	4.3
5	28	6.3	10.6
4	47	10.6	21.2
3	147	33.2	54.4
2	86	19.4	73.8
1	76	17.2	91.0
0	40	9.0	99.0[a]
	443		

[a]Does not total 100 percent because of rounding.

.Over 90 percent of the students mastered at least one new skill as measured by the B.C.P. or the Track IV InDepth Analysis; nearly three-fourths mastered two or more; about half met the criterion of three or more skills.

Table A. 5

Frequency Distribution of Mastery
of Reading Skills by O.T.C. Students, as Measured by the
Fountain Valley Teacher Support System
(Subcomponent 2.2)

Number of Skills Mastered	Number of Students	Percent of Population	Cumulative Percent
4	1	2.9	2.9
3	9	25.7	28.6
2	11	31.4	60.0
1	7	20.0	80.0
0	7	20.0	100.0
	35		

.Eighty percent of the O.T.C. students mastered at least one new reading skill.

Table A. 6

Frequency Distribution of Mastery of Reading Skills by A.S.T.C. Students as Measured by the Fountain Valley Teacher Support System (Subcomponent 2.2)

Number of Skills Mastered	Number of Students	Percent of Population	Cumulative Percent
2	1	9.1	9.1
1	3	27.2	36.3
0	7	63.6	99.9[a]
	11		

[a]Does not total 100 percent because of rounding.

.Fewer than half of the A.S.T.C. students mastered new reading skills.

Table A. 7

Frequency Distribution of Mastery of Mathematics Skills by O.T.C. Students as Measured by the KeyMath Diagnostic Arithmetic Test (Subcomponent 2.2)

Number of Skills Mastered	Number of Students	Percent of Population	Cumulative Percent
5	2	5.7	5.7
4	2	5.7	11.4
3	16	45.7	57.1
2	10	28.6	85.7
1	3	8.6	94.3
0	2	5.7	100.0
	35		

.Over 90 percent of the O.T.C. students mastered at least one new mathematics skill; over 85 percent mastered two or more; and nearly 60 percent mastered at least three.

Table A. 8

Frequency Distribution of Mastery of Mathematics Skills by A.S.T.C. Students as Measured by the KeyMath Diagnostic Arithmetic Test (Subcomponent 2.2)

Number of Skills Mastered	Number of Students	Percent of Population	Cumulative Percent
2	1	9.1	9.1
1	6	54.5	63.6
0	4	36.4	100.0
	11		

.Nearly two-thirds of the A.S.T.C. students mastered one or more new mathematics skills.

Table A. 9

Numbers of Students Whose Grade-Equivalent Scores Increased by More than One Year as Measured by Comparison of 1982 and 1983 Citywide Test Scores, by Test and Service Received (Subcomponent 2.3) (N = 25)

Service Received	Reading and Math	Reading Only	Math Only	Neither	Total
Computer-Assisted Instruction	1	6	2	5	14
Supplementary Equipment	3	3	0	5	11
Total	4	9	2	10	25

- Nine of the 14 students receiving computer assisted instruction showed increases of more than one full year in their grade-equivalent reading or math scores.
- Six of the 11 students receiving supplementary equipment showed increases of more than one full year in reading or math.

Table A. 10

Frequency Distribution of
Gross Motor Skills Mastered
(Subcomponent 2.3)

Number of Skills Mastered	Number of Students	Percent of Population	Cumulative Percent
3	8	80	80
2	2	20	100
	10		

.All students mastered at least two new gross motor skills as a result of program participation.

Table A. 11

Breakdown of Participant Achievement Information
by Program Subcomponent for S.E.D. Curriculum Areas
6, 8, 9, 11, and 12

S.E.D. Code[a]/ Curriculum Area/ Subcomponent	Number Served	Number Meeting Criterion[c]
6. Maladaptive Behavior		
Subcomponent 1.2	36	15
Subcomponent 2.1	58	24
Total	94	39
8. Independent Living		
Subcomponent 1.2	43	31
Subcomponent 2.1	112	74
Total	155	105
9. Societal/Survival		
Subcomponent 1.2	51	25
Subcomponent 2.1	101	69
Total	152	94
11. General Cognitive Readiness		
Subcomponent 1.2	8	5
Subcomponent 2.1	6	6
Total	14	11
12. Reading		
Subcomponent 1.2	57	35
Subcomponent 2.1	15	13
Subcomponent 2.2	48	14
Subcomponent 2.3	30	17
Total	150	79

[a]State Education Department code.

[b]Number of students instructed in each area.

[c]Number of students meeting 75 percent of their instructional objectives.

Table A. 12

Breakdown of Participant Achievement Information
by Program Subcomponent for S.E.D. Curriculum Areas
13, 16, 19, and 20

S.E.D. Code[a]/ Curriculum Area/ Subcomponent	Number Served	Number Meeting Criterion[c]
13. Mathematics		
Subcomponent 1.2	232	116
Subcomponent 2.1	11	9
Subcomponent 2.2	48	25
Subcomponent 2.3	30	9
Total	321	159
16. English Language Arts		
Subcomponent 1.2	17	13
Subcomponent 2.1	4	3
Total	21	16
19. Communication		
Subcomponent 1.2	53	28
Subcomponent 2.1	173	100
Total	226	128
20. Physical Education		
Subcomponent 2.3	11	11

[a]State Education Department code.

[b]Number of students instructed in each area.

[c]Number of students meeting 75 percent of their instructional objectives.

Table A. 13

Breakdown of Participant Achievement Information
by Program Subcomponent for S.E.D. Curriculum Areas
26, 27, 28, and 30

S.E.D. Code[a]/ Curriculum Area/ Subcomponent	Number Served	Number Meeting Criterion[c]
26. Motor Development		
Subcomponent 1.2	7	4
Subcomponent 2.1	33	25
Total	40	29
27. Other Sensory Development		
Subcomponent 1.2	10	0
Subcomponent 2.1	6	3
Total	16	3
28. Career Education		
Subcomponent 1.2	33	14
Subcomponent 2.1	212	144
Total	245	158
30. Vocational/Occupational Subcomponent 1.3	47	35

[a]State Education Department code.

[b]Number of students instructed in each area.

[c]Number of students meeting 75 percent of their instructional objectives.