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ABSTRACT

Harvest is a follow-up study on 1,775 students who entered El Paso Community College, Colorado Springs, Colorado for the fall 1973 term. Data through spring 1976 were analyzed. The study was undertaken to seek answers to the following questions: (1) How do students who enter with basic skills at the elementary, junior high, or high school level compare in achievement after taking compensatory skills courses with students who enter at the same skills level and do not take compensatory skills courses; how do those students compare with students who enter with college level skills? (2) How do veterans compare with non-veterans? (3) How do minority students compare with each other and with whites? (4) How do women students compare with men students? (5) How do students for whom placement tests are waived compare with students who took placement tests? (6) How well did the follow-up to placement testing (counseling and enrollment in the appropriate level course) work? (Author/MV)

HARVEST

A study of 1,775 students at El Paso Community College

by

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Summary

Harvest is a follow-up study on 1,775 students who entered El Paso Community College for the fall 1973 term. Data through spring 1976 were analyzed. The study was undertaken to seek answers to the following eight questions:

1. How do students who enter with basic skills at the elementary school level compare in achievement after taking compensatory skills courses with students who enter at the same skills level and do not take compensatory skills courses; how do those students compare with students who enter with college level skills?
2. How do students who enter with basic skills at the junior high school level compare in achievement after taking compensatory skills courses with students who enter at the same skills level and do not take compensatory skills courses; how do those students compare with students who enter with college level skills?
3. How do students who enter with basic skills at the high school level compare in achievement after taking compensatory skills courses with students who enter at the same skills level and do not take compensatory skills courses; how do those students compare with students who enter with college level skills?
4. How do veterans compare with non-veterans?
5. How do minority students compare with each other and with whites?
6. How do women students compare with men students?
7. How do students for whom placement tests are waived compare with students who took placement tests?
8. How well did the follow-up to placement testing (counseling and enrollment in the appropriate level course) work?

For statistical analysis the 1,775 student population was subdivided into the following sub-samples: 424 veterans - 1,351 non-veterans; 671 females - 1,104 males; 94 Black - 129 Chicano - 29 other minorities- 1,523 white; and 823 students who took placement tests - 952 who did not take placement tests. For each analysis involving compensatory skills courses, students who took placement tests and enrolled in the appropriate level skills course or one level above or below that level were assigned to Group A. All other students whose placement scores suggested a compensatory skills level and who did not enroll in a course at one level above or one level below that level were assigned to Group B.

Dependent variables for each of the above sample conditions included: average skills credits earned: average skills credits attempted but not earned; average number of transfer credit earned; average number of occupational studies credits earned; average number of 100-200 level credits attempted but not earned; average student success in skills; average student success in 100-200 level courses; average student success in all courses; associate degrees earned; certificates earned; and total degrees and certificates earned. The three student success variables were generated by dividing the credits earned by total credits attempted, and representing this decimal equivalent as a per cent. It was felt that the student success data would provide EPCC with a valuable counseling tool.

All analyses were conducted during the summer and fall of 1976. Chi square analysis was employed to compare all grouped data. For all statistical analysis the .05 level of confidence was employed to reject the hypothesis of no significant difference between groups.

Conclusions

As the result of the statistical analyses, the following generalizations are appropriate:

1. Success in compensatory skills courses:
   a. Students who enrolled at the 010 level tended to persevere and be as successful at earning both skills and 100-200 level occupational course credit as those who entered at the 050 or 101 levels.
   b. Over half of the students who took placement tests and whose achievement placed them in compensatory skills courses did not enroll in skills courses.
   c. Students who had low placement scores in English experienced greater difficulty succeeding at EPCC than did those who had low mathematics or reading placement scores.
   d. College level mathematics achievement is not necessary for students to be successful in many occupational degree or certificate programs and some college transfer programs.
2. Veterans vs Non-Veteran Achievement
   a. Veterans took approximately three times as many courses than non-veteran EPCC students.
   b. More minority students were veterans.
   c. Approximately 30% of the veterans completed degree or certificate programs; whereas, 11% of non-veterans completed degree or certificate programs.

3. Achievement of minority and white students
   a. Chicano students completed more programs, 19% compared to 15% for white students.
   b. Minority students entered with lower average scores than whites and took twice as many developmental courses as white students.
   c. White students were successful in a higher percentage of the courses they attempted than were minority students.
4. Women vs Men Students
   a. Women had greater formal education and achieved higher placement scores than entering men students.
   b. 7.5% of both men and women had achieved associate degrees in 1976, whereas, 10% of the men and 4% of the women earned certificates.
   c. Women were successful in 82% of their course work compared to 77% for men.
5. Placement tests: Yes or No?
   a. Of the 1775 students in the total sample, 823 (46.37%) took placement tests.
   b. 77% of the placement students and 80% of the non-placement students were successful in coursework undertaken at EPCC.
   c. 21.39% of the placement group earned degrees and/or certificates compared to 10.29% of the non-placement group.
6. Placement vs Enrollment
   a. For skills courses the accurate placement of students into appropriate courses was 37% for English, 39% for mathematics, and 31% for reading.
   b. When the classes immediately above or below were included, these percentages changed to 41% for English, 46% for mathematics, and 30% for reading.
   c. Correlations between placement and enrollment were .186 for English, .062 for mathematics, and .026 for reading.

Recommendations

It is recommended that:

1. Students whose placement test results suggest that they require 010 level skills courses receive continual counseling follow-up until the skills deficiencies have been remediated. This is especially crucial for students whose placement test achievement for English is at the 010 level. Counseling in terms of occupational major to be pursued at EPCC needs to be undertaken to assure that occupational students receive the compensatory mathematics skills necessary for success in their major rather than to achieve a college level mathematics functioning level. In reading, English, and mathematics, specific skills necessary for a specific program should be made available in that program area wherever possible rather than insist on whole courses.
2. As the veteran enrollment at EPCC declines considerable effort needs to be expended to recruit students and counsel them so that a higher percentage achieve degrees or certificates.
3. Recruitment efforts should assure that the future EPCC student body reflect an ethnic balance representative of El Paso county. State or federal fiscal assistance programs need to be fully implemented to assist minority students.
4. Efforts should be made to recruit women as well as men students to achieve a student body consistent with the population.
5. The EPCC administration should take a defensible position on whether entering EPCC students should take the placement test battery. In 1973 more than half the entering students did not take placement tests, many of whom apparently were deficient in skills. This study data suggest that twice as many placement test students completed programs than non-tested entering students.
6. The English rating scale which was recommended in *The Second Chance* and was to have been developed during the spring of 1976 is still not available to the testing office. It should be developed.
7. Advisors and counselors need to set as a priority achievement of enrollment at placement levels above 75%. The obtained correlational coefficients for placement and enrollment suggest that a chance to zero relationship existed between the two variables. An open registration for skills courses could be made available in the counseling center so that skills registration would occur for the entering student when he/she is counseled after taking placement tests. Continuing skills students could register at mid term for the next quarter's skills courses.
8. The percent success parameter developed during this study be incorporated into the advising-counseling program at EPCC either manually or by automated data processing.
9. Greater use of the computer be employed to continuously monitor a student's progress during his program at EPCC. This recommendation includes: by-mail registration for continuing students, counselor monitoring of students whose success at EPCC declines below 80%, and scheduling feedback to students to advise them what specific courses they need to complete their programs.

10. Follow-up studies need to be conducted on students who have left EPCC to measure the impact which their completed courses had upon their acceptance into other collegiate programs, their ability to be more highly qualified in their job, their promotional potential as a function of the EPCC experience, etc..

Introduction to the study

El Paso Community College is one of the mushrooming open door colleges in which lifelong learning is generally considered a right of every human being. To benefit from lifelong learning opportunities many who enter that open door must upgrade basic reading, English, and mathematics skills. Without basic skills the open door leads to frustration and failure instead of the bright, new future the entering adult envisioned.

Remedial education has become a disproportionate expense in the opinion of those who are responsible for financing it (primarily the Joint Budget Committee of the Colorado Legislature). They are appalled to learn that 60% of entering EPCC students can't read or write at college level and 98% are not prepared for college math. The average age of the student is 32. Legislators argue that taxpayers have already paid for adults to learn basic skills in the K-12 system. They demand proof that remedial courses are needed and that EPCC's skills studies program for the educationally disadvantaged results in students successfully completing occupational or academic studies after taking remedial courses. EPCC feels that a student body which may enter regardless of previous academic experience – an older student body, with a large educationally disadvantaged and minority group is entitled to assistance in achieving the basic skills before going into college level (100-200) courses.

Purpose

The study was undertaken to provide detailed information on the academic achievements of EPCC students. The study will answer the following questions:

1. How do students who enter with basic skills at the elementary school level compare in achievement after taking compensatory skills courses with students who enter at the same skills level and do not take compensatory skills courses; how do those students compare with students who enter with college level skills?
2. How do students who enter with basic skills at the junior high school level compare in achievement after taking compensatory skills courses with students who enter at the same skills level and so not take compensatory skills courses; how do those students compare with students who enter with college level skills?
3. How do students who enter with basic skills at the high school level compare in achievement after taking compensatory skills courses with students who enter at the same skills level and do not take compensatory skills ; courses; how do those students compare with students who enter with college level skills?
4. How do veterans compare with non-veterans?
5. How do EPCC minority students compare with each other and with white students?
6. How do women students compare with men students?
7. How do students for whom placement tests are waived compare with students who take placement tests?
8. How well does the follow-up to placement testing, (counseling, and enrollment in the appropriate level course) work?

Review of Literature

This study appears to be one of the first, if not the first, to evaluate how well adult preparatory courses in basic skills prepare students for freshman college courses. No other research outside EPCC was helpful to the researchers because no other remedial program duplicates EPCC's and no similar follow-up studies were found of any program.

A previous EPCC study is relevant to this effort. In 1975, El Paso Community College hired a research firm, Grady Research Associates Inc., to conduct a study with Skills Department Chairman, John Rodwick, which would determine the need for and effect of the EPCC skills program. As part of this project, the study would determine reliability and validity of EPCC placement tests. It was also designed to determine the success in freshman level courses of students who took remedial skills. The report of findings entitled *The Second Chance* verified the low entering levels of the majority of EPCC students. Between 50 and 60% enter with reading and English deficiencies and over 90% are deficient in math skills. The study confirmed the reliability of the placement tests and demonstrated them to be in the moderate to high validity range. The study compared those who took placement tests, and who were assumed to then take remedial courses with those who did not take placement tests and who were assumed not to need remedial courses. There was little difference in the performance of the two groups in EPCC classes thus demonstrating the effectiveness of the EPCC skills program. This comparison did not provide comprehensive data on those who needed skills courses and who took them. (Nearly one-half of those taking placement tests and demonstrating a need for skills courses do not subsequently enroll in those courses.) As a result, a new study was needed to acquire that information.

The Second Chance study was conducted in two parts, the first, a pilot study, used a sample randomly selected by social security numbers of 1,400 students who had attended EPCC since 1970, approximately 300 from each year. The sample was divided into two groups: those who took placement tests and those who didn't. The reliability of the placement tests was verified as scores of the students from the different years were found to be consistant. At the same time a variety of notations on student IBM registration cards were analyzed in relation to success in remedial and freshman level courses: such variables as age, sex, ethnic group, etc. For example, women were found to be more successful than men, and minorities were found to have lower entry levels than whites. The major study used a smaller sample, also selected randomly by social security number and representing 10% of the student body for the previous three years. Correlation co-efficients on predictive validity for the placement tests were computed for the group who had taken the tests. The math test was slightly below the accepted .40 - .60 correlation which the researchers report as acceptable for predictive validity. The math and English tests had been prepared by faculty and regularly up-dated to assure their content validity. The Science Research Associates (SRA) *Diagnostic Reading Test*, a national test with recognized validity, was used to place students in reading classes. The predictive validity of both reading and English tests were documented in the study. (We report this because those are the tests which were taken by the students in the current study).

The Grady-Redwick study analyzed differences between those who took placement tests and those who did not and found no significant differences in achievement in 100-200 level courses. The Anderson-Grady study uncovered a major difference — Those who took placement tests took far more hours at EPCC than those who did not.

The following excerpt from *The Second Chance* explains the skills program and the content of the courses analyzed in the current study.

"The Skills Studies Department as a comprehensive, remedial-compensatory instructional program operates under a student-centered premise that there is no one instructional mode that works best for all persons. To this end, every available approach is utilized, from classroom teaching to individualized programmed instruction, to one-to-one tutorials. The primary emphasis is placed on classroom instruction with opportunities for student interaction since it is the most efficient, economical method available. Instruction in this setting is individualized to every extent possible. Table I explains placement and content of courses."

Methodology

Sample

The population for this study consists of 1,775 students who entered EPCC in the fall of 1973. The study included all data available on those studen at the end of spring quarter, 1976. The sample v sub-divided into various groups: those who took placement tests and those who did not; male-fem veteran, non-veteran; blacks, chicanos, other min ities, and whites. A major portion of the study w an analysis of the 823 who took placement tests This group provided the sample for a comparison of students who entered at varying skills levels from elementary school through college level. Tl sample includes duplication between subject area Each student was placed in from one to three gro depending upon the number of placement tests taken. As a result each group was studied indepe ent of the other group. The researchers arbitraril assigned to Group A students who took the skills course they tested into or one immediately above or one immediately below. The reason for that w the practice of reassigning skills students by facul when an instructor determines that the placemen test did not accurately reflect the students' real needs. Any student who took a skills course mor than two quarters after enrolling was placed in Group B, the group which tested into a developmental course and did not take that course before or at the same time as taking other courses.

Design

The Study uses a causal-comparative design with chi squares providing the data for analysis. Chi squares were prepared on every analysis made; however, only those which will be meaningful to the reader are included in this report. The remain der are on file in the Public Information Office at El Paso Community College. The .05 level of con fidence was used to reject the null hypothesis.

Data collection

Information such as sex, ethnic group, and veterar non-veteran were already on the computer. The information on courses taken, courses failed or dropped, degrees earned and placement scores had to be obtained individually from data stored in th counseling center and the registrar's office. The researchers wanted to know how students perform ed in college transfer courses apart from occupational courses so the general studies offerings had to be analyzed before the study. All general studies courses which were designed exclusively for support of occupational studies and were not intended to transfer were considered occupational courses. A defect in the data collected occurred when all 100-200 level courses in which credit was attempted but not earned were lumped together. There is no way to determine whether failure to earn credit at the 100-200 level occurred more often in college transfer or in occupational courses. Developmental (skills) courses were analyzed separately.

The researchers did not consider grade point average in analysis. El Paso Community College has not had an F grade and has not computed 0 in the grade point system during the years of the study. The grade system has changed during the three years of the study but it has consistently had passing grades and no-credit grades (currently W for withdrawn and U for unsatisfactory). Therefore, the study simply identifies all passing grades as credit earned and all non-passing grades as credit attempted and not earned.

A three-year period was selected for the study so that full-time students who required remedial work would have time to finish programs. More than half of EPCC students are part-time. Many of the sample are probably still enrolled.

The study is reported in three parts: the first part answers the first three questions expressed in the statement of purpose; the second part answers the next three questions and the third part answers the last two questions.

TABLE I

SUMMARY OF PLACEMENT TEST RESULTS **
From July 1, 1974 through June 30, 1975

Course	Total	Percent	Entry Grade Level	Comment
ENGLISH	(N)			
ENL 010	61	1.3	K-5	This course level develops basic vocabulary, knowledge of the relationship of words, and an understanding of some fundamental rules of Engl usage.
ENL 020	992	21.0	6-9	This course level develops the ability to write sentences and simpler paragraphs.
ENL 030*	205	4.3	6-12	This is a basic course in spelling.
ENL 050	2,030	43.0	10-12	This course, a continuation of ENL 020, helps students with paragraph and theme development.
OK for Freshman English	1,436	30.4		Students testing at this level are prapared to enter college transfer cours in English composition.
	4,724	100%		
READING				
REA 010	265	5.9	K-6	In this course, students are taught phonics, the basic sounds of the langu They use this skill to recognize and pronounce wourds encountered in tl reading process. This course also supplements ENL 030 (Spelling) and students for whom English is a second language.
REA 020	1,731	38.2	7-9	This course develops basic silent reading skills. Comprehension, vocabulary, and speed are emphasized in this order.
REA 050	1,564	34.5	10-12	This course brings the student to a level of competence in reading that i adequate for adult performance. It may be noted that 79% of EPCC students tested in the time period were at or below this level.
REA 101	971	21.4	13	This course emphasizes advanced techniques of reading and study skills as applied to materials used in college-level courses.
	4,531	100%		
MATHEMATICS				
MAT010	2,392	51.2	K-8	This course develops basic arithmetic skills in addition, subtraction, multiplication, and division of whole numbers, decimals, fractions, and percentage. It may be noted that 51% of those tested placed at this leve
MAT 020	1,860	39.8	9-10	This course develops a knowledge of basic concepts of elementary algebi
MAT 030	334	7.1	11-12	This course completes the work of elementary algebra. Students testing to this level may enter MAT 151 Technical Mathematics, which is requir in such programs as architectural and construction technology, drafting and mechanical technology.
MAT 100	72	1.5	13	The MAT 100 course is intermediate algebra and is taught in the Mathematics and Science Department.
MAT 111	16	0.3	13	This level of mathematics is the beginning of a two-year college transfer sequence in mathematics designed for majors in mathematics, physical science, and engineering.
	4,674	100%		

*ENL 030 was not considered in the current study.
**From *The Second Chance*

This section summarizes comparisons between those who took and those who did not take remedial courses. It outlines the achievements of students with college level skills and it includes averages on academic achievement of all students in the sample.

This section answers the following questions:

How do students who enter with basic skills at the elementary school level compare in achievement after taking compensatory skills courses with students who enter at the same skills level and do not take compensatory skills courses; how do those students compare with students who enter with college level skills?

How do students who enter with basic skills at junior high school level compare in achievement after taking compensatory skills courses with students who enter at the same skills level and do not take compensatory skills; how do those students compare with students who enter with college level skills?

How do students who enter with basic skills at the high school level ... compare in achievement after taking compensatory skills courses with students who enter at the same skills level and do not take compensatory skills courses; how do those students compare with students who enter with college level skills?

A comparison of students who tested in developmental (basic reading, English and mathematics) skills courses at EPCC and took them and a group who tested into developmental courses and did not take them shows that the first group (Group A) came back to take far more 100-200 level courses than the students (Group B) who did not take the developmental courses they needed. (Tables II-III)

Number of courses up for Group A

Several disparities were revealed in categories of data which suggests that there were little or no differences between the groups — the number of programs completed and the rate of success in courses, for example. Only a small percentage of EPCC students seem to seek degrees and to persist until those degrees or certificates are obtained. This is true whether or not the student takes developmental courses. At the same time a high percentage of students in both groups succeed in the courses they take. The real difference in the groups is found in the number of courses taken. Analyzing those differences it becomes clear that most students who are not successful (more in Group B than Group A) do not return to fail again. As a result the success rate is similar. The students in Group A returned to take far more courses of all levels (developmental, occupational, and college transfer) than did the students in Group B. Since the main difference in the groups was enrollment in developmental courses, the researchers concluded that developmental courses helped the students develop self-confidence and motivation at the same time as they helped the student overcome learning deficiencies.

The sample numbered 823 of the 1,775 entering students. Over half the entering group did not take placement tests and were not included in this portion of the study.

The students were separated into Group A, those who tested into a developmental course and took that course (or one immediately above or below it),and Group B who did not take the developmental course in the subject area. The skills courses which are reported for Group B are courses in another subject area or those taken more than two quarters after enrolling.

Veterans and minorities

Twenty-four percent of the entering class were veterans. Initially, the researchers were concerned that veterans might be a confounding variable particularly if they took large developmental loads to receive VA benefits. It was found that veterans tested into more skills courses (they entered at lower educational levels) and took more courses at all levels. However, a large number were also in Group B. The effect of veterans on the study is in raising the average number of all courses taken. The researchers also found that a higher percentage of minority than white students were in Group A and more collegetransfer students than occupational students were in Group A.

Greater differences at lower levels

Students who entered at the high school level achieved as well in occupational courses whether or not they took remedial courses. They achieved far more credit in college transfer courses if they took remedial courses. However, students at the junior high or elementary levels earned far more credits in both college transfer and occupational courses if they remediated deficiencies which suggests that remedial courses are especially important at the lower levels of entering abilities. The smallest samples were at the lowest levels so the research team cautiously interpreted those findings. However, fourteen Reading 010 students who entered EPCC in 1973 had completed an average of 55 credits (12 of which were skills) by spring 1976. The average for all students was 30.63 credits. At the same time sixteen students who tested in at that level and did not take skills courses had completed an average of only 26 credits three years later.

English groups have more difficulty

The student who lacks English skills appears to have greater difficulty at all levels of skills than those lacking either reading or math skills yet those who were successful in the developmental English courses they needed went on to take more college level courses than those who did not take developmental courses. It appears from the data that those who needed and did not take developmental English courses were not interested in college transfer courses.

Math group less representative

Each of the English, reading, and mathematics categories must be considered independently because of the duplication among groups . The math groups are less reliable indicators of the students' entering levels than are the English and reading placements. (Second Chance, 1975) Hundreds of students tested into low level math courses through EPCC-developed placement tests compared to only dozens in low level English and reading, apparently because more students have forgotten previously learned math skills whereas reading and English skills tend to be better remembered. Therefore, many of the students in low level math classes tend to be at higher levels in reading or English.

Students take 30-50 hours total

It is difficult to adequately interpret the overall results of the data without knowing the students' goals. The research team can only report what happened and can only infer reasons. The number and percentage of degrees and certificates were similar whether students took developmental courses or not. An earlier analysis of transcripts requested by students to be sent to colleges to which they planned to transfer shows that over 80% of transferring students have earned less than an associate degree with 51% having earned less than 31 hours. It seems logical that many general studies students who took developmental courses were interested in becoming eligible to transfer rather than in earning an associate degree at EPCC. The job placement officer reports that many occupational students leave for jobs before obtaining degrees. It therefore seems logical that the student who took developmental courses and then took more occupational courses than his counterpart in Group B became employable and probably left college for work. A follow-up study of these students would be necessary to determine that.

Some succeed without developmental work

While it appears to be difficult for students to succeed if they bypass the developmental courses they need, many students have indeed succeeded without skills courses.

A possible explanation is that the successful student who needed skills and didn't take the courses was aware of his/her weaknesses and selected programs in which skills prerequisites were low or did not exist. For example, a poor reader might enter cours where instructor demonstrations and hands-on-experience compensated for lack of reading skills; the poor writer probably selected a program in which he she did little or no writing, and the poor math student selected a major which did not include math. Those in Group B who chose programs in which they could not succeed without improved skills apparently left EPCC because skills sections were limited or because they preferred not to take them. This fact resulted in the lower averages earned by Group B.

College level students

The findings for students who tested into college leve courses is presented to provide a frame of reference for comparing the deficient student who did or did n take skills courses with the student who did not have deficiencies in the first place. Many of Group A in the college levels are probably college transfer students. There is no reason for dividing those with coll level skills into a Group A and B except that the desi of the study was extended one level past the skills lev and the information was obtained in that format. Gr B did not take the college level English, reading, or m courses that they tested into, which is irrelevant for purposes of this study. More of that group appear to be occupational majors who had no need for college English, reading, or math.

The significant finding is that deficient Group A stude ended up with as many or more 100-200 level credits their counterparts who already had college level skills when they entered. However, they did not take as ma college transfer courses as college-level entrants. Som segments of deficient Group A and Group B took mor occupational courses then those with college skills.

The all-college average for the total group of 1,775 is clearly lowered by part-time students for whom placement tests were waived. Every category of Grou exceeded the all-college average in occupational studie courses and six of the nine groups exceeded the all-college average in college transfer courses. Seven categori of Group B exceeded the college average of occupatior courses while only three categories of Group B exceede the general studies average...one more indication that a larger number of developmental skills students are inte ested in acquiring the prerequisites necessary for admis sion to a four-year college.

Conclusions:

The student with elementary-level skills

The researchers found that more students entering at the elementary school level who take developmental courses take college level courses and take more of them than those who do not take remedial work. They also take as many or more occupational courses as those who enter at college level and do

not need remedial work at all. They take considerably fewer college transfer courses than those who enter with college level skills.

The student with junior high-level skills

More of the students who enter with junior high level skills and who remediate deficiencies take 100 and 200 level courses (and more of them) than the students who already possess college level skills. They take more courses of all kinds—skills, college transfer and occupational than the junior high level students who do not take the skills courses they tested into. While the average student who remediates deficiencies at the junior high level doesn't take as many college transfer courses as the student who enters at the college level, he takes almost twice as many as the student who enters at the elementary level.

The student with high school - level skills

More students who enter with high school level skills but who need refresher courses and take them, earn college transfer credits and more of them than students who do not complete the refresher courses. Students who take the reading refresher course take nearly nine more occupational credits than students who do not take the reading course or students who already have college skills. However, there is little difference in the number of occupational hours taken between the student who takes and the student who does not take a refresher in high school English or math. The high school level student who remediates deficiencies and the one who does not accomplishes as many occupational hours as the student who enters at the college level. The student who already has college level skills achieves more college transfer credit than the student who remediates deficiencies.

Recommendations:

1. EPCC should determine in which courses students can succeed without remediating deficiencies and in which courses specific skills levels are essential. The college should deny admission to deficient students (particularly at the junior high or elementary levels) to any course in which the student is unlikely to succeed.
2. EPCC should carefully counsel any student who functions at the elementary and junior high levels and who refuses to take skills courses and encourage those students to enter programs in which the skill the student lacks is not necessary.
3. EPCC should incorporate wherever possible basic skills in the occupational area where that skill is needed...particularly at the high school level. Since there appears to be no difference in achievement in occupational courses between students who remediate deficiencies at the high school or refresher levels it appears that occupational students needing a brush-up can function without it. At the high school level, the occupational student could learn basic English or mathematics as needed to handle specific course work rather than take an entire skills course which probably would include some skills which would not be needed.

TABLE II

ACADEMIC OUTCOMES OF STUDENTS WHO TOOK – AND STUDENTS WHO NEEDED BUT DID NOT TAKE – REMEDIAL COURSES

ENTERING SKILLS BELOW 6th GRADE

		Number in group	Average skills credits earned	% success in skills	Average college transfer credits earned	Average occupational credits earned**	100-200 level % success	Degrees GS	Degrees OS	Number certificates one year	Number certificates less than one year	% degrees certificate
REA 010	*Group A	14	12.43	60%	6.64	36.07	74%	0	1	1	0	14%
	*Group B	16	3.00	50%	.19	22.6	82%	0	1	0	0	6%
ENL 010	*Group A	15	9.99	37%	5.93	22.07	62%	0	0	1	1	13%
	*Group B	15	2.40	16%	2.93	30.00	72%	0	1	1	1	20%
MAT 010	Group A	244	10.30	67%	11.12	30.95	76%	12	10	13	15	20%
	Group B	192	.97	72%	5.67	18.18	76%	2	8	11	11	17%

ENTERING SKILLS BETWEEN 6th AND 9th GRADE

		Number in group	Average skills credits earned	% success in skills	Average college transfer credits earned	Average occupational credits earned**	100-200 level % success	Degrees GS	Degrees OS	Number certificates one year	Number certificates less than one year	% degree certifica
REA 020	Group A	122	12.78	68%	10.70	31.83	74%	4	5	3	9	17%
	Group B	112	1.50	57%	2.38	19.85	71%	1	3	11	9	21%
ENL 020	Group A	88	13.29	67%	11.23	31.49	75%	2	1	7	6	18%
	Group B	84	1.49	55%	1.95	13.73	62%	0	5	2	6	15%
MAT 020	Group A	113	7.50	69%	10.79	31.52	74%	2	11	12	4	26%
	Group B	164	.81	79%	11.69	29.40	86%	6	20	11	5	26%

ENTERING SKILLS BETWEEN 9th AND 12th GRADE

		Number in group	Average skills credits earned	% success in skills	Average college transfer credits earned	Average occupational credits earned**	100-200 level % success	Degrees GS	Degrees OS	Number certificates one year	Number certificates less than one year	% degrees certificate
REA 050	Group A	89	9.23	75%	17.54	36.22	83%	3	5	8	4	22%
	Group B	170	1.89	73%	8.56	27.28	82%	5	21	8	4	22%
ENL 050	Group A	137	8.17	72%	19.31	25.42	78%	10	7	14	4	26%
	Group B	198	2.31	70%	5.86	26.78	79%	3	18	9	12	21%
MAT 030	*Group A	15	7.46	97%	27.07	25.07	89%	0	1	0	0	7%
	Group B	47	.35	67%	8.47	25.51	76%	2	6	1	0	19%

ENTERING SKILLS AT COLLEGE LEVEL

		Number in group	Average skills credits earned	% success in skills	Average college transfer credits earned	Average occupational credits earned**	100-200 level % success	Degrees GS	Degrees OS	Number certificates one year	Number certificates less than one year	% degrees certificat
REA 101	Group A	25	6.76	74%	26.28	25.36	72%	1	0	2	0	12%
	Group B	199	1.81	74%	14.02	24.25	82%	11	21	7	7	23%
ENL 101	Group A	84	2.82	82%	23.25	25.42	83%	7	13	4	1	30%
	Group B	141	1.56	82%	8.12	24.34	81%	5	14	5	4	20%
MAT 100	*Group A	5	1.80	43%	12.60	1.60	49%	0	0	0	0	00%
	Group B	25	1.60	100%	21.64	28.52	89%	2	3	0	1	24%

ALL COLLEGE AVERAGE

	Number in group	Average skills credits earned	% success in skills	Average college transfer credits earned	Average occupational credits earned**	100-200 level % success	Degrees GS	Degrees OS	Number certificates one year	Number certificates less than one year	% degree certificat
All college average of entering students followed from Fall, 1973-Spring, 1976	1,775	1.25	69.51%	7.41	19.97	79%	46	88	61	79	15.44%

Group A – This group tested into a skills level and began with the course they tested into OR in a course immediately below the course they tested into OR one immediately above. This was flexible to permit inclusion in this group of those whose test scores were not conclusive or who were counseled into another class immediately by an instructor.

Group B – This group did not take the course tested into OR the course immediately higher OR the course immediately lower. The skills credits shown for this group were in other skills subjects than the subj category.

There is duplication among groups. Most of the sample took all three placement tests and are placed in three groups according to specific tests scores.

*This group had very few members. The information is provided with the caution that the number is too small to have statistical significance.
**Includes general studies support courses which are not transfer courses.

TABLE III

SUCCESSFUL STUDENTS – those who went on to succeed in college level courses

Skills courses by academic level	Group	Number in Group	Number who also earned college level credits	% earning college level credit	χ^2	Direction
Skills below 6th grade						
REA 010	A	14	14	100.00	6.563*	A+
	B	16	10	62.50		
ENL 010	A	15	7	46.67	5.400*	B+
	B	15	13	86.67		
MAT 010	A	244	204	83.61	4.889*	A+
	B	192	144	75.00		
Skills between 6th & 9th grade						
REA 020	A	122	107	87.70	6.252*	A+
	B	112	84	75.00		
ENL 020	A	88	73	82.95	4.614*	A+
	B	84	58	69.05		
MAT 020	A	113	96	84.96	0.091	
	B	164	137	83.54		
Skills between 9th & 12th grade						
REA 050	A	89	77	86.52	1.459	
	B	170	137	80.59		
ENL 050	A	137	118	86.13	0.498	
	B	198	165	83.33		
MAT 030	A	15	13	86.67	0.647	
	B	47	36	76.60		

df = 1: * p .05-3.84; ** p .01=6.64; *** p .001-10.83

THE STUDY — PART TWO

This section provides a comparison of veterans and non-veterans, ethnic groups, and men-women. It answers the following questions:

How do veterans compare with non-veterans?

How do minority students compare with each other and with whites?

How do women students compare with men students?

Veterans

The study was in the planning stages when EPCC became the location for a 100% audit of veterans to determine whether or not veterans were abusing the GI Bill. The audit was concluded spring quarter, 1976, and hundreds of the more than 3,000 veteran students were found to be in violation of VA regulations. There was speculation that veterans might alter the results of this study which prompted the researchers to divide the sample into veterans and non-veterans for analysis.

The researchers found that veterans take more courses, succeed in more of the courses they take, and complete more programs than non-veterans. The total group numbers 1,775 of which 424 or 24% are veterans. Some have been enrolled for the entire three years while others were enrolled for only one or two quarters. Twenty-two per cent of the veterans are Black, Chicano or members of another minority group while 14% of the non-veterans are. Veterans take more classes than non-veterans, three times as many occupational courses, and one and a half times as many college transfer courses. Even more significant is the fact that they take five times as many developmental or remedial courses. The veteran scored lower on entry tests and had a lower level of previous schooling which suggests that they did indeed need to take remedial courses. There were fewer high school graduates, but more with GED's (high school equivalency) than the non-veteran group. They had been away from school longer. The average veteran entered at 32 - the non-veteran, 27.

The veteran appeared more willing to take remedial courses than the non-veteran which may account for his/her success rate later when he took freshman and sophomore level courses. Veterans took an average of seven hours of skills courses, about evenly distributed among reading, English, and mathematics. The non-veteran took an average of only one and a half skills credits.

The veteran received credit in an average of 52.57 freshman or sophomore level (100-200) courses and did not receive credit in 16 making his success ratio nearly 80%. The non-veteran earned credit in 32.59 freshman or sophomore level courses and did not earn credit in 6 making his success 78.5%. While only 11% of the non-veterans had earned either associate degree or certificates by spring 1976, 30% of the veterans ha

Table IV

Women - Men

The data reveals that women students had more form education before entering EPCC than men whereas m men had completed GED's (high school equivalent) t women. A total of 89% of the women and 88% of th men had either high school diplomas or GED certifica Women scored higher on placement tests and more w than men entered English or reading classes at the 05 101 levels (high school refresher or college-level). Me scored lower and took more 010 or 020 development courses (elementary and junior high levels). By sprin 1976, 7½% of both men and women had received ass degrees; whereas, more men (10%) had received eithe short term or one-year certificates of completion. Of women, 4% had earned certificates. A total of 37% o the men enrolled were veterans. The men's success w 77%, in contrast to the 78% success level of veterans only. Women were 82% successful in classes. Only 2 of them were veterans.

Table V

Minorities

An analysis if students by ethnic differences shows that Chicano students earn more credits and complet more courses than any other ethnic group. However, there are only minor differences in the number of to credits earned for all groups. Blacks, and other mino ities fail or drop out without earning 100-200 level c in larger numbers than do Chicanos or whites. Chica finish more programs at the end of three years, 19% compared to 15% for white students. Chicanos and Blacks are unsuccessful in more of the courses they attempt than are whites.

Minority students entered with lower average placem scores than whites and they took twice as many deve mental courses than white students. In addition, a la percentage of all minorities earned no credit in 100 200 level courses. However, those who went on to f man-sophomore level courses took more hours than the white student. While Blacks and "other" minori had not earned as much credit as Chicanos, the succe rate of all groups was not significantly different.

Table VI

Conclusions

The huge difference in credit hours earned by veterans compared to non-veterans in a group in which veterans comprised one-fourth of the student body explains the huge increase in credit hours produced at EPCC from 1973 to 1976 when the veteran enrollment grew to 60% of the student body. It is noteworthy that the ratio of occupational hours earned compared to transfer hours earned is 3-1 for veterans compared to less than 2-1 for non-veterans. This suggests that the trend for occupational programs to incur losses which are greater than the loss in enrollment in transfer program, will continue at EPCC as veteran enrollment declines.

The data further suggests that the percentage of men to women will decline. In addition, a larger proportion of veterans are minority students, so the college can expect fewer minority students as veteran enrollment declines, unless other state or federal funding sources can be found for minority students.

Recommendations

To compensate for low average number of courses and completion of programs by non-veterans several measures should be taken:

1. A follow up study should be conducted on those who leave EPCC. The study should be broken down so that differences between those leaving with 30 credits, 45 credits, and 90 credits could be seen. The study should identify the success patterns of those preparing for jobs, those upgrading in jobs, and those transferring to four-year colleges.
2. Even before the results of such a study are known several steps should be taken to improve retention and recruitment.
   a. advising-counseling — students should be advised carefully so that the courses they take will meet their objectives and so that they will take enough courses to meet them.
   b. Remediation — remediation should relate to the skills needed for the student to meet his/her specific goals...thus getting the student into the desired program as quickly as possible.
   c. Recruitment — public information and recruitment programs should be aimed as much as possible at younger students, women, and ethnic minorities.

TABLE IV

Academic outcomes for veterans—non-veterans

	Veterans N - 424	Non- veterans N - 1,351
Skills credits earned	7.05	1.51
Skills credits attempted and not earned	2.97	.71
College transfer credits earned	10.64	6.41
Occupational credits earned	41.93	13.09
100-200 credits attempted and not eanred	13.06	5.32
Average success in all courses	78.73	77.70
Two year associate degrees	GS 19 OS 38	GS 27 OS 50
One year certificates	32	29
Less than one year certificates	39	40
% earning certificate or degree	30.19	10.81

TABLE V

Academic outcomes for women—men

	Women N - 671	Men N - 1,104
Skills credits earned	1.62	3.60
Skills credits attempted and not earned	.58	1.66
College transfer credits earned	7.59	7.32
Occupational credits earned	14.90	23.07
100-200 credits attempted and not eanred	4.77	8.63
Average success in all courses	81.84	76.76
Two year associate degrees	GS 16 OS 35	GS 30 OS 53
One year certificates	15	46
Less than one year certificates	13	66
% earning certificate or degree	11.77	17.66

TABLE VI

ACADEMIC OUTCOMES OF STUDENTS WHO ENTERED FALL 1973 THRU SPRING 1974 – BY ETHNIC GROUP

	Number	% Vets	%OS	%GS	% undesignated	Average skills credits earned	Attempted not earned	% who received no credit-100/200 level	No. transfer credits	No. OS credits	Average no. 100/200 level attempted not earned	Total credits earned	% success in all courses	Degrees GS	Degrees OS	Certificate 1 yr.	Certificate Short term	% degree or cert3
Blacks	94	37	67	14	19	5.55	3.15	24	5.13	19.04	11.11	29.72	68	2	0	3	6	12
Chicanos	129	34	61	11	28	5.12	3.41	20	5.81	22.40	10.29	33.33	71	3	10	6	5	19
Other minorities	29	10	44	13	43	3.45	1.97	37	7.59	21.90	6.41	32.04	80	0	2	0	2	14
White	1,523	22	67	15	18	2.48	.94	17	7.69	10.90	6.70	29.97	80	41	76	52	66	18

THE STUDY – PART THREE

This section deals with placement testing and student placement. It answers the following questions:

- How do students for whom placement tests are waived compare with students who take placement tests?
- How well does the follow-up to placement testing (counseling and enrollment in the appropriate level course) work?

Findings

More than half the students in the sample did not take placement tests. According to EPCC procedures placement tests are administered to incoming students unless waived because of high ACT or SAT scores or because the student is transferring from another college or because the student intends to take one course for a specific purpose and does not intend to pursue a degree. Since 1973, procedures to assure that application of waivers are consistent have been added. This study indicates that many persons who needed remedial courses in 1973 were not tested. The fact that they later took remedial classes suggests that they were unable to earn college level credit without remediation of deficiencies.

Younger students, veterans, males, and minority students appear to be more willing to take placement tests. More older and more non-minority students found ways to avoid the tests...either legitimately or otherwise.

(Table VII)

The follow-up placement of students who take placement tests is another problem area at EPCC.

(Table VIII)

Table VIII reveals that there is very little correlation between the enrollment of students in classes and the scores on placement tests. Fewer than half of those who took placement tests went into the needed remedial courses. Even when applying the criteria for Part One of the study (AB criteria) which considered placement in a class immediately above or immediately below the recommended course as acceptable the placement is below 50% in all but two of the nine designated courses.

Other findings were that more students who did not take placement tests than could be explained by mere chance took REA 010, ENL 100, and MAT 100. The latter two enrollments suggest that the non placement group had a large number of college prepared students as it should have. However, the entry into REA 010 suggests that some of those with elementary level reading skills perferred to sign up for the course without taking a placement test. Another possible answer was that some of those on the GI Bill or other financial aid programs chose an "easy" course without proving their need for it through placement testing. Data in the study does not provide the reasons.

Conclusions

An obvious conclusion is that since students who took placement tests took more courses and completed more programs than students who did not take placement tests all students should take placement tests. Such a generalization is inappropriate because of the fact that those in the non placement group included students who did not need to take placement tests because of demonstrable skills...students who wanted just one class for a specific purpose...as well as students who clearly needed to take placement tests but did not. It appears however that a solution is needed for two groups of students: (1) those who take placement tests, demonstrate a need for remedial work, and then do not take remedial work and (2) those who do not take placement tests but who do need remedial work and who cannot be identified without placement tests.

Recommendations

1. Requiring placement tests of all students and then requiring entrance into the appropriate skills level would solve the problem. This is not recommended because it could discourage students who dread placement tests from entering. Alternatives which will be acceptable to the open door student who lacks confidence should be sought. Counselors, skills faculty, occupational and general studies faculty, and administrators should seek additional means of innovating so that the deficient and insecure open door student can find a means to succeed at EPCC.
2. EPCC should offer enough sections of skills courses for those who need and want them and should permit registration in skills courses in the counseling center after placement results are known.
3. EPCC should make provisions for placement tests for those who did not take them at the first class meeting in occupational areas. The test could be described as a pre-test to permit diagnosis of entering abilities. With the test results remediation can be planned for those who have bypassed placement testing and who do need remediation. If a student who bypassed placement tests proves to be at the elementary or low junior high skills level when higher skills are needed for success in that program the student should be administratively withdrawn from the program until the deficiencies are remediated unless the instructor can and is willing to compensate for the student's lack of skills by tutoring, or some other means.

TABLE VII

COMPARISON OF THOSE WHO TOOK AND THOSE WHO DID NOT TAKE PLACEMENT TESTS

CRITERIA	Placement Group (N=823)	Non-placement Group (N=952)	χ^2	Remarks
Sex	Males = 524 Females = 289	Males = 570 Females = 382	4.706*	df=1. More males in placement group
Veterans/non vet	Vets = 277 Non-vets - 546	Vets = 147 Non-vets = 805	80.547***	df= 1. More vets in placement group
Average age	29.28 -30=555 +30=268	32.77 -30=514 +30=438	33.257***	df=1. More placement group students were less than 30 yrs. old.
Ethnic distribution	Minority = 135 White = 688	Minority = 117 White = 835	6.161**	df=1. More minority students in the placement group
Prior academic attainment	H.S. grad = 589 GED = 123 No info = 111	H.S. grad = 764 GED = 95 No info = 93	18.508***	df = 2. More placement group student had GED or no high school diploma
EPCC academic major major	GS = 133 OS = 540 No info = 150	GS = 125 OS = 773 No info = 54	9.588**	df= 1. More placement group students were GS majors
Reading skills enrolled	010 = 27 020 = 119 050 = 94 101 = 26 No info = 557	010 = 18 020 = 33 050 = 4 101 = 8 No info = 889	27.424***	df = 3. More non-placement students enrolled in REA 010
English skills enrolled	010 = 31 020 = 82 050 = 112 100 = 123 No info = 475	010=20 020 = 20 050 = 17 100 = 98 No info = 797	45.545***	df = 3. More non-placement students enrolled in ENL 100
Math skills enrolled	010 = 234 020 = 127 030 = 11 100 = 23 No info = 428	010 = 58 020 = 47 030 = 8 100 = 57 No info = 782	81.495***	df = 3. More non-placement students enrolled in MAT 100
Average skills credits earned	4.74	1.22		
Average skills credits attempted but not earned	2.15	.47		
Average number of transfer credits earned	10.54	4.72		
Average number of OS cerdits earned	26.66	14.21		
Average number of 100 level credits attempted, not earned	10.16	4.59		
Average student success in skills	68.80%	72.19%		
Average student success in 100-200 level courses	78.55%	80.48%		
Average student success in all courses	77.31%	79.93		
Associate degrees earned	GS = 28 OS = 60	GS = 18 OS = 28	0.711	df=1. N.S.
Certificates earned	1 year = 51 Short = 37	1 year = 10 Short = 42	-20.067***	df=1. More placement students earned 1 year certificates. More non-placement students earned less than 1 yr. certs.
Total degrees and certificates earned	176 (21.39%)	98 (10.29%)		

df=1: *p .05 = 3.84; ** p .01 =6.64; ***p .001 = 10.83
df=2: *p . 05 = 5.99; **p .01 = 9.21; ***p .001 = 13.82.
df=3: *p .05 - 7.82; **p . 01 = 11.34; ***p .001 = 16.27.
N.S. = not statically significant.

TABLE VIII

SCATTERPLOTS AND CORRELATIONAL COEFFICIENTS FOR STUDENT PLACMENT AND ENROLLMENT IN SKILLS COURSES AT EPCC

= AB = Perfect

English skills courses:

Vets (N - 277)

Placement \ Enrolled	Not	010	020	050	101
101	38	0	3		
050	39	2			
020	29				2
010	7			0	1
Not		3	1	1	0

r = .038
Enrolled
perfect 39.35%
AB 50.90%

Non-vets (N=550)

Placement \ Enrolled	Not	010	020	050	101
101	105	0	0		
050	154	1			
020	54				1
010				0	0
Not		1	0	0	2

r = .215
Enrolled
perfect 35.64%
AB 35.45%

Total (N=827)

Placement \ Enrolled	Not	010	020	050	101
101	143	0	3		
050	193	3			
020	83				3
010	14			0	1
Not		4	1	1	2

r = .186
Enrolled
perfect 36.88%
AB 40.63%

Mathematics skills courses:

Vets (N=274)

Placement \ Enrolled	Not	010	020	030	100
100	8	0	0		
030	7	0			
020	30				4
010	35			0	1
Not		1	0	0	0

r = .035
Enrolled
perfect 56.20%
AB 67.88%

Non-vets (N=548)

Placement \ Enrolled	Not	010	020	030	100
100	17	0	0		
030	39	0			
020	124				6
010	148			1	3
Not		4	0	0	0

r = .106
Enrolled
perfect 31.02%
AB 34.85%

Total (N=822)

Placement \ Enrolled	Not	010	020	030	100
100	25	0	0		
030	46	0			
020	154				10
010	183			1	4
Not		5	0	0	0

r = .062
Enrolled
perfect 39.42%
AB 45.86%

Reading skills courses:

Vets (N=272)

Placement \ Enrolled	Not	010	030	050	101
101	39	2	5		
050	38	1			
030	30				1
010				1	0
Not		1	2	3	0

Enrolled
=.027
nrolled
t 41.54%
50.00%

Non-vets (N=544)

Placement \ Enrolled	Not	010	030	050	101
101	157	1	1		
050	123	0			
030	81				0
010				0	0
Not		0	1	3	1

r = -.048
Enrolled
perfect 25.37%
AB 19.67%

Total (N=816)

Placement \ Enrolled	Not	010	030	050	101
101	196	3	6		
050	161	1			
030	111				1
010				1	0
Not		1	3	6	1

r = -.026
Enrolled
perfect 30.76%
AB 29.78%

APPENDIX

A — College level course credit earned and not earned by various criterion groups in the study

B — Skills course credit earned and not earned by various criterion groups in the study

C — Percent success in skills and college level courses by various criterion groups

APPENDIX A

COLLEGE LEVEL COURSE CREDIT EARNED AND NOT EARNED BY VARIOUS CRITERION GROUPS IN THE STUDY (N=1775)

Criterion Group	N	Average transfer course credits	Average occupational studies credit	Credit not earned*
Vets	424	10.64	41.93	13.06
Non vets	1,351	6.41	13.09	5.32
Females	671	7.59	14.90	4.77
Males	1,104	7.32	23.07	8.63
Black	94	5.13	19.04	11.11
Chicano	129	5.81	22.40	10.29
Other minorities	29	7.59	21.90	6.41
White	1,523	7.69	19.80	6.70
Placement test	823	10.54	26.66	10.16
No placement test	952	4.72	14.21	4.59
College total	1,775	7.42	19.98	7.17

*total college-level credit attempted but not earned

APPENDIX B

SKILLS COURSE CREDIT EARNED AND NOT EARNED BY VARIOUS CRITERION GROUPS IN THE STUDY (N=1,775)

Criterion Group	N	English	Mathematics	Reading	Credit not earned*
Vets	424	2.18	2.71	2.19	2.97
Non vets	1,351	0.44	0.72	0.35	0.71
Females	671	0.47	0.65	0.50	0.58
Males	1,104	1.10	1.53	0.97	1.66
Black	94	1.81	1.80	1.94	3.15
Chicano	129	1.67	1.81	1.64	3.41
Other minorities	29	1.38	0.97	1.10	1.97
White	1,523	0.72	1.12	0.64	0.94
Placement test	823	1.43	2.01	1.30	2.15
No placement test	952	0.37	0.50	0.35	0.47
College total	1,775	0.86	1.20	0.79	1.25

*total skills credit attempted but not earned.

APPENDIX C

PERCENT SUCCESS IN SKILLS AND COLLEGE LEVEL COURSES BY VARIOUS CRITERION GROUPS (N=1775)

Criterion Group	N	Success in skills courses	Success in 100 level courses	Total student success
Vets	424	70.45	80.10	78.73
Non vets	1,351	68.01	78.57	77.70
Female	671	73.64	82.50	81.84
Male	1,104	68.44	77.88	76.76
Black	94	63.79	68.51	67.58
Chicano	129	60.02	73.27	70.87
Other minorities	29	63.65	82.14	79.72
White	1,523	72.51	80.40	79.69
Placement test	823	68.80	78.55	77.31
No placement test	952	72.19	80.48	79.93
College total	1,775	69.51	79.25	78.23

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The Second Chance, a study of remedial education at El Paso Community College published by El Paso Community College, February, 1976.

CREDITS

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