

1985

A Study to Determine if Economically Disadvantaged Adults Improved Their Reading and Math Scores after Utilizing Plato

Robert Allan Teravainen
Old Dominion University

Follow this and additional works at: https://digitalcommons.odu.edu/ots_masters_projects



Part of the [Education Commons](#)

Recommended Citation

Teravainen, Robert Allan, "A Study to Determine if Economically Disadvantaged Adults Improved Their Reading and Math Scores after Utilizing Plato" (1985). *OTS Master's Level Projects & Papers*. 455.
https://digitalcommons.odu.edu/ots_masters_projects/455

This Master's Project is brought to you for free and open access by the STEM Education & Professional Studies at ODU Digital Commons. It has been accepted for inclusion in OTS Master's Level Projects & Papers by an authorized administrator of ODU Digital Commons. For more information, please contact digitalcommons@odu.edu.

A STUDY TO DETERMINE IF ECONOMICALLY DISADVANTAGED
ADULTS IMPROVED THEIR READING AND MATH
SCORES AFTER UTILIZING PLATO

A RESEARCH PROJECT
PRESENTED TO
THE FACULTY OF THE GRADUATE SCHOOL
OLD DOMINION UNIVERSITY

IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE
MASTER OF SCIENCE IN EDUCATION

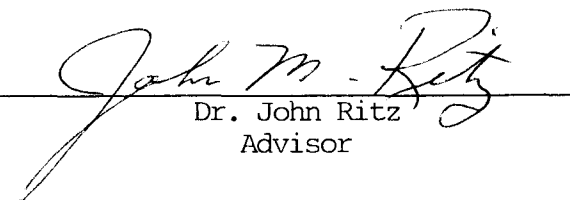
By
Robert Allan Teravainen

April, 1985

This project was prepared by Robert Allan Teravainen under the direction of the professor in VTE 636, Problems in Education, as partial fulfillment of the requirements for the degree of Master of Science in Education.

Date 5-1-85

APPROVED BY:


Dr. John Ritz
Advisor


Dr. Malvern Miller
Graduate Program Director

ACKNOWLEDGEMENTS

This research paper was prepared under the direction of Dr. John Ritz, Professor of Education, Old Dominion University. The author extends his appreciation to Dr. Ritz for his assistance in the preparation of this paper.

Appreciation is also extended to the many people who supplied the necessary information vital to this research project, and special thanks to:

Mr. Gary Butler - Greater Peninsula Job Training Consortuim
Mrs. Bobbie Fiest - Buckroe Learning Center
Ms. Renee Ellis - Intern at Training Control Center

TABLE OF CONTENTS

	Page
Acknowledgements	i
List of Tables	iii
CHAPTER	
I. INTRODUCTION	
A. Statement of the Problem	1
B. Research Goals	1
C. Background and Significance	2
D. Limitations	3
E. Assumptions	3
F. Procedures	4
G. Definition of Terms	4
H. Overview of Chapter	6
II. REVIEW OF LITERATURE	
A. Purpose of BSLs	7
B. Peninsula JTPA	14
C. Participant Flowchart	17
D. Summary	19
III. METHODS AND PROCEDURES	
A. Population	20
B. Testing	21
C. Data Analysis	22
D. Summary	22
IV. FINDINGS	
A. Results of Nelson Reading Test	23
B. Results of Metropolitan Math Test	24
C. PLATO Client Placement	24
D. PLATO Drop - Out Rate	26
E. PLATO Entry Level Criteria	26
F. Summary	28
V. SUMMARY, CONCLUSION, AND RECOMMENDATIONS	
A. Summary	29
B. Conclusion	31
C. Recommendations	33
VI. BIBLIOGRAPHY	35

LIST OF TABLES

TABLE	Page
I. Income Guidelines	5
II. PLATO Math Chart	9
III. PLATO Reading Chart	10
IV. GPJTC - JTPA Participant Flowchart	18
V. Mean Pre-Test and Post-Test Scores on Reading .	23
VI. Mean Pre-Test and Post-Test Scores on Math . .	24
VII. Percentage of clients placed from PLATO	25
VIII. PLATO Drop - Out Rate	26
IX. PLATO Test Criteria	27

CHAPTER I
INTRODUCTION

One of the aims of Public Law 97-300 (Job Training Partnership Act) was to establish programs to prepare unskilled adults for entry level employment. The Greater Peninsula Job Training Consortium (GPJTC) was utilizing the PLATO (Programmed Logic Automatic Teaching Operation) computer system to upgrade clients of JTPA in their reading and math scores so that these clients could enter into training or the labor force. The GPJTC initiated three centers which utilized four terminals per center. High school skills were also taught for clients who hoped to obtain their equivalent High School Diploma (CED).

STATEMENT OF THE PROBLEM

The problem of this study was to determine if economically disadvantaged adults, whose reading and/or math grade equivalencies were between 4.0 and 5.9, increased their reading and math scores after attending a Learning Center utilizing the PLATO (Programmed Logic Automatic Teaching Operation) system.

RESEARCH GOALS

The purpose of this study was to ascertain the following questions:

1. Did the clients of the Learning Center increase their scores in reading and math after completion of the PLATO program?
2. What percentage of students who completed the PLATO program were placed into either employment training program or directly into employment?

3. What percentage of students dropped out of the program after their start with the PLATO system?
4. Were the grade equivalencies (4.0 to 5.9) too narrow to allow maximum participation in the PLATO program by the clients of JTPA.

BACKGROUND AND SIGNIFICANCE

The computer has been making many inroads into our daily routine and education has been an area where people have deep rooted feelings about computer learning. MacGregor (1982) thought that some teachers felt that the community of scholars would eventually disappear with the computers taking over teaching. He stressed that teachers must view systems like PLATO as Computer Assisted Instruction (CAI) and that it should not be viewed as a threat but as a tool of the teacher.

There have been many reports on the PLATO system in conjunction with grade school applications. Nabors (1974) found a five percent overall academic achievement gain with 50 fifth grade students who used CAI versus the 50 students who were instructed in a traditional classroom. PLATO was shown to be cost efficient for remedial math at three Florida High schools (Brown, 1981). The Illinois Department of Corrections has used PLATO in the prisons and has had relatively good success with grade equivalency increases (Meyers, 1983).

However, there is a scarcity of research in the area of the economically disadvantaged adults who have a reading and math grade equivalency below fifth grade level. The clients of the Greater Peninsula Job Training Consortium who were recommended to upgrade their reading and/or math scores were persons with grade equivalencies between 4.0 to 5.9.

This score was relatively low compared to the Baltimore Learning Center which introduced PLATO in 1978 and reported excellent gains in grade equivalencies. However, their average grade equivalency of a client entering the Basic Skills program was the 7th grade (Judge, 1978). This could mean it is possible that the statistics will vary in relationship to the grade levels of the people entering the PLATO programs. The Director of the GPJTC, Mr. Curtis Johnson, was eager to ascertain if any changes could be brought out to obtain better results from the Learning Center programs. Since its inception in October 1983, statistics were available from October 1983 to March 1985, and modifications could be made in the programs if necessary.

LIMITATIONS

This report was limited to clients of the Greater Peninsula Job Training Consortium. These clients were economically disadvantaged persons from the cities of Hampton, Newport News, Williamsburg, Poquoson and the counties of York, James and Gloucester. The results were from clients who utilized the PLATO system for Adult Basic Education between 1983 and 1984. The math and reading portions were the only areas used and the pre-test and post-test were accomplished by the administration of the Metropolitan Achievement Test for Math and the Nelson Reading Test.

ASSUMPTIONS

It was assumed that the clients' test scores would improve after taking part in basic skills education with the PLATO system, and better reading and math skills would enhance their chances of employment or employment training opportunities.

PROCEDURES

Data were gathered from the Assessment Center on total clients seen, total clients recommended for basic skills improvement and their scores obtained on the math portion of the Metropolitan Achievement Test and the Nelson Reading Test. Data were also gathered from the Buckroe Learning Center which keeps records of all clients enrolled in all of the learning centers. The post-test scores were gathered at the Training Control Center along with client information to follow up and ascertain if the person was employed or in skill training. These data were analyzed to determine if the research goals were answered.

DEFINITION OF TERMS

To simplify and shorten the overall paper, the following terms have been defined. These terms have been used throughout this paper.

ABE - Adult Basic Education

BSLS - Basic Skills Learning System - a software program designed by Control Data Corporation to aid in teaching people the basic skills of reading and math for grade equivalencies three through eight.

CETA - Comprehensive Employment and Training Act, (1973), it replaced the Manpower and Development Act and provided federal monies to provide job training and employment opportunities for the economically disadvantaged.

ECONOMICALLY DISADVANTAGED - persons making less than the Income Guidelines as set up by the Private Industry Council, see Table 1.

GED - General Education Diploma, a way for people to achieve a High School Diploma by successfully completing a battery of tests.

GPJTC - Greater Peninsula Job Training Consortium-agency responsible for training and job placement of economically disadvantaged persons under JTPA.

TABLE 1
INCOME GUIDELINES

1984 OMB Poverty Income Guidelines

<u>Size of Family Unit</u>	<u>Poverty Guideline</u>
1	\$ 4,980
2	6,720
3	8,460
4	10,200
5	11,940
6	13,680
7	15,420
8	17,160

For family units with more than 8 members, add \$1,740 for each additional member.

70% LOWER LIVING STANDARD INCOME LEVEL

<u>Number in Family</u>	<u>70% LLSIL Income Level</u>
1	\$ 4,980
2	6,720
3	9,010
4	11,120
5	13,130
6	15,350

Note: For families larger than six (6) persons, an amount equal to the difference between the six (6) and the five (5) person eligibility income levels should be added to the six (6) person family eligibility income level for each additional persons in the family:

Amount to be added for each person over 6 in a family is \$15,350 - \$13,130 = \$2,220.

JTPA - Job Training Partnership Act (1982) superseded the CETA and has involved the private industry sector to a greater degree. Clients' training and employment opportunities basically remain the same.

PIC - Private Industry Council is made up of educators and industry leaders, it supervises the GPJTC.

PLATO - Programmed Logic Automatic Teaching Operation, a computer which provides individualized self paced literacy training.

TCC - Training Control Center determines eligibility, administers paper and pencil tests, and work samples to determine interests, aptitudes and abilities and also provides vocational counseling.

OVERVIEW OF CHAPTERS

The present chapter defined the study area of PLATO basic skills programs in conjunction with employability skills. It developed the need for this study because of the scarcity of research with adults below the fifth grade level. It stated the assumption, limitations and definitions used in this report. Chapter II reviewed the literature and Chapter III further defines the methods and procedures used in this study. Chapter IV stated the findings of the report and Chapter V presented the summary, conclusions and recommendations.

CHAPTER II

REVIEW OF LITERATURE

This chapter will review the literature concerning Control Data Corporation's Basic Skills Learning System and the High School Skills program utilized with the PLATO computer system. It will review this system as it has been used in the Illinois prison system, the Bexar County jail and the Baltimore Skills Center. It will also describe the role of PLATO as used by the Greater Peninsula Job Training Consortium.

PURPOSE OF BSLS

In 1979, Rizza and Hunter collated reports from the National Institute of Education which indicated that over thirty million American over the age of 16 had completed less than nine years of school. They also reported that a sampling from the U. S. Office Of Education indicated that an estimated 23 million American adults read at less than an eighth grade level; an estimated 39 million American adults cannot interpret an earnings statement; and an estimated 52 million American adults cannot determine the correct amount of change from a purchase. In response to these figures the control Data Education Company designed and developed a computer-based instructional system in November, 1976, targeted to these functionally illiterate American adults. The system was called the Basic Skills Learning System (BSLS) and an evaluation of the program began in January of 1978. Rizza and Hunter stated that the main

purpose of the BSLS was to reach and educate individuals whose inability to read, write, or understand basic arithmetic functions impairs their ability to obtain employment or to meet their responsibilities as citizens. The system was designed to enable functionally illiterate individuals (defined by HEW as those persons with less than an eighth-grade equivalent education) to achieve an eighth grade equivalency education in reading, language, and mathematics skills (Rizza and Hunter, 1979).

The BSLS consisted of modules of instruction which were stored on diskettes. The modules of instruction were listed as course numbers under grade levels three through eight. For a complete listing of courses in the Basic Skills Learning System, see Tables 2 and 3. A student who started at level 4 in math would load the diskette, entitled Multiplication 1 into the PLATO computer and sign on. The computer kept a memory of the students progress and when the student finished course 4 he removed that instructional disk and replaced it with the test disk for that course. If he satisfactorily completed the test he would go on to the next course. PLATO automatically recorded the students passing into it's memory and the instructor had immediate access to the students progress and also access to how many times the student attempted that particular course. If the student needed help in a certain area the instructor would be available and could utilize the remedial exercise books supplied by CDC. The BSLS was presented through the computer for up to seventy five percent of the total course, the rest was designed to be extracted from workbooks and exercise books.

TABLE 2
PLATO MATH CHART

Grade Level 3

Course 1 Basic Number Ideas
 Course 2 Addition 1
 Course 3 Addition 2
 Course 4 Substraction
 Course 5 Multiplication 1 a-f
 Course 9 Fractions 1 Part 1

Grade Level 5

Course 10 Fractions 2
 Course 11 Decimals

Grade Level 7

Course 13 Geometry and Measurement
 Part 1

Grade Level 4

Course 5 Multiplication 1
 g-j
 Course 6 Multiplication 2
 Course 7 Division 1
 Course 8 Division 2
 Course 9 Fractions 1 Part 2

Grade Level 6

Course 12 Ratio Proportion
 And Percent

Grade Level 8

Course 13 Geometry and Measurement
 Part 2

TABLE 3
PLATO READING CHART

Grade Level 3

Course 1	Making New Words Part 1 a-i
Course 3	Understanding New Words Part 1 All
Course 5	Understanding What You Read Part 1 a-k
Course 7	Thinking About What You Read Part 1 All
Course 9	Judging What You Read Part 1 a-e

Grade Level 4

Course 1	Making New Words 1 Part 1 j-p
Course 3	Understanding New Words Part 2 All
Course 5	Understanding What You Read Part 2 l-r
Course 7	Thinking About What You Read Part 2 l-r
Course 9	Judging What You Read Part 2 f-j

Grade Level 5

Course 1	Making New Words 1 Part 2 All
Course 3	Understanding News Words 1 Part 3 All
Course 5	Understanding What You Read 1 Part 2 c-i Part 3 a,b
Course 7	Thinking About What You Read Part j-r

Grade Level 6

Course 2	Making News Words 2 Part 2 All
Course 4	Understanding New Words 2 Part 1 a-i
Course 5	Understanding What You Read Part 3 c-k
Course 8	Thinking About What You Read Part 1 All

Grade Level 7

Course 2	Making New Words 2 Part 2 a-i
Course 4	Understanding New Words 2 Part 1 j-p
Course 6	Understanding What You Read Part 1 c-m

Grade Level 8

Course 2	Making New Words 2 Part 2 j-p
Course 2	Understanding New Words 2 Part 2 All
Course 4	Understanding What You Read Part 2 All

This BSLS package was utilized by Diem and Fairweather in 1980 and they reported the results of one of the pilot evaluations in the Bexar County Jail, Texas. Thirty-eight male inmates were assigned either to an experimental group using PLATO or to a control group engaged in a traditional classroom instructional approach. Each group was pre-tested and post-tested using the Adult Basic Learning Examination (ABLE), Level II. The results showed that, in general, achievement gains were greater for the group using PLATO versus the group using the traditional approach. However, they cited many problems that were endemic to other settings. The administrators thought their problems were over when the computer hardware arrived. No attention was given to curriculum or training of people to administer the PLATO program. Most of the guards at first thought the program was a waste of money; money which they felt could have gone into raises for them. The education staff at BCDC expected PLATO to relieve some of the load from their work. However, only three of the seven staff made use of the computers. Barring all the problems, they felt that the PLATO program was a success, and with changes in the education of personnel, that computer assisted instruction could work.

In addition to county jails, PLATO was very active in prison schools in Illinois and Minnesota. Siegel (1978) felt that there were four unique capabilities of PLATO that were especially useful in prison schools.

1. PLATO was individualized, which gave each student the lessons needed.
2. PLATO was infinitely patient, which allowed each student to progress at his own rate.
3. PLATO was non-threatening and interactive, which maintained the students interest and concentration.

4. PLATO was a network which provided a common bases of curriculum record keeping across institutions, both inside and outside the the correction setting (Siegel 1978).

According to Siegel, the program at the prisons was a success and during the first two years of regular use, almost 2,000 students used the PLATO System for 26,000 hours. The General Education Diploma (GED) test in Illinois had a separate constitution test, based on the state and federal constitution and the passing score on the test was 30. The average PLATO students score was 40, while the average non-PLATO students was 29. While Siegel admits that this was an informal study, he felt the differences were large enough to credit PLATO with an overall gain.

Meyer (1983) also performed prison studies and using 359 male inmates, she divided them into a traditional self-paced instruction group and the PLATO group. She found that the PLATO group outperformed the traditional group in math, however, the PLATO students received a great deal of paper and pencil practice with off-line worksheets. Therefore, the greater gains of the PLATO students may have resulted from the amount of practice they received in math. The least gains of all were in reading comprehension with the traditional group faring slightly better than the PLATO group. Meyer was plagued with inmate turnover problems, but stated that sixty-six percent of the PLATO students remained to complete the three months instruction in comparision to only thirty-three percent of the students in the traditional classroom. Another factor in the Meyer study was that the Tests for Adult Basic Education (TABE) Reading and Math score was 7.2 and 7.1 grade equivalencies.

As with Meyer, the students pre-tested by Wadsworth and Frazier (1982) in the Oklahoma Skill Center also had a mean pre-test equivalency of the seventh grade. Their research ran into problems with poor controls over the students and PLATO not being utilized as it should have been. PLATO wound up being used as a supplementary tool only, and it was up to the discretion of the traditional teacher whether or not the students even used PLATO. The results of the post-test showed no grade differences between PLATO and the traditional group. They did recommend that in further studies the use of PLATO should be controlled so that students would use the PLATO Instructional system independently of any other instructional method.

The clientele of the Oklahoma Skill Center were very similar to those of the Baltimore Adult Learning Center, which was a joint venture of the Mayor's Office of Manpower Resources (MOMR) and the Commercial Credit Company, a subsidiary of the Control Data Corporation. MOMR acted as the administrator for the Comprehensive Employment and Training Act (CETA) which was replaced by the current Job Training Partnership Act (JTPA). Judge (1978) stated that the grade gains in one center involving the BSLS were one entire school year in reading in less than 12 hours - 7.5 hours on PLATO and the rest in outside study. A jump of 1.5 grade levels in Math was reported in less than 20 hours - 13 on PLATO and the rest on outside study. Most students were tested on the Adult Basic Learning Examination (ABLE) and their pretest average in reading was a seventh-grade level while the Math pre-test figures were at the sixth grade level. The most impressive figure from the Baltimore study was

the very low drop out rate of five percent. However, during this period the clients were paid through CETA Funding and this was a strong motivating factor.

PENINSULA JTPA

The CETA Funding for students ceased when JTPA superseded CETA and section 2 of Public Law 97-300 - October 13, 1982 stated that the purpose of the Job Training Partnership Act (JTPA) was to establish programs to prepare youth and unskilled adults for entry into the labor force and to afford job training to those economically disadvantaged individuals and other individuals facing serious barriers to employment. To be able to successfully place a person in a skill training program or into an on-the-job-training (OJT) program, the person must be functionally literate. The Hampton Literacy Council quoted figures that state almost one out of every five Americans are functionally literate. The aim of the Greater Peninsula Job Training Consortuim (GPJTC), which acted as the administrator for JTPA on the Peninsula, was the fulfillment of Section 2. Through advertisements and employment counselors at the various offices of the Virginia Employment Commission, people were informed of the opportunity for employment training or subsidized employment placement. These people were referred to the JTPA intake centers and eligibility was determined. The income guidelines were listed in Table 1 and the following eligibility criteria was extracted from the Private Industry Council Instruction 84-5, January 1984.

1. General Criteria

- a. Citizen or Legal Alien
- b. Compliance with Selective Service Act
- c. Less than 45 days between Application and enrollment

2. Eligibility Requirements for Title II (Training Services for the Disadvantaged).
 - a. Residents of Newport News, Hampton, Poquoson, Williamsburg, or counties of York, James, or Gloucester.
 - b. Economically Disadvantaged or have other barriers to employment.

3. Eligibility Requirements for Title III (Employment and Training Assistance for Dislocated Workers).
 - a. Terminated, laid off or have received notice of such and is eligible or has exhausted UI benefit and not likely to return to old occupation or,
 - b. Terminated or received notice as a result of permanent plant closure or,
 - c. Long term unemployed with limited chances for reemployment in old occupation in the area including older workers with age barriers.

4. Requirements for Economically Disadvantaged
An individual who;
 - a. receives, or is a member of a family which receives cash welfare payments under a Federal, State, or Local welfare program;
 - b. has or is a member of a family which has, received a family income for the six-month period prior to application for the program involved (exclusive of unemployment compensation, child support payments, and welfare payments) which, in relation to family size, was not in excess of the higher of (i) the poverty level determined in accordance with criteria established by the Director of the Office of Management and Budget, or (ii) 70 percent of the lower living standard income level;
 - c. is receiving food stamps pursuant to the Food Stamp Act of 1977;
 - d. is a foster child on behalf of who State or local government payments are made; or

- e. is an adult handicapped individual whose own income meets the requirements of clause (a) or (b), but who is a member of a family whose income does not meet such requirements.

5. Family Criteria

- a. One or more persons living in a single residence related by blood, marriage, or adoption, a step-child or step-parent shall be considered related by marriage.
- b. An older worker, age 55 or older, whether living in the residence or not, or an adult handicapped individual, may be considered a family of one when applying for programs under the Act.
- c. An individual 18 or older, except as provided in (4) above, who receives less than 50 percent support from the family, and who is not the principal earner nor the spouse of the principal earner, is not considered a family of one.
- d. An individual 14 years of age or older living in a single residence/household and not related to the family by blood, marriage, or adoption shall be considered a family of one when applying for programs under the Act.
- e. An individual released within 6 months of the date of applying for programs under the Act, from an institution or facility providing 24-hour support such as a prison, hospital, or community care facility may be considered a family of one, provided that such confinement status presents a significant barrier to employment and the person is not claimed as a dependent on a family member's income tax return.
- f. Any handicapped youth, 14 years or older, shall be considered a family of one (Signature of parent or guardian is required).

6. Income Criteria

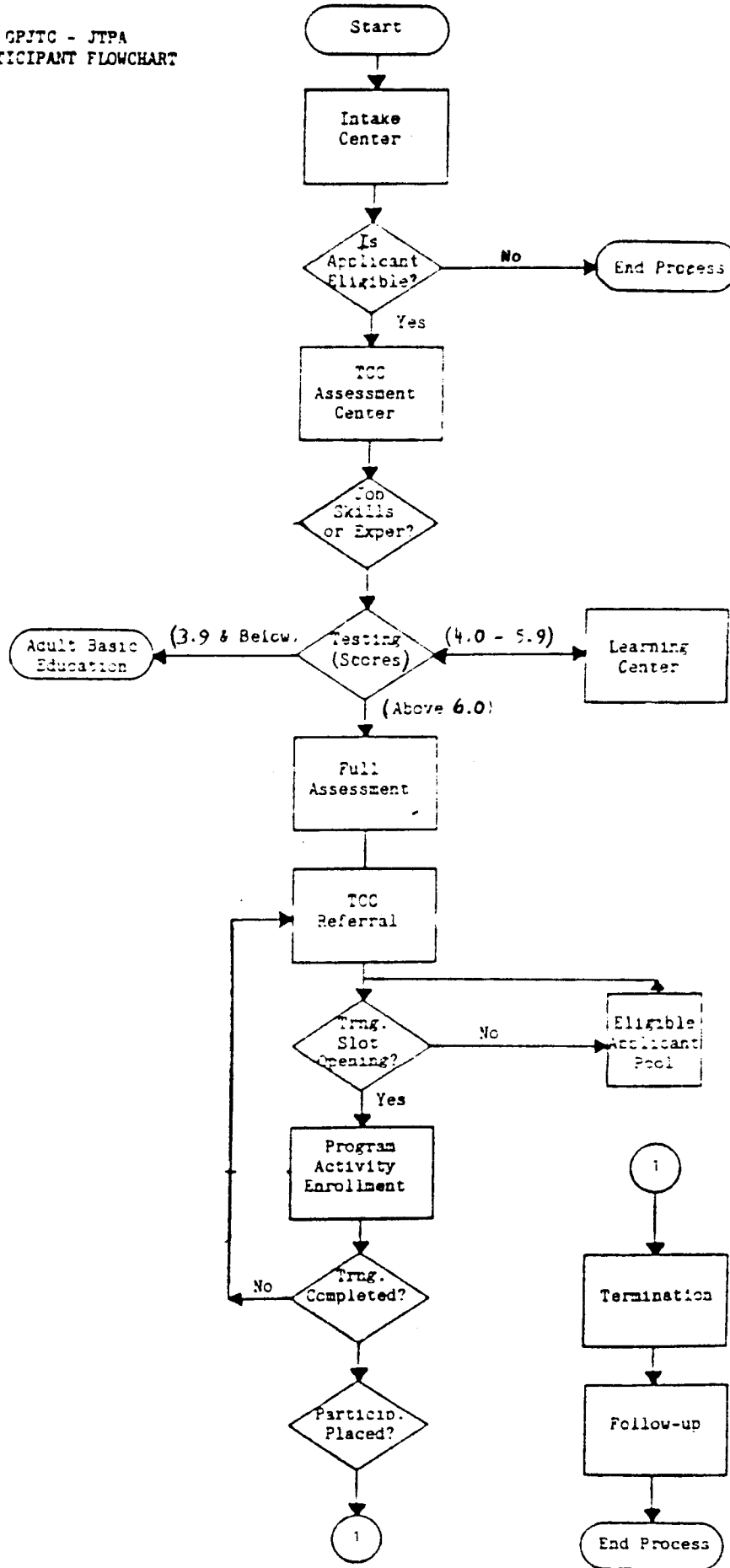
All income received from all sources for the six-month period prior to eligibility determination by persons who are family members at the time of eligibility determination. Family size shall be maximum number of family members at the time of eligibility determination. When computing family income, all income for each family member at the time of application for the entire six-month determination will be included in the family income computation.

PARTICIPANT FLOWCHART

As shown in Table 4, the participant started at one of the intake centers located in his or her area, and eligibility for the program was determined. If the client was eligible, he was sent to the Training Control Center. All clients were tested utilizing the Metropolitan Achievement Tests (Math portion only), Form JS, Intermediate Level, and the Nelson Reading Test, Form A. If the scores were equivalent to grade level 3.9 and below, the client was referred to the Adult Basic Education Program in his or her community, as the GPJTC had no provisions in its program for people who tested below grade level 3.9. These people were told that they could reenter and retest after they had upgraded their scores at their Adult Education Centers. If the clients grades were between 4.0 and 5.9, they were referred to the Learning Center nearest their home for instruction which utilized the Basic Skills Learning System of the Plato system. The client was given an appointed period and they utilized the Plato system for two hours a day, five days a week. The total time spent on the computer was approximately eighteen through twenty-five hours for Readings skills and approximately the same for Math skills. When the client finished the program, which was equivalent to eighth grade level, they returned to the Training Control Center and were retested.

GPJTC - JTPA
PARTICIPANT FLOWCHART

TABLE 4



If the clients scored over 6th grade level, they were assessed and tested, utilizing the General Aptitude Test Battery (GATB) and the Wide Range Interest Opinion Test (WRIOT). Trained counselors interpreted the test results and after they conferred with the client, recommended either skill training or employment through the program activity. If no training slots were open at the time, the client was placed in a holding pool. The system was closed when the client was placed into employment and after the On-The-Job Training contract was up, if the contract was utilized.

SUMMARY

In conclusion, many Americans today are functionally illiterate and this adds to the chronic unemployment problem of this group. The GPJTC has leased the PLATO system to try to upgrade the reading and math grade levels of these economically disadvantaged adults. However, the GPJTC worked with people who fell between grade level 4.0 and 5.9, while almost all of the research to date had been done on people whose mean reading and or math score was at least the seventh grade level. There had been no research found indicating whether PLATO would increase scores in math and or reading for people in the GPTC spectrum of 4.0 to 5.9.

There was also no research found indicating that PLATO was used independently of any other teaching type. The GPJTC utilized PLATO independently and this factor could have affected the results.

Chapter III discussed the methods and procedures used to correlate the figures discovered in this report.

CHAPTER III

METHODS AND PROCEDURES

Chapter III contains a description of the methods and procedures used to obtain the needed information for the report. It described the population of the study and the testing procedures utilized by the Training Control Center. The analysis of the data from the Pre-test and Post-tests were also described.

POPULATION

The population consisted of persons deemed eligible by the criteria set up by the Job Training Partnership Act. In general, these people were male and female, between 18 through 55 years of age, unemployed and usually lacking a skill or trade. These people met the criteria of either Title III, or were dislocated workers, or considered a handicapped youth 14 years of age or older. The persons sent to the Learning Centers to utilize Plato were people who scored between grade level 4.0 and 5.9 on either the reading or math tests. The total population of the people seen by The Greater Peninsula Job Training Consortium Testing Center was 830.

TESTING

There were two tests administered to the population, The Nelson Reading Test, and the math portion of the Metropolitan Achievement Test.

The Nelson Reading Test was used to determine the clients grade equivalency in reading comprehension and word meaning and a total grade equivalency in reading was also established. Each test contained 70 items, 29 items measured word meaning and 41 items measured reading comprehension. The reliability of The Nelson Reading Test was from .88 in grade level 7 to .93 in grade level 3. The alternate forms method was used to derive the reliability coefficient.

The math portion of The Metropolitan Achievement Test had a reliability coefficient of .90 which was determined by the Kuder - Richardson Formula 20. There were 50 items on the math portion of the test and these items measured the following strands:

1. Numeration
2. Geometry and Measurement
3. Problem Solving
4. Operations: Whole Numbers
5. Operations: Laws and Properties
6. Operations: Fractions and Decimals
7. Graphs and Statistics

The administration time of the test was approximately 45 minutes and the results are converted to grade equivalency levels of 3 through 12. Both tests were conducted by The Testing Technician Evaluator every Monday at 8:45 and every Wednesday at 12:15 at The Training Control Center.

DATA ANALYSIS

Pre-test scores were obtained for all clients enrolled at the Learning Centers from October 1983 through March 1985. Information was obtained from the files on the number of days spent in the program and their post-test scores were obtained from their personnel folder at The Learning Control Center. The results were correlated to see if there was a difference between the mean pre-test and mean post-test scores on Math and Reading of the clients utilizing Plato. Information was obtained from the computer records at The Greater Peninsula Job Training Consortium to determine if there was a correlation between job placement and/or training and the clients who utilized Plato.

SUMMARY

The eligible JTPA clients pre-test scores in reading and math were compared to their post-test scores after completion of the Control Data Corporation Basic Skills Learning System (BSLS) utilizing the PLATO computer. A correlation was determined and the clients progress through the JTPA system was tracked. Chapter IV discussed the findings of reports.

CHAPTER IV

FINDINGS

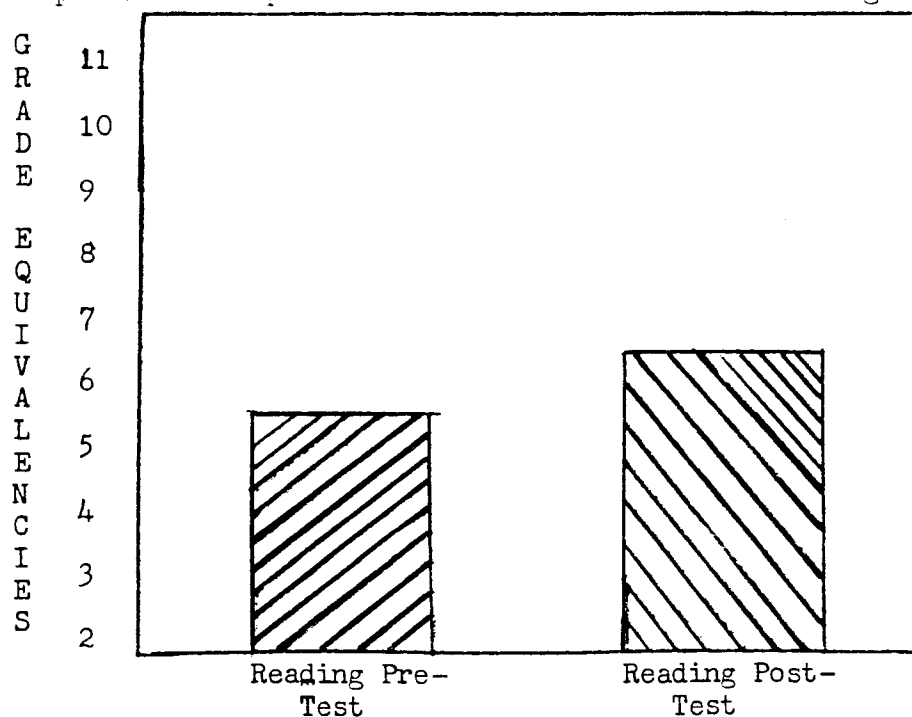
Chapter IV presented the findings of this study. Within this chapter the difference between the pre-test and post-test scores of the PLATO clients were presented. The percent of PLATO clients that dropped out of the program was also presented, along with the number of people that were below the minimum grade level for entry into the PLATO program.

RESULTS OF NELSON READING TEST

Table V showed the mean pre-test score on the Nelson Reading Test at grade level 5.5. The mean post-test score after completion of the PLATO program was 6.4. There was an overall reading increase of .9 of a grade level.

TABLE V

Mean pre-test and post-test scores on the Nelson Reading Test

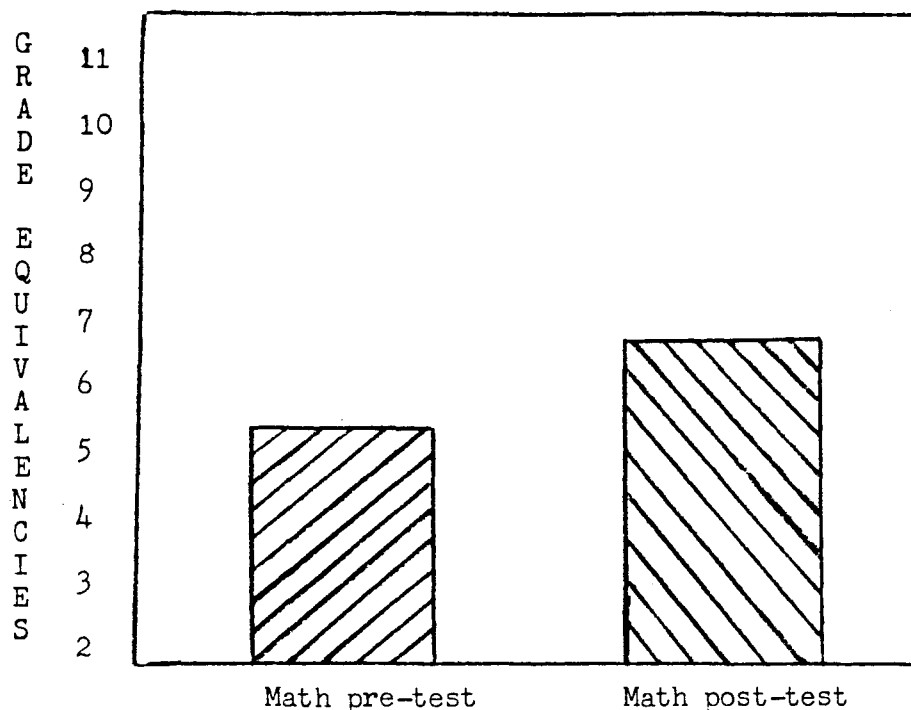


RESULTS OF METROPOLITAN MATH TEST

Table VI showed the mean pre-test score on The Metropolitan Math Test at grade level 5.2. The mean post-test score was at grade level 6.8. There was an overall grade increase in math of 1.6 grade levels.

TABLE VI

Mean pre-test and post-test scores on the Metropolitan Math Test



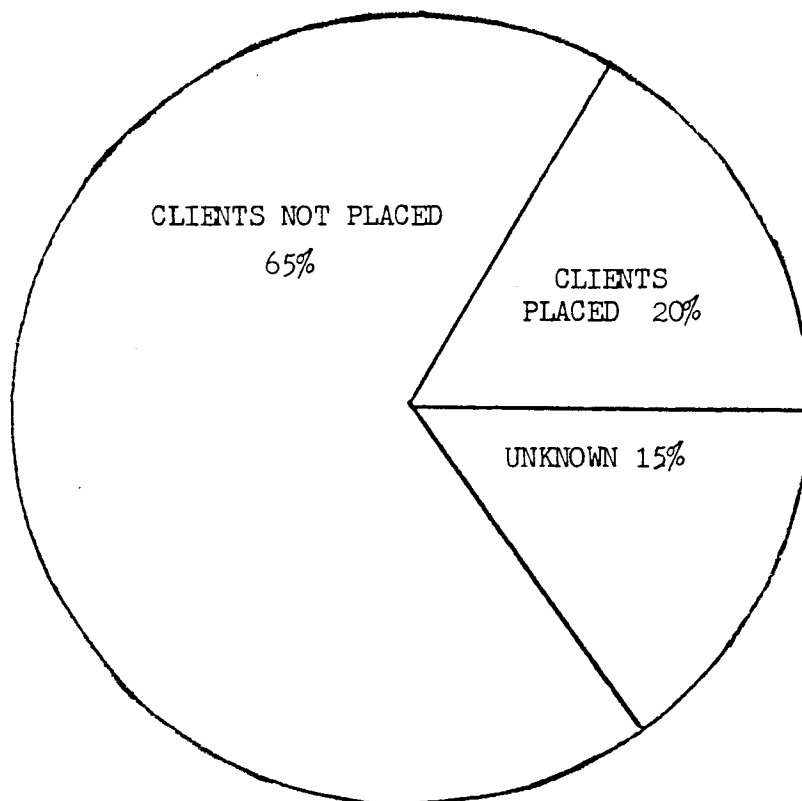
PLATO CLIENT PLACEMENT

The second question raised in this report was what percentage of clients who completed the PLATO program were successfully placed into either employment or an employment training program. Table VII showed that the percentage rate for positive placement into either employment or training was twenty percent, with the number of clients placed being 22 out of the total number of clients being 107. There were 69 people who were

not placed into either employment or training and these people were declared negative. Sixteen people were unaccounted for.

TABLE VII

Percentage of clients placed from PLATO

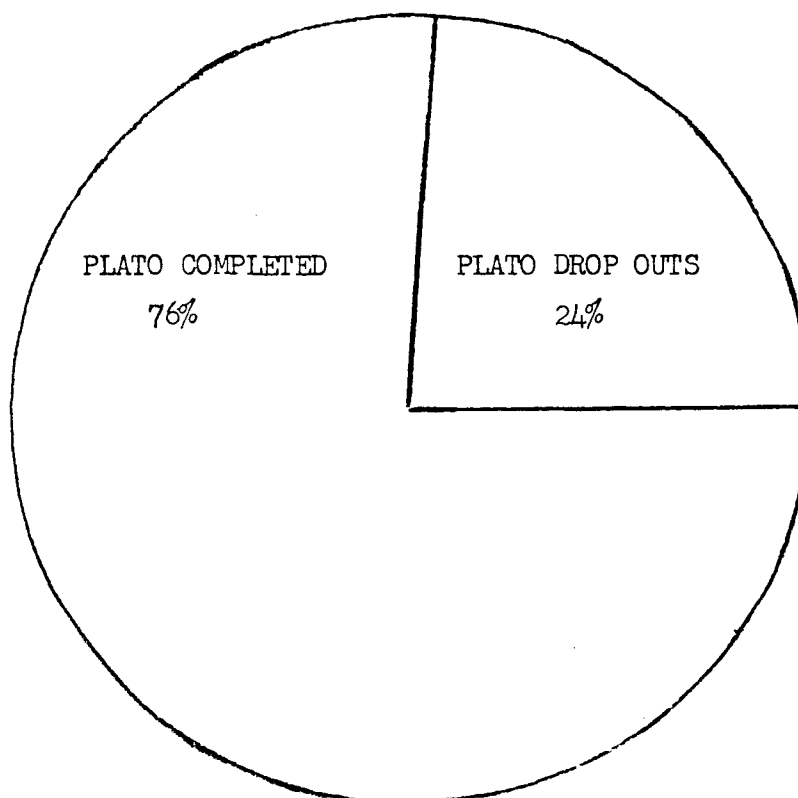


PLATO DROP OUT RATE

The third question raised was, what percent of the students dropped out of the PLATO program after their initial start? Table VIII showed that the number of people that dropped out of the PLATO program was 34 out of 141 people who started the program. The drop rate for clients of the PLATO was 24 per cent.

TABLE VIII

PLATO drop-out rate



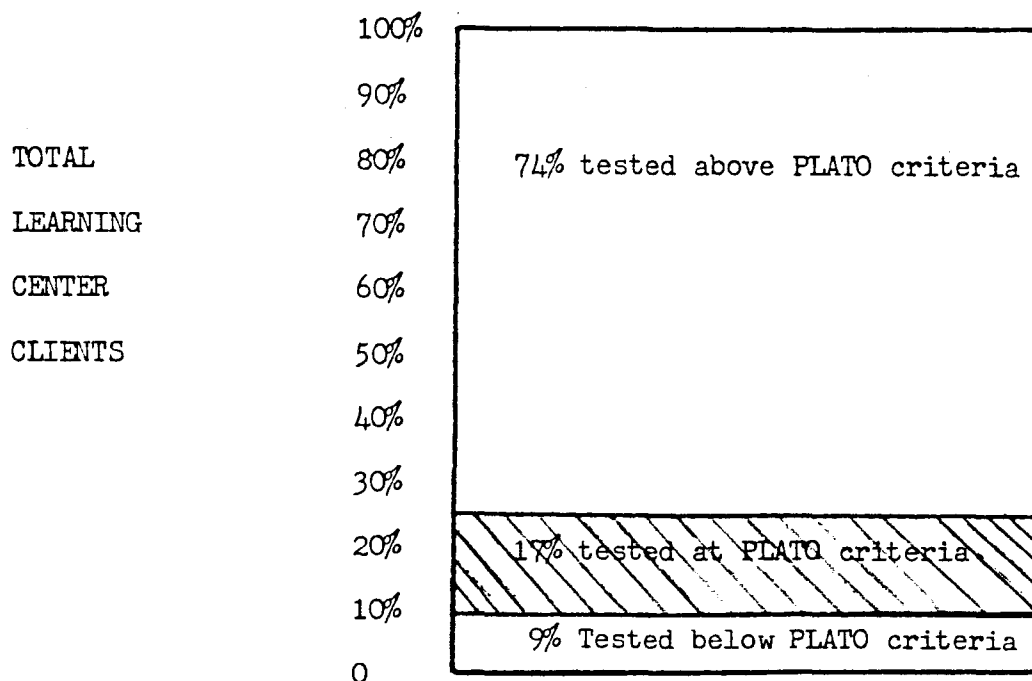
PLATO ENTRY LEVEL CRITERIA

The fourth question asked whether the grade equivalencies of 4.0 to 5.9 were too narrow to allow maximum participation in the PLATO program by

initially tested by the training control center met the criteria for entry level into the PLATO Learning Centers. Seventy - four percent of the participants scored above the criteria designed by the GPJTC. Nine percent of the participants were below the criteria set up the GPJTC and were referred to the Adult Education program in their area. Of the four learning centers only the two at Buckroe and Huntington used the PLATO computers to the maximum student capacity. The Learning Center at Williamsburg had 4 students enrolled, and 3 pending as of April 1985. The Learning Center at Yorktown was moved to Gloucester because of poor student enrollment.

TABLE IX

PLATO Test Criteria



SUMMARY

The findings indicated that there was grade level increases in both reading and math after students completed the PLATO program. Twenty percent of the people who completed PLATO were placed into either employment or employment training. The drop out rate for students in the PLATO program was twenty four percent. Two out of the four learning centers were not filled to their maximum student capacity. Chapter V discussed the summary, conclusions and recommendations.

CHAPTER V

SUMMARY, CONCLUSION AND RECOMMENDATIONS

SUMMARY

The Greater Peninsula Job Training Consortium acted as the agent for the Job Training Partnership Act in the lower peninsula of Virginia. Their aim was to provide employment opportunities for economically disadvantaged persons. In October 1983, the GJPTC initiated three learning centers utilizing PLATO (Programmed Logic Automatic Teaching Operation). The Control Data PLATO Microcomputer System Reading and Mathematics Series is a comprehensive, individualized program. The High School skills curricula have been designed to help individuals master the skills necessary to pass the General Educational Development (GED) exam. The instructional approach used in the High School skills curricula offers a broad range of options designed to meet the needs of a diverse student population. At the same time, it offers a mode of instruction most efficient and appropriate for each individual. The curricula serves this dual purpose by using the PLATO Microcomputer System to help students identify their skill deficiencies and select appropriate options for attaining skills. The PLATO Microcomputer System also provided frequent, immediate feedback based on an individual's response to the instructional materials, and further personalized the working arrangement by using each student's name and producing graphic displays of his or her progress.

The clients of the GPTJC were recommended to the Learning Center if their scores from the Nelson Reading Test or math scores from the Metropolitan Achievement Test were between grade level 4 and grade level 5.9. The feeling was that the chances for subsidized employment or employment training was extremely difficult below the sixth grade level. The people that were recommended to the Learning Center received instruction from the PLATO system for two hours a day, five days a week, until they finished. Then retested and if they scored sixth grade level or above, they went on with total assessment through the GPTJC system. The problem of this study was to ascertain if these people did increase their scores after attending the PLATO system and were these people successful in either obtaining employment or employment training. PLATO has been used mainly in correctional facilities during its initial trial period and overall the results have been successful. The Baltimore Adult Learning Center also showed excellent grade gains but as with most of the correctional studies, they all started with an average pre-test score of around the seventh grade level. The GPTJC started with an average pre-test score of 5.5 in reading and 5.2 in math. There were no other studies found indicating mean pre-scores as low as these. The Baltimore Adult Learning Center also had a very low drop out rate of five percent, however, their clients were being paid a stipend, therefore, a comparison here would not be valid.

CONCLUSION

The clients of the Learning Center did increase their scores in reading and math after completion of the PLATO program. The mean score increased on the Nelson Reading Test was .9 of a grade level. The increase on the math portion was more impressive, at an increase of 1.6 grade levels. These increases parallel the increases in the Baltimore and Oklahoma skill centers and their mean pre-test scores were at the seventh grade level. PLATO works and as shown from this data increases can be obtained even when the means are starting at the fifth grade level.

The total number of students that were placed into employment or employment training, after their completion of the PLATO program, was twenty percent. This figure is not low with respect to other learning centers that are dealing with economically disadvantaged persons. The figure is misleading because the people have to be declared negative if they can not be contacted after they complete the course. A negative indicates that the person completed the course and was not placed into either an employment training program, or directly into employment.

The drop out rate for people starting PLATO was 24 percent. This figure was not unduly high for this socio-economic group. These people were not receiving any assistance and were enrolled in a pre-training or pre-employment program and for 76 percent to stay for completion, says much for their determination to reach higher levels. Figures extracted from the Commonwealth of Virginia, Adult Education Service, reflected that

in the school session 1983-84 the separation rate was over 57 percent.

These figures were broken down into the following categories:

1. Health problems
2. Child care problems
3. Transportation problems
4. Location of class:
 - a. Distance
 - b. Safety factor
5. Lack of interest
6. Time class is scheduled
7. Moved
8. Released from an institution

These categories were accounted for, but over 30 percent of the people who dropped out of the Adult Basic Education programs in Virginia were unaccounted for and over 50 percent of those people had follow-up attempted. So the problems of these people were endemic to the problems of the people enrolled in the Learning Center and the drop out rate for the Learning Center indicated an excellent retention rate.

The fourth question addressed whether the grade equivalencies of 4.0 to 5.9 were too narrow to allow maximum participation in the PLATO program by the clients of JTPA. Out of the 830 people seen by the Assessment Center, only 75 tested below grade level 4, and these would be the ones most needing assistance in gaining employment. 142 people fell within the grade levels set up by the GPTJC. The 75 people who tested below the cutoff of the fourth grade level were told that they could not be serviced and that the Adult Basic Education Center in their city or locale would be able to help them to increase their scores. During this period only two of the four Learning Centers were being utilized to their full capacity of sixteen students. The learning center at Williamsburg had only four students enrolled during March 1985. This was because of lack of publicity, lack of transportation, and lack of visibility. The

learning center at Gloucester was in the process of its initial open house. The grade equivalencies are not too narrow for the Buckroe and Huntington Learning Centers because they are working to full capacity. However, the learning centers at Williamsburg and Gloucester are not working to anything near full capacity because of lack of clients meeting the GPJTC criteria.

RECOMMENDATIONS

One of the figures missing from this report was the number of hours spent by each student actually on the PLATO system. The computer printouts at GPJTC had the start and stop dates, but there were no actual hours kept on each student. These figures would enhance a cost effectiveness study on grade level increase per 20 hours of computer time for groups utilizing PLATO. A log could be kept at each learning center and weekly totals of actual computer time could be updated into the computer. This would also aid in the statistical analysis of the mean hours spent on the computer of the students who dropped PLATO. It could be possible that the 24 percent of students who dropped PLATO entered the program but never got on the computer if they did not show up for their first class.

The grade level increases shown at the Learning Center closely parallel those of other institutions and skill centers. However, this learning center is taking in people with much lower mean reading and math scores. Therefore, PLATO worked as well with people regardless of whether they entered the Learning Center at a mean fifth grade or seventh grade equivalent. So since PLATO worked for fifth grade equivalency it should work for fourth grade equivalency and this would allow more disadvantaged people access to the goals of the Job Training Partnership Act. It is recommended that

the grade level be dropped from 4.0 to 3.0 in reading and math. This would give a grade spread of 3.0 to 5.9 and allow more participation in the PLATO program. The mean entry score was 5.35, allowing people with 3.0 grade level in, would not affect the mean entry that much, as only 75 people out of 830 scored below grade level 4. These 75 people were sent to the Adult Basic Education programs and as stated in the conclusion, the drop out rate in the state was over 57 percent. These clients are probably the ones most in need of assistance. By lowering the grade entry criteria this would aid them to at least enter the programs set up by JTPA to prepare unskilled adults for entry level employment. If the addition of these people would tax the microcomputers at Buckroe and Huntington, because of maximum enrollment, then moving terminals from Williamsburg, where enrollment is low, may be the answer.

Besides the Basic Skills Learning System, the Control Data Corporation also developed the High School Skills learning package. This package has been a proven asset for people preparing for their GED. It is recommended that clients without high school diplomas be referred to the Learning Center to utilize the High School Skills program. These clients could be the people selected for employment training at the Buckroe Skill Center. This would in turn enhance the clients' ability to be competitive in today's labor market, and could be accomplished through dual enrollment into the Learning Center and the Skill Center.

BIBLIOGRAPHY

- Brown, Betty, "Plato Promises Grade Gains". Electronic Education, (Oct 1981), p. 10 - 12.
- Diem, Richard A. and Fairweather, Peter G., "An Evaluation of a Computer Assisted Education System in an Untraditional Academic Setting - A County Jail".
- Judge, John F., "Baltimore Brings in Plato to Fight Illiteracy", Voc Ed, Nov 1978, p. 60 - 63.
- MacGregor, William B., "Plato and the English Curriculum" Paper presented at the combined Annual Meeting of the Hawaii Council of Teachers of English and the Hawaii State Council for the Social Studies Conference, 1982.
- Meyer, Linda A., "Evaluation Research in Basic Skills with Incarcerated Adults". Paper presented at the Annual Meeting of the American Educational Research Association, Montral, Canada, 1983.
- Nabors, Donald G., "A Comparative Study of Academic Achievement and Problem Solving Abilities of Black pupils at the Intermediate level in Computer Supprted Instruction and Self-Contained Instructional Programs". Dissertation, Xerox University Microfilms, Ann Arbor, Mi., 1974.
- Private Industry Council Instruction 84 - 5. Greater Peninsula Job Training Consortium, Hampton, VA., 1985.
- Rizza, Peter J., and Hunter, Peggy Walker, "New Technology Solves an Old Problem: Functional Illiteracy". Audiovisual Instruction, Jan. 1979, p. 22 - 23.
- Siegel, Martin A., "Computer Based Education in Prison Schools". A Journal of Educational Technology Systems. 1978 - 79, p. 239 - 256.
- Sims, Marcy, "Almost one in five Virginia adults can't read warning lables, and signs". Daily Press, Hampton, VA., Jan. 11, 1985.
- Summary of Adult Basic Education, Commonwealth of Virginia, Adult Education Service, Department of Education, Richmond, Virginia, 1983 - 84.
- Wadsworth, Samuel G., and Frazier, William D., "Plato Use in Oklahoma Skill Centers, Final Report". Oklahoma State Department of Vocational and Technical Education, Stillwater., 1982.