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ABSTRACT

This document describes a project which served Chinese-speaking students of limited English proficiency in grades 9-12. Participating students received instruction in English as a Second Language, native language arts (NLA), and the content area subjects of mathematics, science, pre-engineering, computer literacy, and social studies. Students were also offered career counseling. Multicultural education was an integral part of programming. The project offered staff development to teachers of participating students as well as to some mainstream teachers and provided field trips and workshops to the parents of participating students. Project PRISM met its objectives for Chinese NLA, content area subjects, attendance, staff development, and parental involvement and is in the process of developing a Chinese bilingual glossary for the engineering course. The following recommendations were made: (1) Continue to seek methods to increase participating students' English proficiency and (2) Acquire or develop Chinese materials for pre-engineering. (MKR)

OER Report

Pre-engineering Instruction/Science and Mathematics
(Project PRISM)
Transitional Education Grant T003D30248
FINAL EVALUATION REPORT
1993-94

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(Project PRISM)
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FINAL EVALUATION REPORT
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EXECUTIVE SUMMARY

Pre-engineering Instruction/Science and Mathematics (Project PRISM) was an Elementary and Secondary Education Act (E.S.E.A.) Title VII-funded project in its first year in 1993-94. The project served Chinese-speaking students of limited English proficiency (LEP) in ninth through twelfth grade at Seward Park High School in Manhattan. Participating students received instruction in English as a second language (E.S.L.), native language arts (N.L.A.), and the content area subjects of mathematics, science, pre-engineering, computer literacy, and social studies. Students were also offered career counseling. Multicultural education was an integral part of programming.

The project offered staff development to teachers of participating students as well as to some mainstream teachers. Teachers of project students had the opportunity to team-teach with the project's resource specialists.

Project PRISM provided field trips and workshops to the parents of participating students.

Project PRISM met its objectives for Chinese N.L.A., content area subjects, attendance, staff development, and parental involvement. It was impossible for the Office of Educational Research (OER) to evaluate the objective for E.S.L. since it was too early in program implementation for Project PRISM to fulfill the conditions specified in the objective.

Project PRISM reported that it is in the process of developing a Chinese bilingual glossary for the engineering course.

The conclusions, based on the findings of this final evaluation, lead to the following recommendation:

- Continue to seek methods to increase participating students' English proficiency.

- Acquire or develop Chinese materials for pre-engineering

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I. INTRODUCTION

In 1993-94, Pre-engineering Instruction/Science and Mathematics (Project PRISM) was in its first year of funding as an Elementary and Secondary Education Act (E.S.E.A.) Title VII-funded project.

PROJECT CONTEXT

Project PRISM is a Chinese bilingual education program in science, mathematics, and pre-engineering. The project operates at Seward Park High School which is located in lower Manhattan. A large number of area residents are recent immigrants from China, Hong Kong, Taiwan, and other parts of Asia. The area has the highest concentration of Asian-American students in the city.

All demographic data reported are from 1992-93, the last year for which such data were available. Of the 3,202 students at Seward Park High School, 46 percent were Latino, 38 percent were Asian-American, 14 percent were African-American, and 2 percent were European-American. Of these students, 43 percent were of limited English proficiency (LEP) and 66 percent came from low-income families as evidenced by their eligibility to participate in the free-lunch program.

Although Seward Park High School's large building was old and in need of repairs in some parts, the hallways were clean and quiet. Walls were covered with displays of students' work. The project's resource room was easily accessible and frequently visited by students.

STUDENT CHARACTERISTICS

Project PRISM served Chinese-speaking LEP students in ninth through twelfth grade. LEP status was determined by scores at or below the 40th percentile on the Language Assessment Battery (LAB). In addition to LEP status, the following were considered for admission: interviews by the project director or coordinator; placement tests in the native language; English as a second language (E.S.L.) and content area subject grades; and responses on the Student Selection Questionnaires which indicated interests in mathematics, science, and engineering.

In 1993-94, the project served a total of 298 Chinese-speaking LEP students, with 42 students in 9th grade, 94 in 10th grade, 129 in 11th grade, and 33 in 12th grade. The majority of participants (90 percent) were born in China. (For students' countries of origin, please see Table 1.) Over 99 percent of the participants came from low-income families as evidenced by their eligibility for the free-lunch program.

Needs Assessment

Before instituting this program, Seward Park High School conducted an exhaustive needs assessment of the targeted students and their families as well as of the educational staff who were to serve them. The data obtained from this assessment indicated these primary needs: (1) to provide LEP students with intensive English and native language instruction and support services to improve their school performance; (2) to provide the LEP students with mathematics, science, and pre-engineering programs to match the academic backgrounds of the Chinese bilingual students; (3) to offer staff development activities on bilingual and

multicultural subjects; (4) to develop bilingual mathematics, science, and pre-engineering curriculum materials in Chinese; and (5) to provide parents of participants with E.S.L courses and workshops to familiarize them with the educational system and project goals through the Seward Park Family English Literacy Program.

TABLE 1

Students' Countries of Origin

Country	Number of Students
People's Republic of China	267
Hong Kong	20
Malaysia	6
Vietnam	3
Taiwan	1
Macau	1
TOTAL	298

PROJECT OBJECTIVES

Student Objectives

As a result of participating in the project, by the end of June 1994, 75 percent of students who participated in the project for no less than 140 days (75 percent participation) will

- make statistically significant ($p < .05$) gains in English language proficiency, as measured by the Language Assessment Battery (LAB).

- demonstrate growth in native language proficiency as measured by achieving a final native language arts course grade of 65 or higher based on administration of teacher-made examination.

- demonstrate growth in mathematics courses by achieving a final mathematics course grade of 65 or higher based on administration of teacher-made examinations.

- demonstrate growth in science courses by achieving a final science course grade of 65 or higher based on administration of teacher-made examination.

- demonstrate growth in pre-engineering courses by achieving a final pre-engineering course grade of 65 or higher based on administration of teacher-made examinations.

- demonstrate growth in computer courses by achieving a final computer course grade of 65 or higher based on administration of teacher-made examinations.

- By the end of June 1994, 75 percent of project students will maintain a 90 percent attendance rate.

Staff Development Objectives

By the end of June 1994,

- three project staff members and/or instructional staff serving project students will have taken college credits in bilingual education, mathematics, science, or engineering education, computer education, or other subject areas related to the goals and objectives of the project.

- project staff members will have attended a total of ten workshops and in-service training sessions that are related to the goals and objectives of the project.

- project staff members will conduct four in-service workshops related to the goals and objectives of the project.

Parental Involvement Objective

- By the end of June 1994, a total of 200 parents (67 percent) of project students will attend the project's fall and spring parent meetings.

PROJECT IMPLEMENTATION

During the 1993-94 school year, Project PRISM provided instructional and support services to Chinese-speaking LEP students and their families. The project's main goal was to promote bilingual excellence and achievement of content area skills. To meet this goal, project staff worked very closely with teachers of participating students.

The resource specialists worked at the school as facilitators. They modeled various interdisciplinary techniques, which the classroom teachers then adopted. At the end of each lesson, teachers reviewed vocabulary and concepts in English. Content area courses were taught in the native language supplemented by English.

Project PRISM provided parents and staff with opportunities to participate in various cultural and instructional activities.

Capacity Building

In the year following the one under review, the project will receive New York State categorical funds for curriculum materials development; Chapter 1, Project Achieve, and other funds for the five U.F.T. paraprofessionals; and Chapter I and tax levy funding for guidance counselors and family paraprofessionals. Tax levy will also fund 50 percent of the salary of the resource specialists.

Materials, Methods, and Techniques

Project PRISM offered E.S.L. at three levels: beginning, intermediate, and advanced. Beginning and intermediate classes met 15 periods a week and advanced classes met 10 periods a week. The project offered Chinese native

language arts (N.L.A.) at beginning, intermediate, advanced, and advanced placement levels. Each met five periods a week. Content area classes were taught mostly in Chinese supplemented by English. As students' English proficiency improved, teachers made the transition to greater use of English with an E.S.L. methodology. Many textbooks were in English, but teachers were able to use Chinese materials for general science, biology, global and American history, American government, and mathematics. All classes were taught five periods per week. For languages of instruction, see Table 2.

TABLE 2

Languages of Instruction

Subject	Grade	Language of Instruction
Mathematics	9	Chinese only
	10	Chinese + English
	11	Chinese + English
	12	English + some Chinese
Science	9	Chinese only
	10	Chinese + English
	11	English + Chinese
	12	English + some Chinese
Social Studies	10	Chinese + English
	11	Chinese + English
	12	Chinese + English

Teachers of participating students used a wide array of strategies and techniques, including bilingual methodologies, team teaching with paraprofessionals assisting monolingual teachers, storytelling, and role playing; laboratory experiments in science; the use of news articles to develop students' native language proficiency; and storytelling and cooperative learning in E.S.L. Students participated in field trips and a variety of cultural experiences, about which they were encouraged to speak or write.

Project PRISM held two orientation sessions for newly admitted students and conducted a tutoring program throughout the school day.

For a list of instructional materials used in the project, see Appendix A.

Staff Qualifications

Title VII staff. The project's Title VII staff included one project coordinator and two resource specialists, all of whom were partially supported with tax-levy funds, two educational assistants, and one bilingual secretary. For a description of degrees held and language proficiency (teaching or communicative*), see Table 3.

The project coordinator's responsibilities included overseeing the day-to-day operation of the project and coordinating staff development and evaluation activities. The resource specialists coordinated parental involvement activities, assisted classroom teachers in preparing instructional programs, and coordinated student

*Teaching proficiency (TP) is defined as the ability to use LEP students' native language in teaching language arts or other academic subjects. Communicative proficiency (CP) is defined as a non-native speaker's basic ability to communicate and interact with students in their native language.

TABLE 3

Project Staff Qualifications

Position Title	Degree	Language Proficiency	Additional Funding
Project Coordinator	M.A.	Chinese TP	Tax levy
Resource Specialist	Ph.D.	Chinese TP	Tax levy
Resource Specialist	M.A.	Chinese TP	Tax levy
Educational Assistant	B.A.	Chinese CP	
Educational Assistant	B.A.	Chinese CP	
Secretary		Chinese CP	

activities and cultural events. The educational assistants assisted classroom teachers in translating instructional materials and providing tutoring to project students. The bilingual secretary provided clerical services and maintained project records.

Other staff. Tax-levy funds paid the salaries of the project director and 50 classroom teachers who provided instructional services to project students. All teachers were certified in the areas in which they taught. For a description of degrees held, certifications, and language competencies, see Table 4.

The project director's responsibilities included providing overall administration and supervision; handling budgetary matters; implementing city, state, and federal regulations; serving as a liaison between the project and various divisions of the Board of Education of the City of New York and the State Education Department; and initiating and conducting workshops and other staff development activities.

TABLE 4

Qualifications of Non-Title VII Staff

Position Title	Degrees	Certification	Lang. Proficiency
Project Director	M.A.	Administration/ Supervision	Chinese TP
Teachers (50)	1 Ed.D. 40 M.A. 8 M.S. 1 B.S.	23 E.S.L. 4 Chinese 11 Bil. Mathematics 5 Bil. Science 6 Bil. Social Studies 1 Health Education	35 Chinese TP

Staff development. Project PRISM provided staff development to teachers of participating students and project staff. The teaching staff had the opportunity to attend a variety of activities on such topics such as "Minority Education in Rural Areas of China," "Using Bilingual Techniques in Content Area Classes--With Emphasis on Math and Science," and "Using Video in the Classroom." The median attendance for workshops was 40 teachers. Project staff also attended meetings which covered such topics as students' concerns and problems and how the staff could better serve bilingual students.

The project director and other staff members attended a number of out-of-town conferences: National Association for Bilingual Education (NABE), Office of Bilingual Education and Minority Language Affairs (OBEMLA) Management Institute in Los Angeles, International Teaching English to Speakers of Other Languages

(TESOL) in Baltimore, New York State Association for Bilingual Education (NYSABE), New York State TESOL, and the National Association for Asian & Pacific American Education.

Instructional Time Spent on Particular Tasks

See Appendix B for examples of class schedules.

Length of Time Participants Received Instruction

Students had a mean of 7.9 years (s.d.=1.7) of education in a non-English-speaking school system and 2.0 years (s.d.=1.0) of education in the United States. The median time students participated in Project PRISM was 10 months.

Activities to Improve Pre-Referral Evaluation Procedures for Exceptional Children

Teachers referred those students thought to be in need of special education services to the School-Based Support Team (S.B.S.T.) for evaluation. The social worker was proficient in Chinese.

Gifted and talented students were identified by teacher judgement and course grades.

Instructional Services for Students with Special Needs

The project referred disabled students to the S.B.S.T. Gifted and talented students were given activities which were enriching and allowed them to progress at their own pace. Such students enrolled in Advanced Placement (AP) classes in mathematics, science, and social studies.

PARENT AND COMMUNITY INVOLVEMENT ACTIVITIES

Project PRISM's parental involvement component aimed to enhance the

relationship between home and school, and to involve parents in their children's education. Staff made frequent home contacts. The project made outreach efforts to the community through community newspapers. Parental involvement activities included workshops and four meetings, including a citywide Chinese parents' conference.

II. EVALUATION METHODOLOGY

EVALUATION DESIGN

Project Group's Educational Progress as Compared to That of an Appropriate Non-Project Group

The Office of Educational Research (OER) used a gap reduction design to evaluate the effect of language instruction on project students' performance on standardized tests. Because of the difficulty in finding a valid comparison group, OER used instead the groups on which the tests were normed. Test scores are reported in Normal Curve Equivalents (N.C.E.s), which are normalized standard scores with a mean of 50 and a standard deviation of 21.1. It is assumed that the norm group has a zero gain in N.C.E.s in the absence of supplementary instruction and that participating students' gains are attributable to project services.

Applicability of Conclusions to All Persons Served by Project

Data were collected from all participating students for whom there were pre- and posttest scores. (There were no pretest data on students who entered the program late; therefore, posttest data for them will serve as pretest data for the following year.) Instruments used to measure educational progress were appropriate for the students involved. The LAB is used throughout New York City to assess the growth of English in populations similar to those served by Project PRISM.

INSTRUMENTS OF MEASUREMENT

OER compared pre- and posttest scores on the LAB to assess the E.S.L. objective. The Chinese N.L.A. objective and the content area objectives in

mathematics and science were assessed through course grades, as specified.

According to the publishers' test manuals, all standardized tests used to gauge project students' progress are valid and reliable. Evidence supporting both content and construct validity is available for the LAB. Content validity is confirmed by an item-objective match and includes grade-by-grade item difficulties, correlations between subtests, and the relationship between the performance of students who are native speakers of English and students who are LEP. To support reliability, the Kuder-Richardson Formula 20 (KR20) coefficients and standard errors of measurement (SEM) are reported by grade and by form for each subtest and total test. Grade reliability coefficients, based on the performance of LEP students on the English version, ranged from .88 to .96 for individual subtests and from .95 to .98 for the total test.

DATA COLLECTION AND ANALYSIS

Data Collection

To gather qualitative data, an OER evaluation consultant carried out on-site and telephone interviews of the project director several times during the school year and also observed two classes on each of two visits. The project evaluator collected the data and prepared the final evaluation report in accordance with the New York State E.S.E.A. Title VII Bilingual Education Final Evaluation Report format, which was adapted from a checklist developed by the staff of the Evaluation Assistance Center (EAC) East in consultation with OBEMLA.

Proper Administration of Instruments

Qualified personnel received training in testing procedures and administered the tests. Test administrators followed guidelines set forth in the manuals accompanying standardized tests. All students were tested at the appropriate grade level. Time limits for subtests were adhered to; directions were given exactly as presented in the manual.

Testing at Twelve-Month Intervals

Standardized tests were given at 12-month intervals, following published norming dates.

Data Analysis

Accurate scoring and transcription of results. Scoring, score conversions, and data processing were accomplished electronically by the Scan Center of the Board of Education of the City of New York. Data provided by the Scan Center were analyzed in the Bilingual, Multicultural, and Early Childhood Evaluation Unit of OER. Data collectors, processors, and analysts were unbiased and had no vested interest in the success of the project.

Use of analyses and reporting procedures appropriate for obtained data. To assess the significance of students' achievement in English, OER computed a correlated *t*-test on the LAB scores. The *t*-test determined whether the difference between the pre- and posttest scores was significantly greater than would be expected from chance variation alone.

The only possible threat to the validity of any of the above instruments might be that LAB norms were based on the performance of English proficient (EP) rather than LEP students. Since OER was examining gains, however, this threat was inconsequential—the choice of norming groups should not affect the existence of gains.

III. FINDINGS

PARTICIPANTS' EDUCATIONAL PROGRESS

Project PRISM carried out all instructional activities specified in its original design.

LEP Participants' Progress in English

Throughout the school year, students had ample opportunity to develop their English language skills. E.S.L. was offered at beginning, intermediate, and advanced levels. Beginning and intermediate classes met 15 periods a week; advanced classes met 10 periods a week.

An OER evaluation consultant visited Seward Park High School twice during the year and observed two classes on each occasion. One visit was to a beginning level E.S.L. class of 21 students. The classroom was arranged informally, with students sitting in small circles. The teacher indicated that she found such an arrangement more convenient and students felt more comfortable. A Mandarin-speaking paraprofessional walked around the room, explaining and translating to students who had problems understanding English. The teacher used a variety of objects (a paper bag, a toy shovel, a tin can, a mirror, and a hammer) for demonstration while introducing the sentence pattern: what can/could we do with this? During this process, students learned new words and expressions.

At the beginning of the class, the teacher asked students to write for about ten minutes on their chosen topic. The class was conducted in English. Chinese was used by the paraprofessional only when helping individual students. There was excellent student participation in the lesson.

The evaluation objective for E.S.L. was:

- As a result of participating in the project, by the end of June 1994, 75 percent of students who participated in the project for no less than 140 days (75 percent participation) will make statistically significant ($p<.05$) gains in English language proficiency, as measured by the Language Assessment Battery (LAB).

Project PRISM began in September 1993 and the participating students took the LAB in March 1994. The time between the students entering the project and the time when they were tested was less than 140 days. In spite of the short period in which the students received the services of Project PRISM, the average gain on the LAB for the 222 students for whom there were complete pre- and posttest scores was 4.6 N.C.E.s (s.d.= 7.7). This gain was statistically significant ($t=8.82$, $p<.05$). OER was unable to evaluate the objective for E.S.L. since it was impossible for the project to meet the condition that students participate at least 140 days. In the year following the one under review it will be possible to evaluate this objective.

LEP Participants' Progress in Native Language

In the year under review, Chinese N.L.A. was offered at beginning, intermediate, advanced, and advanced placement levels. All met five periods a week.

The evaluation objective for Chinese N.L.A. was:

- As a result of participating in the project, by the end of June 1994, 75 percent of students who participate in the project for no less than 140 days (75 percent participation) will demonstrate growth in native language proficiency as measured by achieving a final native language arts course grade of 65 percent or higher based on administration of teacher-made examination.

Over 92 percent of participating students in the fall semester and 94 percent in the spring semester achieved a passing grade of 65 or better in Chinese N.L.A.

courses. This was well over the proposed 75 percent.

The project met its Chinese N.L.A. objective.

LEP Participants' Academic Achievement

Most of the texts for content area classes were in English. Teachers, however, used Mandarin predominantly as the language of instruction, and introduced new vocabulary with an E.S.L. methodology. A mathematics and science research lab was available to project students so that they might read, research, and discover.

The OER evaluation consultant observed a tenth grade mathematics class of 25 students. The classroom was clean and bright. Before the class, the teacher listed new words and the major problem for the day on the blackboard: How do we measure the angles of an *n-gon* and find the sum of the measures of all angles of an *n-gon*. A question-and-answer format kept the students very involved. Students also solved problems on the blackboard. There was excellent student participation.

The OER evaluation consultant observed a second tenth grade mathematics class of 32 students. The lesson was on how to apply trigonometry to verbal problems. The teacher started by distributing a one-page worksheet containing five verbal problems, with special terms underlined and translated into Mandarin. She asked one student to read the problems in English, another to translate them into Mandarin, and a third to solve the problem on the blackboard. At the end of the class, students solved two problems on the worksheet and were assigned an additional three for homework. The students were very interested and well-prepared.

The OER evaluation consultant observed a tenth grade biology class of 30 students. The classroom was bright, clean, and decorated with bulletin boards featuring students' work. The lesson was on how substances were transported in organisms. The teacher wrote on the blackboard in English, but presented the lesson in Mandarin. Well-structured questions and slides of earthworms and grasshoppers kept students' interest level high. They asked many questions. The teacher encouraged and complimented creative questions, and answered them appropriately. The students were so enthusiastic that they were not willing to end the lesson when the class period was over. The teacher had to ask them to wait until the following week to explore remaining areas.

The project proposed four objectives for content area subjects:

As a result of participating in the project, by the end of June 1994, 75 percent of students who participate in the project for no less than 140 days (75 percent participation) will

- demonstrate growth in mathematics courses by achieving a final mathematics course grade of 65 percent or higher based on administration of teacher-made examinations.
- demonstrate growth in science courses by achieving a final science course grade of 65 percent or higher based on administration of teacher-made examination.
- demonstrate growth in pre-engineering courses by achieving a final pre-engineering course grade of 65 percent or higher based on administration of teacher-made examinations.
- demonstrate growth in computer courses by achieving a final computer course grade of 65 percent or higher based on administration of teacher-made examinations.

The pre-engineering courses were equivalent to sequential mathematics (MQ 3-4). Students had to complete MQ 4 before taking Introduction to Engineering,

which was to be offered in 1994-95. The project staff indicated that Chinese engineering materials were needed for this course.

Over 90 percent of participating students received a passing grade of 65 and above both semesters in mathematics, science, and computer science. (See Table 5.) This was well over the proposed percentage of 75 percent.

As evaluated by final course grades, project PRISM met all its objectives for content area subjects.

TABLE 5

Passing Grades in Content Area Courses

Subject	Fall 1993		Spring 1994	
	Number of students for whom data were reported	Percent Passing	Number of students for whom data were reported	Percent Passing
Math	284	87.0	279	89.6
Science	225	93.3	200	86.0
Computer Science	11	90.9	37	97.3

FORMER PARTICIPANTS' ACADEMIC PROGRESS IN ENGLISH LANGUAGE CLASSROOMS

Since the current year was the first year of operation for Project PRISM, there were no former project participants.

OVERALL EDUCATIONAL PROGRESS ACHIEVED THROUGH PROJECT

Mainstreaming

The project did not propose any objective for mainstreaming, nor did it report the number of students mainstreamed during the year under review.

Cultural Pride

The Chinese Culture Club held activities such as outings, sports events, and a singing contest. Its members were involved in community work, serving as interpreters for parents during Open School Night and at neighboring elementary schools. The project also sponsored other student activities such as the annual China Nite, a theatrical performance presented by the Seward Park High School Chinese Culture Club, together with project staff, alumni, and community members.

Grade Retention

The project did not propose any objective for reducing grade retention. The project reported that no program students were retained in grade in the year under review.

Attendance

In order to promote better attendance, project staff gave students individual advisement and contacted the parents of absentees. School staff provided tutoring and home visits. The project also used community newspapers to urge parents to make sure students attended school.

The evaluation objective for attendance was:

- By the end of June 1994, 75 percent of project students will maintain a 90 percent attendance rate.

Over 80 percent of project students maintained an attendance rate of over 97 percent. The project met its objective for attendance.

Placement in Gifted and Talented Programs

Gifted and talented students were identified and referred by guidance counselors to attend advanced placement (AP) classes in mathematics, science, and social studies.

Enrollment in Postsecondary Education Institutions

Of the 47 seniors who graduated, 45 (98 percent) were enrolled in college.

CASE HISTORY

When J.S. first entered Seward Park High School in the middle of the semester, he was bewildered and unhappy. He had recently come from a rural area in China, and did not speak much English. The large city was frightening to him. Project PRISM staff were able to help him adjust to the new environment and make friends. He joined the Seward Park Chinese Culture Club and started to take part in the after-school activities held by the Chinese-American Planning Council. By taking advantage of the project's tutoring program, J.S. was able to catch up with his classmates. He took advantage of the bilingual nature of the project classes to continue his education without being held back by his lack of English proficiency. Project PRISM helped his family meet their educational and nutritional needs by applying for government aid.

STAFF DEVELOPMENT OUTCOMES

The project proposed three staff development objectives:

- By the end of June 1994, three project staff members and/or instructional staff serving project students will have taken college credits in bilingual education, mathematics, science, or engineering education, computer education, or other subject areas related to the goals and objectives of the project.

During the 1993-94 school year, five project staff members took college courses in bilingual and computer education through attending the Intensive Teacher Institute (I.T.I.) at St. John's and Long Island Universities. The project director participated in an Education Policy Fellowship Program.

Project PRISM met its objective for continuing education.

- By the end of June 1994, project staff members will have attended a total of ten workshops and in-service training sessions that are related to the goals and objectives of the project.

Project staff participated in over ten workshops and in-service training sessions sponsored by the project, the school, the Multifunctional Resource Center (MRC) at Hunter College, and the Board of Education of the City of New York.

Project PRISM met its objective for workshop attendance.

- By the end of June 1994, project staff members will conduct four in-service workshops related to the goals and objectives of the project.

Project staff conducted four in-service workshops focusing on teaching mathematics and science, an average number of workshop attendance was 40. Some staff members also had the opportunity to attend a number of out-of-town conferences.

Project met its objective for conducting workshops.

CURRICULUM DEVELOPMENT OUTCOMES

The project did not propose any objectives for curriculum development.

PARENTAL INVOLVEMENT OUTCOMES

Project PRISM had an active parental involvement component. The project contacted parents through community newspapers and also involved other community members in the project.

Project PRISM proposed one parental involvement objective:

- By the end of 1994, a total of 200 parents (67 percent) of project students will attend the project's fall and spring parents meetings.

A total of 230 parents (77 percent) attended four parent meetings and the citywide Chinese Parents' Conference. Parents also participated in a number of cultural and educational activities sponsored by the project, such as China Nite, outings, and sports events.

The project met its parental involvement objective.

IV. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

ACHIEVEMENT OF OBJECTIVES

Project PRISM met its objectives for content area subjects, Chinese N.L.A., attendance, staff development, and parental involvement. It was impossible for OER to evaluate the objective for E.S.L. since it was too early in program implementation for Project PRISM to fulfill the conditions specified in the objective.

Participating students in Project PRISM showed academic progress. All the 298 participating students were promoted to the next grade. The students showed gains in Chinese native language arts and in the content areas as indicated by their final course grades. Although students did not show gains on the LAB at the rate projected, gains that were shown were statistically significant.

Project services not only benefited the students academically but also increased their awareness of the importance of education. Guidance was an important aspect of the program. The attendance rate of participating students was very high and no student dropped out. Project staff attended graduate courses to increase their knowledge of bilingual education and in-service workshops proved helpful to teachers and project staff in fulfilling their project-related responsibilities.

The project is in the process of developing a Chinese bilingual glossary for the engineering course.

MOST AND LEAST EFFECTIVE COMPONENTS

Highly effective components of Project PRISM included cultural activities, services for parents, and staff development.

While no component of the project was ineffective, teachers of participating students indicated that they would need Chinese bilingual engineering materials for the engineering course.

RECOMMENDATION TO ENHANCE PROJECT EFFECTIVENESS

- Continue to seek methods to increase participating students' English proficiency.
- Acquire or develop Chinese materials for pre-engineering

APPENDIX A

Instructional Materials

E.S.L.

Level	Title	Author	Publisher	Date of Publication
1	Turning Points 1	R. Saitz	Addison-Wesley	1983
2	Side by Side 1a	Molinsky & Bliss	Prentice Hall	1983
3	Turning Points 3a	R. Saitz	Addison-Wesley	1983
4	Great American Stories I	C. G. Draper	Prentice Hall	1986
5	Great American Stories II	C. G. Draper	Prentice Hall	1986
6	At the Door	McKay & Petitt	Prentice Hall	1984

N.L.A.

Level	Title	Author	Publisher	Date of Publication
1	Practical Chinese Reader I.	Liu Yu, Al.	Commercial Press	1989
2	Practical Chinese Reader II.	Liu Yu, Al.	Commercial press	1989
3	Chinese Language Arts I.	Evaluation, Assessment Ctr.	ESEA Title VII, Lesley College	1983
4	Chinese Language Arts I.	Evaluation, Assessment Ctr.	ESEA Title VII	1983
5	Chinese Language Arts II.	Evaluation,Assessment Ctr.	ESEA Title VII	1983
6	Chinese Language Arts III.	Evaluation,Assessment Ctr.	ESEA Title VII	1983
7	Reading in Contemporary Chinese Literature	*	*	*
8	Best Chinese Literature	Xie Bing Ying	San Min Publishing	*

* Information not supplied.

APPENDIX A

Instructional Materials, cont'd.

Mathematics

Grade	Title	Author	Publisher	Date of Publication
9	H.S.Math 1st Grade Vol.I	*	HEIAN Intl.	*
9	H.S.Math 1st Grade Vol.II	*	HEIAN Intl.	*
12	H.S.Math 3rd Grade Vol.I	*	HEIAN Intl.	*
12	H.S.Math 3rd Grade Vol.II	*	HEIAN Intl.	*
10	Mathematics: A Topical Approach Course II	*	Houghton Mifflin	*
11	Mathematics: A Topical Approach Course III	*	Houghton Mifflin	*
12	College Calculus with Analytic Geometry	*	Houghton Mifflin	*

* Information not supplied.

Science

The following materials were developed in other Chinese bilingual programs: Physical Science, Theme I and II are Chinese Supplementary Readings - grade 9; Texts for Biology I and II, Human Development, RCT Science Review Text - grade 10 and 11; Chemistry - The Central Science, and College Physics - grade 12.

Social Studies

The following materials were developed in other Chinese bilingual programs: Chinese Supplementary Text for "Understanding the World" - grade 10; A Supplementary Text for "U.S. History & Government" - grade 11; Global History Review Glossary - grade 10 through 12.

APPENDIX A

Instructional Materials, cont'd.

Hygiene

Grade	Title	Author	Publisher	Date of Publication
9-10	Let's Talk About Health	K. Packer & J. Bower	Allyn & Bacon, Inc.	1980

APPENDIX B

Class Schedules

Seward Park High School

Period	Grade 9	Grade 10	Grade 11	Grade 12
1	E.S.L. 1-2	E.S.L. 3-4	E.S.L. 5-6	Transitional English 7-8
2	E.S.L. 1-2	E.S.L. 3-4	Transitional English 5-6	Transitional English 7-8
3	Sequential Math Course I	Physical Education	Physical Education	Physical Education
4	Physical Education	Biology I	Biology II	AP Physics or AP Chemistry
5	Chinese	Chinese	Chinese	AP Chinese
6	Health Education	R.C.A. 3-4	Global History 3-4	U.S. History & Government or Economics
7	Lunch	Lunch	Lunch	Lunch
8	R.C.A. 1-2	Sequential Math Course II	Sequential Math Course III	RCT or Elective
9	Physical Science I	Computer Math I	Chemistry	AP Calculus