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IDENTIFIERS *Chicago Public Schools IL

ABSTRACT

This is an evaluation of the second year (1980) of the Pilot Enrichment Program (PEP), an intensive college preparatory program for underprepared ninth and tenth grade high school students in Chicago, Illinois. Changes in student academic achievement and adaptability to school were measured for 74 PEP participants and compared to data from a control group of 51 students. Test scores, attendance rates, and grade averages were evaluated. In pre- and posttest scores on reading, mathematics, and language arts, significant differences between the two groups were found only in mathematics, with PEP students scoring higher. Attendance rates were also higher among PEP students, but no significant differences in grade point averages were found between control and PEP students. This report also provides the results of a parent and student survey, which indicated that both parents and students perceived PEP favorably. Recommendations for program improvement conclude the evaluation. (Author/APM)

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# PILOT ENRICHMENT PROGRAM
# FINAL EVALUATION REPORT



Submitted by:

Department of Research, Evaluation and Long Range Planning

September 1980

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Special thanks to Dr. Siegfried Mueller, Department of Research and Evaluation and Mrs. Virginia Giles, Office of Government Funded Programs, for their assistance and encouragement in this evaluation. The data collection would not have been possible without the fine efforts of Ms. Carol Gearring and Mr. Larry Hawkins. Mr. Alexander Whitfield, Project Director of PEP and principal of Carver High School and Mr. Weldon Beverly, principal of Hyde Park Academy, are to be commended for their endeavors on our behalf to facilitate this evaluation.

# EXECUTIVE SUMMARY
# of the
# PILOT ENRICHMENT PROGRAM (PEP)

The Pilot Enrichment Program (PEP) has completed its second year of operation. This project was designed as an intensive college preparatory program for underprepared ninth and tenth grade high school students. The program combined the resources of Carver High School and Hyde Park Academy along with the University of Chicago.

Classes were held three days a week at the students' respective high schools and for the remaining two days in the week at the University of Chicago. Prior to the school year, the students were enrolled in an eight week summer session. The PEP project was organized to include participation in a wide range of cultural activities, enriched academic classes, tutoring programs and visits to college campuses.

This evaluation analyzed the outcomes of the two program objectives which included the measurement of academic achievement and adaptability to high school, respectively. Ninty-four students began the school year with PEP. During the year, 21 students dropped from PEP with the majority of this group not attending the summer session. The remaining 73 students comprised the population of this evaluation. A control group of 51 students from the two PEP high schools was utilized for comparison with the PEP participants on each of the outcomes analyzed in the two program objectives.

The measurement of academic achievement included the comparison of the PEP students with the control group on pretest and posttest score differences on the Reading, Language Arts and Mathematics subtests of the Iowa Test of Educational Development. No significant differences were found between the two groups of students on the Reading and Language Arts tests. However, significant differences were found on the Mathematics test favoring the PEP students. Much of this statistical difference occurred because the PEP males scored significantly higher on the posttest than the pretest, while the girls in the program achieved only small gains. The results of the analyses also did show that both PEP and control group students scored significantly higher on the posttests than the pretests on the Language Arts and Reading tests, but only the PEP participants scored significantly in Mathematics.

The second objective was measured by analyzing the outcomes of school adaptability of the PEP students as compared with the control group. PEP

participants had a significantly lower absence and tardy rate than their counterparts in the control group. The rate of absences per student for the PEP students was under five days for the school year. Similarly, the tardy rate was extremely low. The third variable used to measure school adaptability was the cumulative grade-point averages. The grade-point averages of both the PEP and control groups were quite similar with no significant differences between these two groups of students.

In response to a survey, the students, as a group, perceived PEP quite favorably. Their parents, likewise, gave the program a good rating. Both groups did express apprehension about the opportunities for PEP students to participate in extra-class activities. The students' responses also indicated some reservations about their educational experiences being located both at the high school and the university.

The results of this evaluation suggest that the criteria for the selection of the PEP participants and the adjustment of the students matriculating in two diverse educational settings needs review. This review may also provide insights on decreasing the attrition rate from PEP.

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SECOND YEAR EVALUATION OF THE
PILOT ENRICHMENT PROGRAM (PEP)

## Introduction

The Pilot Enrichment Program (PEP) was funded by ESEA Title IVc and has completed its second year of operation. This report is based on the results of the outside evaluation of PEP for the 1979-80 year.

Ninth and tenth grade students from Carver High School and Hyde Park Academy were the program participants. PEP was a response for the need to facilitate the improvement of academic competencies of minority students from lower income homes who exhibited outstanding potential. Specifically, the PEP project developed reading, writing and computational skills of outstanding underprepared high school students in order to provide them with the academic tools necessary for matriculation in higher education.

The problems with public schools in large metropolitan areas are well publicized, though students with high academic potential are largely overlooked. Additionally, the needs of black students are even more critical as a result of discriminatory practices in large city public schools (Cooke & Baldwin, 1979). Too often, failure to achieve in critical academic skills is masked by high grades which according to specific school standards are outstanding. However, many of them rank low on nationally standardized tests.

The responses to providing a strong academic program in the large city public schools are many. Yet, the success of any effort seems to center on the need to provide alternative programs which break away from traditional educational molds. In a broadly scoped article,

Francis Chase of the University of Chicago, believes that programs that change from a prescriptive to a responsive or enabling curriculum along with the utilization of the total urban environment, provide the most favorable prognosis for stronger academic programs (Chase, 1979).

The design of PEP utilized the suggestions of Chase. That is, involvement with a university provides opportunities for curriculum innovations, and the utilization of the vast resources of Chicago offered students educational experiences not available in more traditional settings. The need to offer an alternative program enables students to receive educational opportunities beyond which they have experienced previously. Exposure to alternative modes of instruction and activities are needed so their abilities are challenged in less prescriptive settings (Rohwer, 1980).

The staff of PEP included professionals from both the high school and university levels. Bringing together the talents of a variety of professionals, utilizing the community resources of a large city, and obtaining strong parental involvement were the ingredients of the PEP project.

Program Description

The PEP project operated both during the academic year and the summer session. The classes were held three days a week at the students' respective high school and for the remaining two days at the University of Chicago.

Students spent Monday, Wednesday and Friday at their home high school enrolled in math, English and science classes conducted as

80 minute double period blocked classes. Social studies and foreign language were single period classes of 40 minutes.

Each Tuesday and Thursday, the students attended classes at the University of Chicago in reading, language arts and mathematics which reinforced and enriched their academic activities at the home high schools. Each class was programmed for 90 minutes with about 45 minutes devoted to lectures-discussions, and the remaining time was spent in a wide range of academic activities. Approximately 15 students were enrolled in each class with grouping based on standardized achievement test scores.

Integral parts of the program were field trips, tutorials, art, music, physical education and related activities. These activities were programmed at regularly scheduled intervals throughout the school year. These courses were taught by teachers from the two participating high schools, by state certified teachers, and university graduate assistants. Upon completion of formal instruction, students were encouraged to use the University of Chicago library and participate in tutorials. It should be noted that students returned to their respective high schools for extra curricular activities.

The students participated in an eight week summer session preceding the 1979-80 school year with classes held four days each week. On each Friday and Saturday, students were given opportunities to be involved with tutoring, field trips, camping, college trips and other special activities. During the summer session, students enrolled in classes which provided intensive instruction in the major subjects

of study including English, mathematics, and science. Participants were placed in sections according to the results of diagnostic tests.

PEP provided a wide array of counseling by the staff which was designed to assist the students with both identifying and resolving problems and opportunities. Specifically, counseling was directed toward specific components associated with higher education. They were also offered guidance in selecting college campuses to visit. Additionally, the "Guest Table," an informal luncheon program, gave students an opportunity to interact with speakers representing a variety of occupations and backgrounds.

During the academic school year, parental involvement was a vital feature of PEP. Parents met each month with the PEP staff. At the meetings, parents were provided with information about PEP and with opportunities to meet with the staff to discuss the academic progress of their child.

The progress of the students was closely monitored. To ensure maximum effectiveness of the program, each PEP participants was reassessed in the spring by the program staff and the teachers in his/her home high school. The student must show strong academic progress and a high level of motivation to be eligible to continue in the program for the next academic year.

Purpose

The PEP project was designed to develop an intensive college preparatory program for underprepared lower income high school students. The project combined the resources of Carver High School and Hyde Park

Academy along with the University of Chicago. Improvement of reading, literacy and academic skills along with activities to enhance motivation and interest in college were integral features of the program.

Organization of the Program

The staff of the PEP project included:

1. Program director,
2. Program coordinator,
3. University of Chicago coordinator,
4. Teachers for major subject instruction,
5. University of Chicago instructors, and
6. Program secretary.

Mr. Alexander Whitfield, principal of Carver High School, was the program director. Mr. Weldon Beverly is the principal of the other cooperating school, Hyde Park Academy. Mrs. Carol Gearring was the program coordinator and Mr. Larry Hawkins, Director of Special Projects at the University of Chicago, served as liaison with the two high schools, the University of Chicago, the community and the Chicago Board of Education. During the first semester, [redacted]igh school teachers, two from each of the cooperating schools, taught on Tuesdays and Thursdays at the University of Chicago. For the second semester, three teachers served in this role. Counseling was provided by the two high schools and the University of Chicago.

Objectives

The objectives, activities and evaluation procedures are listed on Table 1. The table includes the two objectives of PEP. The first

Table 1

Objectives, Activities, and Evaluation Procedures of PEP

| Objectives | Activities | Evaluation |
|---|---|---|
| 1. Selected 9th and 10th grade students from the target schools (PEP participants) will increase their communication and computation skills at the .05 level of significance, by June 1980, compared to control group students, as measured by the Iowa Tests of Educational Development, Form X, 1971 edition. | 1. Students will:<br>a. Be programmed into honors level classes at their home schools five (5) days per week (Monday thru Friday).<br>b. Be enrolled/blocked programmed into the division of one of the released time teachers selected for participation in this project.<br>c. Attend enrichment classes/college courses on the Chicago State University two (2) hours per day, five (5) days per week.<br>d. Enroll in/attend eight (8) week summer session. | 1. In July 1979, the Iowa Tests of Educational Development, Form X 1971 edition, will be administered to PEP participants and the control group.<br>2. In June 1980, the Iowa Tests of Educational Development, Form Y 1971 edition will be administered to the PEP participants and the control group as a posttest. |

Table 1 continued

| Objectives | Activities | Evaluation |
|---|---|---|
| 2. PEP participants as a group will demonstrate greater adaptability to the high school environment as evidenced by significantly higher (.05) grade point averages, lower rates of tardiness and absence as compared with the control group each semester. | 1. Students will learn: a) how to actively participate in introductions of and discussions with guest speakers; b) how to actively pursue their own academic and cultural interests; c) how to interview; d) how to participate in peer counseling and peer tutoring.<br>2. Students will receive instruction in: peer-counseling, peer-tutoring, questioning strategies, public speaking.<br>3. Students will participate in field trips; cultural and recreational activities; introduce guest speakers; participate in independent scheduling; use campus resources; tutor younger students; assist in program planning, implementing, and evaluation. | 1. Number of tardies and absences of the PEP participants and the control group will be compared.<br>2. The grade point averages of the PEP and the control group will be compared. |

objective focused on the cognitive component of the program as measured by the Iowa Tests of Educational Development. The second objective included selected behaviors of the PEP students which were grade-point averages, school attendance and tardies.

Evaluation

The evaluation design was based on the measurement of the two program objectives. For objective one, academic achievement was measured with the Iowa Tests of Educational Development, Form X, 1971 Edition (ITED). This achievement battery is designed for senior high school students and measures performance in high school subjects. The battery includes six subtests which are Reading, Language, Mathematics, Social Studies, Science and Source Usage. In addition to subtest scores, a composite score is provided.

Since the objectives of the ITED were written to reflect the content of academic programs in common use throughout the nation, ITED can be said to be valid for measuring these common objectives. These objectives reflect the educational goals of the PEP project. The reliability estimates of ITED range from .95 to .97 for parallel forms, while validity estimates range from .50 to .60 when performance is correlated with school grade point averages.

The ITED was analyzed in this project by utilizing Reading, Language Arts, and Mathematics subtests. The remaining three subtests on the ITED (Social Studies, Science and Source Usage) were not completed by the PEP participants based on the data that the evaluator received from the PEP staff. With three subtests being reported, the composite results were not included.

The scores on the ITED were shown in terms of growth scale values. The publishers of the achievement test, Science Research Associates, believe that grade equivalents do not seem appropriate at the secondary school level. Diversification of curriculum areas and widely varying student interests which leads to differing emphasis in subjects make grade-equivalents as the standard scores have questionable value. The advantage of the growth scale values is that scores can be charted over a period of time which has relevance to this evaluation which utilizes pretest and posttest scores.

The ITED was administered to the PEP participants and a control group in September as a pretest, and readministered to the two groups on May 29 and 30 as a posttest. The batteries were administered by professionals in the two participating high schools. The posttest administration was also monitored by one member of the evaluation team.

The following variables were analyzed to measure objective two:

1. The grade-point averages of each student were comprised of the four major subjects.
2. Attendance and tardies were compiled for each student.

The data for both variables were compiled from school records by the PEP staff.

Questionnaires were administered to the PEP staff, students and parents of the students to obtain their perceptions of the program. These instruments were administered in May, and were a source of additional data beyond what was measured by the two objectives.

Analysis of Data

Each analysis in this evaluation of the two objectives in this project included a comparison of the PEP participants (treatment group) and a control group. The results of the pretest and posttest Iowa Tests of Educational Development (ITED) scores as prescribed by Objective One were analyzed by performing three (3) three-way analyses of covariance. The independent variables were student group (treatment and control group), grade level (nine and ten) and sex. Even though the measurement of the grade level and sex variables were not prescribed in Objective One, it appeared that these two variables might provide data that would help the PEP staff in evaluating their instructional program. The dependent variable was posttest achievement subtest scores (Mathematics, Language Arts, and Reading). The covariance in each of the three-way analyses was the respective pretest achievement test scores. Follow-up analyses included reporting mean scores, standard deviations, and two-tailed t-tests whenever appropriate.

Analysis of covariance (ANCOVA) is a statistic that tests the significance of the differences between means of final experimental data by taking into account the correlation between the dependent variables and a chosen covariate. The outcome of a covariance statistic is that initial differences in the dependent variable are accounted for and adjusted appropriately. The importance of an ANCOVA lies in the choice of a measure that is directly related to the dependent variable which, in this application, is the pretest score.

The attendance, tardies, and grade-point average variables were subjected to t-tests. Each of the three variables were totaled and differences between the control and treatment group means were analyzed.

Population

The population data of the PEP participants and the control group are shown on Table 2. An overview of the table indicates that 73 students were included in this evaluation. Hyde Park Academy had 48 students enrolled in PEP as compared to 25 students from Carver High School. Also noted is that 64% of the population was female.

Table 2

Population Data of the PEP and Control Groups

| Group | Number of Girls | Number of Boys | Total Number |
|---|---|---|---|
| PEP | 47 | 27 | 73 |
| Control | 34 | 17 | 51 |

Attrition from PEP was an important factor from the beginning of the year. Within a few weeks of the school year, ten Carver freshmen dropped from the program. All ten were not involved in the summer program. By November 1, two more Carver students had dropped from the program. After that date, seven (7) additional Carver students left PEP. Two students from Hyde Park dropped from the program. The

dropouts apparently lacked motivation and the academic ability to stay in PEP.

The procedure used to identify members of the treatment and control group was as follows: a pool of all possible candidates was created and from this, a group of students was identified expressing willingness to participate in the PEP project. The remaining students became the control group. The selection of a control group for a study of this type is exceedingly difficult. The control group should be as nearly comparable to the experimental (PEP) group as possible, however, the population pool from which to select comparable groups is limited. To select students from schools not participating in the PEP project adds a series of variables that make comparisons not meaningful. A total of 13 control group students were dropped as a result of incomplete data. If two of the following were not available, the student was not included: 1) ITED scores, 2) GPA, and 3) absences and tardies. The remaining 51 students in the control group were not comparable on the sex and grade level variables. A series of two-tailed t-tests were completed which compared the PEP participants with the control group on pretest Reading, Language Arts and Mathematics achievement test (ITED) scores. In each test, the PEP students had significantly higher scores than the control group. Tables 3, 4 and 5 show the results of comparing the treatment (PEP) and control groups on pretest achievement test scores in Mathematics, Language Arts and Reading. A two-tailed t-test was performed in each comparison to ascertain significance level.

Table 3

Comparison of PEP Participants and Control Group on Pretest Reading Achievement Test Scores

| Group | Number of Students | Mean | Standard Deviation | t-test |
|---|---|---|---|---|
| PEP | 73 | 407.33 | 36.47 | 2.82* |
| Control | 51 | 385.39 | 46.37 | |

*p < .01

Table 4

Comparison of PEP Participants and Control Group on Pretest Language Arts Achievement Test Scores

| Group | Number of Students | Mean | Standard Deviation | t-test |
|---|---|---|---|---|
| PEP | 73 | 415.51 | 44.33 | 3.73* |
| Control | 51 | 384.08 | 47.34 | |

*p < .01

Table 5

Comparison of PEP Participants and Control Group on Pretest Mathematics Achievement Test Scores

| Group | Number of Students | Mean | Standard Deviation | t-test |
|---|---|---|---|---|
| PEP | 73 | 424.89 | 64.93 | 4.15* |
| Control | 51 | 378.39 | 58.79 | |

*p < .001

Results

The tables that follow show the data that were collected by the outside evaluators since December 1979. The analyses of findings are organized on the basis of the objectives of the program. The written analysis for each table offers conclusions about the data and points out selected data which offer informative perspectives about the program.

Objective One

> Selected 9th and 10th grade students from the target schools (PEP participants) will increase their communication and computational skills at the .05 level of significance, by June 1980, compared to control group students, as measured by the Iowa Tests of Educational Development, Form X, 1971 edition.

As indicated previously, the PEP participants and the control group were administered the Iowa Tests of Educational Development (ITED) as a pretest in September, 1979 and as a posttest in May, 1980. The analyses

included the results from the Reading, Language Arts, and Mathematics achievement test scores.

A three-way analysis of covariance (ANCOVA) was performed for each of the pretest and posttest achievement test results comparing the PEP and control groups. The covariate in each ANCOVA was the pretest score and the dependent variable was the posttest score. The three independent variables were student group (PEP participants vs. control group), grade level (nine and ten) and sex.

Table 6 shows the analysis of covariance summary results of the ITED Reading pretest and posttest score differences for the PEP participants and the control group. None of the three independent variables, student group, grade level and sex, were found to be significant. No significance was found in either the two-way or three-way interactions. The covariate was significant at the .001 level indicating it was a suitable variable to adjust for the posttest reading scores.

Tables 7 and 8 show the mean scores, standard deviations and t-tests of the pretest and posttest results on the Reading achievement test for the PEP and control groups, respectively. The data on the two tables show that both groups of students scored significantly higher on the posttest than the pretest. The proportion of score gains were about the same for each group.

A summary of the three-way ANCOVA on the Language Arts ITED achievement test is shown on Table 9. The covariate was significant at the .001 level. Pretest and posttest Language Arts test mean scores

Table 6

Summary of Analysis of Covariance on Pretest and Posttest Reading Achievement Scores by Student Group, Grade Level and Subject Sex

| Dependent Variable | Source | F | Significance |
|---|---|---|---|
| Posttest scores | Student group | .082 | NS |
| | Grade level | .87 | NS |
| | Sex | .002 | NS |
| | Pretest scores | 120.988 | .001 |

Table 7

Pretest and Posttest Scores of the PEP Participants on Reading Achievement

| Test | Number of Students | Mean | Standard Deviation | t-test |
|---|---|---|---|---|
| Pretest | 72 | 406.51 | 36.05 | 2.97* |
| Posttest | | 415.60 | 33.31 | |

*p < .01

Table 8

Pretest and Posttest Scores of the Control Group on Reading Achievement

| Test | Number of Students | Mean | Standard Deviation | t-test |
|---|---|---|---|---|
| Pretest | 47 | 386.17 | 50.43 | 2.93* |
| Posttest | | 402.15 | 38.36 | |

*p < .01

Table 9

Summary of Analysis of Covariance on Pretest and Posttest Language Arts Achievement Scores by Student Group, Grade Level and Subject Sex

| Dependent Variable | Source | F | Significance |
|---|---|---|---|
| Posttest scores | Student group | 1.64 | NS |
| | Grade level | .75 | NS |
| | Sex | .31 | NS |
| | Pretest scores | 171.09 | .001 |

were found not to be significant across all three independent variables (student group, grade level and sex). No significant interactions were found.

An observation of Tables 10 and 11 which record the results of the Language Arts achievement tests for the PEP and control groups, respectively, shows that score gains were made for the school year when comparing the posttest and pretest results. As with the Reading achievement test scores, the gains were significant. However, the score gains of the PEP participants were greater than the control group based on the t-test results.

Table 10

Pretest and Posttest Scores of the PEP Participants on Language Arts Achievement

| Test | Number of Students | Mean | Standard Deviation | t-test |
|---|---|---|---|---|
| Pretest | 72 | 415.21 | 44.57 | 3.77* |
| Posttest | | 429.07 | 42.76 | |

*p < .001

Table 11

Pretest and Posttest Scores of the Control Group on Language Arts Achievement

| Test | Number of Students | Mean | Standard Deviation | t-test |
|---|---|---|---|---|
| Pretest | 47 | 387.80 | 41.34 | 2.30* |
| Posttest | | 399.17 | 52.53 | |

*p < .05

The results of comparing the treatment (PEP) and the control group on the Mathematics achievement test on the ITED with a three-way ANCOVA are shown on Table 12. Unlike the two previous achievement test results (see Tables 6 and 9), significant results were found for the student group, $F = 9.42$, $p < .01$, and sex, $F = 4.61$, $p < .05$. The third independent variable, grade level, was found not significant. The two-way and three-way interactions were found not significant.

Tables 13 and 14 show the pretest and posttest Mathematics achievement test scores of the PEP participants and the control group, respectively. The PEP students made significant gains at the .01 level, but the control score gains was found not to be significant.

As previously indicated (see Table 12), the three-way ANCOVA results for mathematics indicated significance on the sex variable. Four follow-up t-tests were completed to gain some insight on the

Table 12

Summary of Analysis of Covariance on Pretest and Posttest Mathematics Achievement Scores by Student Group, Grade Level and Subject Sex

| Dependent Variable | Source | F | Significance |
|---|---|---|---|
| Posttest scores | Student group | 9.417 | .01 |
| | Grade level | .002 | NS |
| | Sex | 4.607 | .05 |
| | Pretest scores | 93.36 | .001 |

Table 13

Pretest and Posttest Scores of the PEP Participants on Math Achievement

| Test | Number of Students | Mean | Standard Deviation | t-test |
|---|---|---|---|---|
| Pretest | 72 | 424.04 | 64.98 | 3.68* |
| Posttest | | 448.93 | 57.83 | |

*p < .001

Table 14

Pretest and Posttest Scores of the Control Group on Math Achievement

| Test | Number of Students | Mean | Standard Deviation | t-test |
|---|---|---|---|---|
| Pretest | 47 | 384.56 | 60.89 | 1.28 |
| Posttest | | 394.51 | 68.97 | |

source of the significance. The results for the females are shown on Tables 15 and 16. Tables 17 and 18 show the test results for the males.

A perusal of Table 15, which presents the pretest and posttest Mathematics achievement test results, shows that the score gains for the females in the PEP project were nonsignificant. A study of Table 16 indicates that the score gains of the females in the control group were also nonsignificant, and this group even made proportionally less gains than their counterparts in PEP.

The males in PEP made significant pretest to posttest score gains at the .001 level as shown in Table 17. However, the results on Table 18 show that the control group males did not achieve significant score gains on the Mathematics achievement tests. This indicates that a good portion of the score gains in Mathematics for the PEP students was made by the males. To summarize, the PEP participants scored significantly higher on the posttest than the pretest Mathematics test.

Table 15

Pretest and Posttest Scores of the PEP Females on Math Achievement

| Test | Number of Students | Mean | Standard Deviation | t-test |
|---|---|---|---|---|
| Pretest | 46 | 428.43 | 61.44 | 1.81 |
| Posttest | | 442.57 | 57.24 | |

Table 16

Pretest and Posttest Scores of the Control Group Females on Math Achievement

| Test | Number of Students | Mean | Standard Deviation | t-test |
|---|---|---|---|---|
| Pretest | 25 | 373.08 | 49.79 | 0.82 |
| Posttest | | 382.60 | 53.64 | |

Table 17

Pretest and Posttest Scores of the PEP Males on Math Achievement

| Test | Number of Students | Mean | Standard Deviation | t-test |
|---|---|---|---|---|
| Pretest | 26 | 416.27 | 71.40 | -3.67* |
| Posttest | | 460.19 | 58.26 | |

*p < .001

Table 18

Pretest and Posttest Scores of the Control Group Males on Math Achievement

| Test | Number of Students | Mean | Standard Deviation | t-test |
|---|---|---|---|---|
| Pretest | 16 | 402.50 | 73.19 | 1.21 |
| Posttest | | 413.13 | 86.45 | |

However, the PEP males made much larger gains than the females in the program.

Overall, on Objective One, no significant differences were found between pretest and posttest Reading and Language Arts achievement tests when PEP participants were compared with the control group. On the Math subtests, the PEP participants did make significant pretest to posttest gains, while the control group failed to reach significance. Additionally, the PEP males made significant score gains while the female gains were not significant.

Objective Two

> PEP participants as a group will demonstrate greater adaptability to the high school environment as evidenced by significantly (.05 level) higher grade-point averages, lower rates of tardiness and absences as compared with the control group.

School attitudes are difficult to assess and the standardized tests that have been developed are often subject to socially desirable responses by the respondents. Consequently, it was decided that grade-point averages, number of school absences and tardies were the best available indicators of attitudes and adjustment to senior high school.

The data on Table 19 show the t-test results from comparing the PEP participants with the control group on total tardies for the school year. Both groups of students had very low tardy rates and significant differences were found with the PEP students having a lower rate.

The difference in the absence rate for the PEP participants and the control group was even more distinct than the tardy rate. The

Table 19

Comparison of PEP Participants and the Control Group on Number of Tardies for the School Year

| Group | Number of Students | Mean | Standard Deviation | t-test |
|---|---|---|---|---|
| PEP | 72 | .15 | .62 | 3.23* |
| Control | 51 | .90 | 1.58 | |

*p < .01

average number of days absent for a PEP student was slightly more than 4½ days for the school year. This compared with nearly 12 days of absences per control group student over the same time span (see Table 20). In fact, the absence rate of the PEP student appears outstanding when compared with most other groups of high school students. Additionally, the absence rate of the PEP participants and the control group was statistically significant at the .001 level.

Grade-point averages were based on the four major subjects in which the student was enrolled. A two-tailed t-test was completed to measure differences between the PEP participants and the control group on grade-point averages. An "A" in an honors class was scored as five points. The PEP participants received slightly higher grades as a group than the control group, but the differences were found to be not significant (see Table 21). A perusal of the grades earned by the students indicated that tenth graders in PEP received higher

Table 20

Comparison of the PEP Participants and the Control Group on Number of Absences for the School Year

| Group | Number of Students | Mean | Standard Deviation | t-test |
|---|---|---|---|---|
| PEP | 72 | 4.74 | 4.72 | -4.43* |
| Control | 51 | 11.90 | 10.85 | |

*p < .001

Table 21

Comparison of the PEP Participants and the Control Group on Cumulative Grade Point Averages for the School Year

| Group | Number of Students | Mean | Standard Deviation | t-test |
|---|---|---|---|---|
| PEP | 72 | 3.20 | .96 | .58 |
| Control | 51 | 3.08 | 1.18 | |

grades than their ninth grade counterparts. Most of the subject failures by the PEP group were in foreign language courses.

The findings on Objective Two point out that the PEP participants had a significantly better attendance record and tardy rate than the control group. Though significant differences were found on comparing the two groups on number of tardies, the rate was low for both groups. The PEP students' grade-point averages were a shade higher than the control group, but the differences were nonsignificant.

Questionnaires

In addition to measuring the outcomes of Objective One and Two, PEP students, their parents, and the PEP teachers were each given a questionnaire to solicit their perceptions about the project. Three questionnaires, one for each of the three targeted groups, were designed by the outside evaluators and approved by the Board of Education.

Each parent was mailed by first class a cover letter explaining the purposes of the questionnaire, the questionnaire and a business reply envelope (see Appendix A). Seventy-nine letters were delivered and 19 parents responded which is a 24 percent return rate. A follow-up of the nonrespondents was attempted by hand delivering another set of questionnaires which were distributed at a parents' meeting. No additional data were received from the follow-up. Table 22 gives a summary of the parental responses.

Interestingly, the responses to questions 1 through 6 show an overwhelming favorable opinion toward PEP by the nineteen parents

Table 22

Parents' Perceptions of PEP (N = 19)

| Item | Percent Agree and Strongly Agree |
|---|---|
| 1. I believe that my child is more interested in school since being enrolled in PEP. | 73.7% |
| 2. I have had enough opportunities to be involved with PEP. | 73.7 |
| 3. The summer program is a useful part of PEP. | 84.2% |
| 4. My child benefits more from taking courses at the University of Chicago two days a week instead of remaining all week at the high school. | 78.9% |
| 5. I want my child in PEP for another year. | 84.2% |
| 6. There has been adequate information given about PEP. | 73.7% |
| 7. My child has sufficient opportunities to participate in regular school activities that take place outside of class (fine arts, physical education, student government, etc.). | 42.1% |

who responded to the survey. The last question on the instrument (Question 7) provides an indication that parents are uncertain about the advisability of a program which limits their child's extra-curricular activities.

As indicated on Appendix A, parents were given an opportunity to answer the following open-ended question, "What is the most important

benefit that your child is receiving from PEP? Of the 17 parents who responded, four have been randomly selected.

Response 1: "The most important benefit my child has received from PEP is an opportunity to be on a university campus with best of people...."

Response 2: "The strong emphasis on academics and early exposure to places of higher learning made my son realize that in order to get into the better colleges and universities he has to plan ahead and that his number one priority is his academic courses from his first year of high school...."

Response 3: "Tutorial services and an opportunity to take national achievement test."

Response 4: "The only thing that I can see is that she likes school more."

During late May, the students in the program completed a questionnaire which was designed to elicit students' attitudes toward the program. The questionnaire (see Appendix B) consisted of twelve questions, each of which required the student to circle the choice reflecting their point of view. Each student was also requested to indicate sex and class by checking the appropriate blank. The results from the questionnaire indicated the following:

| | | |
|---|---|---|
| Carver High School | = | 24 |
| Hyde Park High School | = | 48 |
| Total N | = | 72 |

Table 23 gives a summary of the results of the students' responses to the questionnaire (see Appendix B).

Table 23

Students' Perceptions of PEP

| Item | Percent Agree and Strongly Agree |
|---|---|
| 1. I believe my attitude toward school has improved since I have been in PEP. | 64.8% |
| 2. I found the summer program helpful in improving my attitude toward school this year. (Don't answer this if you did not attend summer school.) | 48.3% |
| 3. I believe that the extended class periods (80-90 minutes) at the high school and the university helps me with my school work. | 61.9% |
| 4. My parents believe that PEP is a good program. | 80.7% |
| 5. I would recommend PEP to my friends. | 45.1% |
| 6. I believe that going to the University for two days each week does not interfere with my school activities at the high school. | 21.1% |
| 7. I have found my classes at the high school more worthwhile than at the university. | 70.7% |
| 8. PEP students are given sufficient recognition for outstanding accomplishments at the high school. | 34.4% |
| 9. I have sufficient opportunities to take part in school activities (physical education, music, art, etc.). | 8.4% |
| 10. I would like to enroll in PEP for another year. | 50.6% |
| 11. I feel that my teachers are interested in helping me become a better student. | 74.7% |
| 12. I have enough time to study in school. | 32.4% |

Question 9 seems to represent a consistency between the parental attitude and student attitude. That is, both groups seem to feel that the program limits the students' involvement with extra-curricular activities. Perhaps the necessity for travel time and the increased level of home work prevented students from participation.

A rather stunning result is the answer to Question 10 which focuses on whether or not the students want to participate in PEP, again next year. Specifically, 50.6% agreed or strongly agreed with the statement (Question 10). Reviewing the data in more detail, 95.7% of the students at Carver express disagreement or strong disagreement with the statement. By contrast, 27.1% of the students at Hyde Park express disagreement or strong disagreement.

Reviewing the results from Question 5 (I would recommend PEP to my friends) in more detail seems to support the above finding. Specifically, 10.5% of the Carver population agreed or strongly agreed while 60.4% of the Hyde Park respondents gave favorable responses.

Responses 6, 7, 8 and 9 focused on the students' views of the University of Chicago component of the project, and its relationship to participation in activities at their home high school. A perusal of the percentage of agreements with these four statements indicated some apprehension about the University experience among the PEP participants. Probably, the students identified strongly with their high school and their friends. Leaving the high school environment may have generated some less than enthusiastic support.

The evaluators distributed a questionnaire to each of the teachers in the project (see Appendix C). Surprisingly, only one teacher took the necessary time to complete the questionnaire. The questionnaires were given the teachers with a cover letter and a business reply envelope for their convenience. The comments prepared by the one teacher were essentially positive. Since no other responses were available, the evaluators can not form any judgments relative to the views held by the teachers.

Summary of Results

PEP during this year was an intensive college preparatory project for ninth and tenth graders who had exhibited outstanding academic potential. Students from the two participating high schools, Carver and Hyde Park, spent two days a week at the University of Chicago which enabled them to participate in a wide range of cultural and educational enrichment activities. Achievement of greater academic skills along with improving their attitudes toward school were, in summary, the two objectives of PEP.

This evaluation analyzed the academic achievement and the adaptability to high school of 73 students in PEP. The majority of participants were girls and, as a group, PEP students had an academic background which indicated a good potential for pursuing a collegiate education successfully. A control group of 51 students from the two participating PEP high schools was utilized for comparison with the PEP participants on each of the outcomes analyzed in this report.

Academic achievement included comparing PEP students with the control group on pretest and posttest scores on Reading, Language Arts and Mathematics tests of the Iowa Tests of Educational Development. No significant differences were found between the two groups of students on the Reading and Language Arts achievement tests. However, significant differences were found on the Mathematics achievement subtest favoring the PEP participants. Much of this statistical difference occurred because PEP males scored significantly higher on the posttest than the pretest. Follow-up t-tests also indicated that both the PEP and control groups scored significantly higher on the posttests than the pretests on the Language Arts and Reading tests, but only the PEP scored significantly higher in Mathematics.

The second objective measured the outcomes of school adaptability to the PEP students compared with the control group. PEP participants had a significantly lower absence rate than their counterparts in the control group. The mean of absences per student for the PEP group was under five days over the school year which is an excellent record. Similarly, the tardy rate was extremely low. The third variable used to measure school adaptability was cumulative grade-point average. The grade-point averages of each group were quite similar with no statistically significant differences. Grade-point averages are a subjective variable in that teachers do vary to a great extent on the determination of grades. However, good school attendance is a prime indicator of satisfactory adjustment to school. High rate of absences is often an indicator that a student is losing interest in school

suggesting that the absence rate of each student must be carefully monitored.

A survey of opinions about educational programs has been accepted as the most efficient and effective procedure for obtaining views about educational programs. Those parents who responded to the evaluators' designed questionnaire gave strong approval to the PEP, except they believed that the students may not have had sufficient opportunities to participate in extra-class activities in their home high school. Over 90 percent of the students supported their parents' views on the status of participation in high school activities.

Overall, the students perceived PEP favorably, though as a group they did express some reservations. Basically, the concern revolved around the portion of the program operated at the university. Attendance on a university campus is a sharply different experience than attending public schools. Educators may have overestimated the ability of the ninth and tenth graders to adjust to a university campus. Expectations may be different in both the academic and social realms. It does appear that the students want a stronger identity with their home high school.

Recommendations for Project Activities

1. The identification and selection of PEP participants needs clarification and a statement of criteria necessary for selection should be made available.

2. The selection of a comparable population of students to serve as the control group presents a continuous problem. It is desirable

that the students in the control group be enrolled in the same high schools as the treatment group (PEP). However, this goal is often difficult to achieve for students in an accelerated program. Criteria for selecting the control group must include the variables utilized to measure the outcomes of the program objectives so that the students are comparable with the treatment group.

3. The students should be given more opportunities to provide input on the issues of accessibility of extra-class activities to the PEP participants and the program at the University of Chicago.

4. It is assumed that parents of the students are vitally interested in this accelerated college preparatory program. Yet, the low response rate to the questionnaire about their views of the program does suggest that greater attention to parental involvement may have many benefits for PEP. Newsletters, invitations to student programs and opinionnaires about the program might encourage greater parental involvement.

5. The dropout rate from PEP needs attention. This involves an analysis of the criteria for selection of the participants (see recommendation 1), providing counseling attention specifically for students who did not attend the summer session, searching for reasons why the dropout rate centered on Carver High School students, which could include a study of transportation problems, differing backgrounds of students and a greater integration with the Hyde Park Academy student group.

6. Teachers should review their grading practices. The teacher marks appeared somewhat low and the subject failure rate, especially in foreign language, needs some scrutiny.

7. The females in PEP made only small gains in mathematics for the school year as indicated by the Mathematics achievement pretest and posttest results. A lack of confidence and a low interest level may well be critical factors in this lack of achievement. This problem is national in scope, and an innovative program as PEP should show leadership in breaking the cycle of low achievement in mathematics by females.

Conclusion

Overall, the results of the evaluation of the PEP project were quite positive. The students had an outstanding attendance and tardy record which indicates a good adjustment and attitude toward school. They made good gains in their achievement tests scores in Language Arts, Reading, and Mathematics (with the exception of the females).

PEP, as an alternative educational project, did face problems that fortuantely can be resolved, at least to a degree. The dropout rate and the adjustment to the university campus as perceived by the students appear as issues that are most visible. An even greater degree of involvement by both students and parents on providing feedback about the program may well do much to alleviate the most pressing problems that PEP faces as a challenge.

## REFERENCES

Astin, Alexander. Four Critical Years. San Francisco: Jossey-Bass Publishers, 1978.

Chase, Francis S. "The Regeneration of Public Education in Our Cities." Phi Delta Kappan, January 1979, 60 (5), 353-357.

Cooke, Gwendolyn J., & Baldwin, Alexinia Y. "Unique Needs of a Special Population." The Gifted and the Talented: Their Education and Development, the 78th Yearbook of the National Society for the Study of Education, Part I. Chicago: University of Chicago Press, 1979, 388-394.

Rohwer, William D. "How the Smart Get Smarter." Educational Psychologist, Spring 1980, 15, 35-44.

# APPENDIX A

## PARENTAL VIEWS OF PILOT ENRICHMENT PROGRAM (PEP)

# PARENTAL VIEWS OF PILOT ENRICHMENT PROGRAM (PEP)
## in Carver and Hyde Park Schools

Directions: Below are eight (8) statements. If you strongly agree with the statement, circle SA, if you agree, circle A, if you disagree circle D, and if you strongly disagree, circle SD. On the eighth statement, please provide a brief response.

Your child is a freshman _____

sophomore _____

| | Strongly Agree | Agree | Disagree | Strongly Disagree |
|---|---|---|---|---|
| 1. I believe that my child is more interested in school since being enrolled in PEP. | SA | A | D | SD |
| 2. I have had enough opportunities to be involved with PEP. | SA | A | D | SD |
| 3. The summer program is a useful part of PEP. | SA | A | D | SD |
| 4. My child benefits more from taking courses at the University of Chicago two days a week instead of remaining all week at the high school. | SA | A | D | SD |
| 5. I want my child in PEP for another year. | SA | A | D | SD |
| 6. There has been adequate information given about PEP. | SA | A | D | SD |
| 7. My child has sufficient opportunities to participate in regular school activities that take place outside of class (fine arts, physical education, student government, etc.) | SA | A | D | SD |

8. What is the most important benefit that your child is receiving from PEP?

_____

_____

_____

# APPENDIX B

## MY VIEWS OF PEP

# MY VIEWS OF PEP

Freshman _____ Male _____

Sophomore _____ Female _____

Your views on PEP are needed as part of the evaluation of this program. Below are a series of statements about PEP. Select one of the following responses for each statement that most closely reflects your view.

Strongly Agree (SA) Agree (A) Disagree (D) Strongly Disagree (SD)

| | | | | | |
|---|---|---|---|---|---|
| 1. | I believe my attitude toward school has improved since I have been in PEP. | SA | A | D | SD |
| 2. | I found the summer program helpful in improving my attitude toward school this year. (Don't answer this if you did not attend summer school.) | SA | A | D | SD |
| 3. | I believe that the extended class periods (80-90 minutes) at the high school and the university helps me with my school work. | SA | A | D | SD |
| 4. | My parents believe that PEP is a good program. | SA | A | D | SD |
| 5. | I would recommend PEP to my friends. | SA | A | D | SD |
| 6. | I believe that going to the University for two days each week does not interfere with my school activities at the high school. | SA | A | D | SD |
| 7. | I have found my classes at the high school more worthwhile than at the university. | SA | A | D | SD |
| 8. | PEP students are given sufficient recognition for outstanding accomplishments at the high school. | SA | A | D | SD |
| 9. | I have sufficient opportunities to take part in school activities (physical education, music, art, etc.). | SA | A | D | SD |
| 10. | I would like to enroll in PEP for another year. | SA | A | D | SD |
| 11. | I feel that my teachers are interested in helping me become a better student. | SA | A | D | SD |
| 12. | I have enough time to study in school. | SA | A | D | SD |

# APPENDIX C

## PERCEPTIONS OF PEP

As part of the evaluation of PEP, your views as teachers are an important part of this endeavor. Return the questionnaire in the attached envelope. Please respond to each of the first nine statements by selecting one of the five responses provided with each statement.

Strongly Agree (SA) Agree (A) Disagree (D) Strongly Disagree (SD)

| | | | | | |
|---|---|---|---|---|---|
| 1. | The 80 minute class periods provide greater flexibility in classroom activities and learnings. | SA | A | D | SD |
| 2. | Sufficient time is given in teaching reading and math skills. | SA | A | D | SD |
| 3. | The summer program is a vital component of PEP. | SA | A | D | SD |
| 4. | Students have sufficient opportunities to participate in extra-curricular activities. | SA | A | D | SD |
| 5. | Having class two days a week at the University is a benefit to the program. | SA | A | D | SD |
| 6. | The longer class periods provide increased opportunities for individualized instruction. | SA | A | D | SD |
| 7. | The PEP students have developed a good rapport with each other. | SA | A | D | SD |
| 8. | Not enough classroom time is given for some courses. | SA | A | D | SD |
| 9. | The students have sufficient time to study. | SA | A | D | SD |

X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X

10. On a scale of 1 to 10, I would rate PEP as follows: (circle one)

1 2 3 4 5 6 7 8 9 10

Weak Average Outstanding