

Introduction

Nationwide, remedial/developmental education is a topic of debate in the education community and among public policymakers. The issues surrounding the scope, delivery, and cost of remedial/developmental education have recently attracted substantial attention in several states including: New York, California, Texas, Maryland, Washington State, New Jersey, Montana, Florida, Ohio, and Alabama.

The National Center for Educational Statistics (NCES) has defined remedial/developmental education as, “courses in reading, writing, or mathematics for college students lacking those skills necessary to perform college-level work at the level required by the institution” (NCES, 1996, p. 2). In an era when publicly funded entities are being held increasingly accountable for student outcomes, the need for high school graduates to strengthen their fundamental academic skills before they are ready for college-level coursework is receiving closer scrutiny. Questions about why additional tax dollars should be spent teaching students skills they are expected to acquire in high school are being asked with a greater sense of urgency. These questions are particularly pressing when recent high school graduates need remediation. Adding, however, to the complexity of the issue is the broad cross section of the population served by community colleges which includes recent high school graduates as well as students who have been out of high school for many years.

Community colleges offer comprehensive remedial/developmental coursework that is designed to help students improve their basic academic skills when test results reveal that they are performing below the expected college-level in reading, math, or writing/English.

As a result of action by the General Assembly in 1979 (P.A. 81-803), community colleges have been designated as the primary providers of remedial/developmental education in the state. Board of Higher education policies on undergraduate education (1986) affirm that although community colleges have the primary responsibility for remedial/developmental course delivery, all colleges and universities have an obligation to provide admitted students with

needed remedial coursework and academic support services to maximize the opportunity for all students to succeed. Accordingly, community colleges offer comprehensive remedial/developmental coursework that is designed to help students improve their basic academic skills when test results reveal that they are performing below the expected college-level in reading, math, or writing/English. Likewise, nationally, public two-year colleges have been identified as particularly important providers of remedial/developmental education (NCES, 1996, p. 37).

Background Initially, an overview of remedial/developmental education is provided to help establish the context for an examination of underprepared student initiatives in Illinois. Remedial/developmental programs have been a formal part of postsecondary education in this country since at least the mid-nineteenth century when, in 1849, the University of Wisconsin established the first "preparatory department" (Boylan, 1986). By 1900, 84 percent of colleges and

universities in the country had established preparatory schools that mainly addressed deficiencies in students' knowledge base (SREB, 1991). As a public secondary education became the norm, students tended to possess a more standard knowledge base, and the focus of remedial/developmental education shifted from teaching course content to developing the basic skills in reading, writing, and computation needed to be successful in college-level coursework (Pintozzi, 1987). More recently, a number of factors have contributed to the creation of a larger and more diverse college student population, including civil rights legislation, the availability of student financial assistance, and the widespread growth in the number of two-year community colleges with "open door" admission policies.

As access to higher education has increased, the number of students requiring remediation and the public resources dedicated to the delivery of remedial/developmental education have grown.

A recent National Center for Educational Statistics (NCES) report indicates that nationwide, three out of four colleges and universities surveyed offer remedial/developmental education, and nearly three of every ten first-time freshmen require remediation in at least one basic skill area. Among community colleges, the statistics are even higher. Nationally, all community colleges surveyed offer remedial/developmental education, and approximately four of every 10 first-time

freshmen are underprepared in at least one of the basic skill areas (NCES, 1996). Statewide studies conducted in Florida, Texas, Maryland, and Minnesota and a regional study conducted by the Southern Regional Education Board reflect similar remedial/developmental course offering and enrollment patterns. Additionally, these studies provide information about the public resources required to provide remedial/developmental education annually -- \$17.6 million in Maryland, \$50 million in Florida and \$155 million in Texas.

The scope of remedial/developmental education has grown to the extent that a recent article in *Community College Week* (Jan. 13, 1997) likened it to "...the education world's equivalent of the elephant-in-the-living room syndrome: An enormous problem staring you in the face that everyone can see but no one likes to talk about." However unpleasant remedial/developmental education may be to talk about, given the growing public pricetag, it is not surprising that debate about remedial/developmental education among educators, legislators, and others has increased. Questions have been raised regarding who should be responsible for delivering (and paying for) remedial/developmental education. States have considered policies or laws to address the issue that include: (1) concentrating remediation in community colleges; (2) limiting remedial/developmental coursework to the freshman year; (3) limiting the number of remedial/developmental courses offered; (4) requiring public school systems (K-12) to reimburse colleges for remedial/developmental work needed by their graduates; and (5) prohibiting the use of state money to pay for remedial/developmental coursework (NCES, 1996).

The debate regarding the problem of underprepared students and the need for remedial/developmental education in the nation's colleges and universities will undoubtedly continue. For example, in his annual "State of American Education" address in February of this year, U.S.

Secretary of Education Richard W. Riley announced that his department will convene a public forum to examine how public high schools can better prepare students for college academically (*The Chronicle of Higher Education*, February 28, 1997). However, the issues are complex, and it is unlikely that an immediate solution will be determined. Issues of academic excellence and cost to the public need to be balanced with issues of access and student/societal benefits derived from remedial/developmental instruction. In the meantime, institutions of higher education continue to offer remedial/developmental education appropriate to their admission policies. For selective institutions, it may be a matter of choice. For institutions with open admissions policies, like Illinois community colleges, providing remedial/developmental education is a necessity.

Remedial/Developmental Education in Illinois A jointly developed Board of Higher Education (IBHE) September 1997 agenda item by IBHE and ICCB staff provides an overview of the status of remedial/developmental education in public higher education institutions statewide. In Illinois, policies regarding undergraduate education recognize the need for colleges and universities to identify underprepared students and to provide them with appropriate remedial/developmental education.

A thrust of the goal to improve undergraduate education involves strengthening the academic preparation of high school students for college. Colleges and universities provide annual reports to the state's public high schools regarding the academic progress of their recent graduates. Individual colleges and universities are expected to communicate their expectations for academic preparation to high schools, students, and parents and to work with high schools to ensure that students are adequately prepared for college. Additionally, in 1993, legislation was enacted requiring minimum academic area course-specific requirements for admission to all Illinois public universities and to students in baccalaureate transfer programs in community colleges. The high school course requirement legislation led to the reclassification of intermediate algebra and geometry courses from college-level to the remedial/developmental classification. A complementary initiative passed by the Illinois State Board of Education (K-12) in July, 1997 defines Illinois Learning Standards which specify the academic skills high school students are expected to develop. These policies are designed to reduce the need for postsecondary remedial/developmental education in the state among recent high school graduates. While these initiatives are welcome and positive, there is a current and expected ongoing need to provide access to higher education opportunities for those students who are underprepared for college-level work. Colleges will still need to address the needs of both recent high school graduates as well as those who have been away from school for extended periods of time whose fundamental academic skills need strengthening.

Current Study

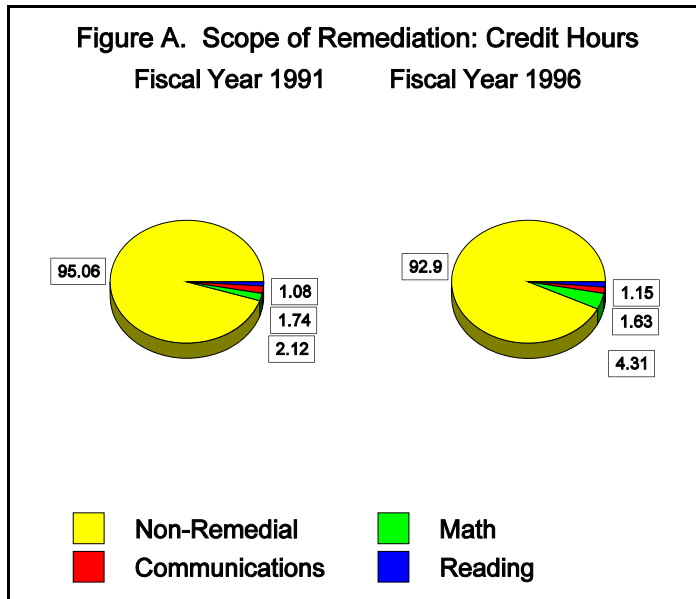
This report is the first of a two-part study of remedial/developmental education in the Illinois public community college system. The scope, cost, structure, and effectiveness of remedial/developmental education in the Illinois Community College System will be examined. Sources of information include a survey conducted by the Illinois Community College Board (ICCB) and data contained in ICCB administrative databases. The second study will focus on the results of remedial/developmental education by examining the educational outcomes of a cohort of students who took remedial/developmental courses.

Scope of Remedial/Developmental Education in Community Colleges

This section of the report examines the scope of remedial/developmental instruction offered at Illinois community colleges in fiscal year 1991 and fiscal year 1996. Data for the study were obtained from annual enrollment and completion information (A1 data) reported by the colleges to the ICCB. Students who were enrolled in adult basic and adult secondary education were excluded from the study, since those programs are distinct from college remedial/developmental programs. Additionally, students in English as a Second Language (ESL) programs were excluded. ESL programs generally provide language instruction to students whose native language is not English and with whom considerably different English language teaching strategies are used.

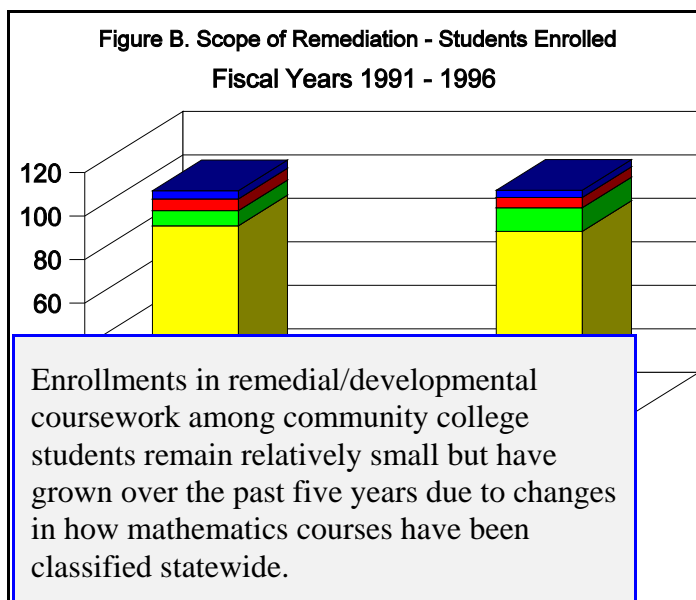
In general, the enrollment data used for this study tend to understate the number of students who require remediation. All of the colleges require placement testing to assess basic skills for some or all students. Institutional policies for the assessment of basic skills are discussed more fully in a later section of this report. However, not all students for whom remediation is recommended enroll in remedial/developmental coursework in any given term. Furthermore, there is also evidence to suggest that the data in this study understate remedial/developmental education at the City Colleges of Chicago. As reported to ICCB in fiscal year 1996, there were 18,088 students enrolled in remedial/developmental courses for credit at the seven City Colleges. However, a second pre-credit remedial/developmental program operated by the City Colleges offers instruction in the basic skills to high school graduates whose placement test scores fall below the level prescribed for remedial/developmental credit courses. Enrollment data for pre-credit remedial/developmental courses are not part of the enrollment data reported to ICCB, since the courses do not generate credit hours. A separate study conducted by the Office of Planning and Research at the City Colleges indicated that in the fall of 1996, 33,609 students were enrolled in credit and pre-credit courses at City Colleges.

Credit Hours Generated by Remedial/Developmental Courses Statewide in fiscal year 1991, 332,876 credit hours were generated in remedial/developmental courses, which represented 4.9 percent of all credit hours generated at the community colleges for the year. In fiscal year 1996, both the number and percent of credit hours generated in remedial/developmental courses increased to 461,917 credit hours, or 7.1 percent of all credit hours for the year. While the largest increase both in terms of number of credit hours (142,788 to 280,663 for a 97% change) and percentage of



overall credit hours (2.12 to 4.31%) was in the mathematics area, a very slight increase was also experienced in reading skills courses in number of credit hours (72,771 to 75,168 for a 3.3% change) and percent of total credit hours (1.08 to 1.15%). The increase in credit hours in remedial/developmental mathematics is due largely to the reclassification of intermediate algebra and geometry from college-level to remedial/developmental as a result of new college admission requirements implemented in Fall 1993. The number of credit hours generated in remedial/developmental communication skills courses decreased between fiscal years 1991 and 1996 by 9.6 percent.

Remedial/Developmental Coursetakers Compared to the Total Student Population Illinois community colleges account for 88 percent of the students enrolled in remedial/developmental coursework at public higher education institutions during fiscal year 1996 according to the IBHE and ICCB jointly prepared report entitled, *The Scope and Effectiveness of Remedial/Developmental Education in Illinois Public Universities and Community Colleges*. Given the role of community colleges and their open door admission policies, one would expect that community colleges should provide the bulk of remedial/developmental instruction in the state. The proportion of community college students enrolling in remedial/developmental coursework varied among the colleges.



As can be seen in Figure B, the number of students enrolled in remedial/developmental coursework remained relatively small but has grown over the past five years due to changes in how mathematics courses have been classified statewide.

In fiscal year 1991 approximately 63,700 (11.1 percent) of the 553,912 students attending Illinois community colleges were enrolled in at least one remedial/developmental course. By fiscal year 1996 these enrollments had increased to approximately 83,000 (14.1 percent) of the 587,977 community

FY-91	4.7 %	2.0 %	0.9 %	1.0 %	0.5 %	1.6 %	0.8 %
FY-96	8.1 %	1.6 %	0.7 %	1.2 %	0.6 %	0.9 %	1.1 %

Results by academic basic skill area indicate that the reclassification of intermediate algebra and geometry from college level to remedial/developmental which occurred in Fall 1993 contributed strongly to the overall growth in remedial/developmental enrollments in community colleges. The

Positive results were reported in communication skills and reading. Across the board enrollment decreases occurred in these language related remedial/ developmental subjects between FY 1991 and FY 1996.

number of students who were underprepared in either math alone or math and one other academic area increased approximately 70 percent (N = 23,792) between fiscal year 1991 and fiscal year 1996. Mathematics was clearly the most common area where students enrolled for remediation in both fiscal years and had the most substantial growth during the timeframe studied. Approximately seven

percent of collegiate-level students were enrolled in remedial/developmental math in 1991 compared with 11 percent in 1996.

In the broad area of language skills, which encompasses both communications and reading, the number of students taking remedial/developmental coursework was considerably smaller. Across the board decreases occurred in the language related remedial/developmental subjects between fiscal year 1991 and fiscal year 1996. A combined decrease of 26 percent was evident in the number of students with deficiencies in either one of the language arts areas or both communications and reading but not mathematics.

Enrollment in remedial/developmental writing (communications) was much more prevalent than remedial reading. Specifically, among students with a single language skill needing remediation, more than twice as many students required assistance with writing skill development as reading skill development at both points in time. The most recent fiscal year 1996 data show that 9,133 students required assistance exclusively in remedial/developmental writing/communication skills and 4,150 students required remedial/developmental coursework only in reading. Both areas show decreases of approximately 18 percent over fiscal year 1991.

Generally community college students enrolled in remedial/developmental coursework required remediation in only one academic area

Number of Areas Where Student Required Remediation Table 2 provides information that focuses on only remedial/developmental coursetakers for fiscal year 1991 and fiscal year 1996. Generally community college students enrolled in remedial/developmental coursework

required remediation in only one academic area. Nearly three-quarters of the students enrolled in remedial/developmental coursework in fiscal year 1996 and two-thirds of the students enrolled in remedial/developmental coursework in fiscal year 1991 required remediation in a single academic area. Most growth in remediation was for students needing to build their skills in a single academic

subject which was typically mathematics.

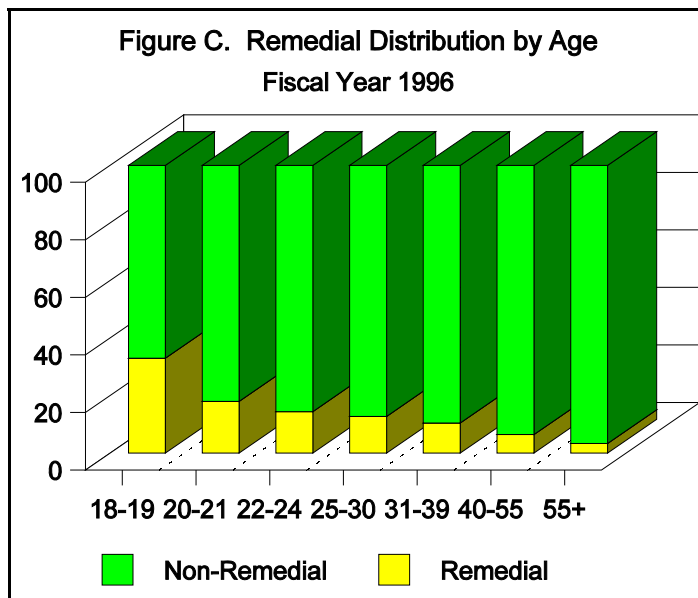
Students requiring remediation in two areas decreased from approximately a quarter of the students enrolled in remedial/developmental coursework in fiscal year 1991 to less than 20 percent in fiscal year 1996. Math was typically one of the two areas where remediation was required. Relatively few students required remediation in all three basic skill areas. Yet the number enrolling in at least one course in all three areas grew by nearly 2,000 (N =1,965) students. These data indicate that these 6,366 remedial/developmental coursetakers are likely at serious academic risk.

Table 2

Percent of Remedial/Developmental Subjects Taken
By Students Enrolled in Remedial/Developmental Courses
During Fiscal Years 1991 and 1996

Fiscal Year	Remedial Course Enrollment in a Single Academic Area	Remedial Course Enrollment in Two Academic Areas	Remedial Course Enrollment in All Three Academic Areas
FY 91	66.8 %	26.3 %	6.9 %
FY-96	73.1 %	19.2 %	7.7 %

Age of Students Enrolled in Remedial/Developmental Courses Figure C on the following page displays for fiscal year 1996 age profile of the total student population compared to remedial/developmental coursetakers only.



Recent high school graduates (18- and 19-year-olds) represent 14.1 percent of the total student population. Approximately 33 percent of the recent high school graduates took at least one remedial/developmental course during fiscal year 1996. This is an increase from 22 percent from fiscal year 1991. There was also an increase in the percent of 20- and 21-year-olds taking remedial/developmental courses (from 12 percent to 18 percent). The percentage of remedial coursetakers decreases with each age group. However, it should be noted that, contrary to popular perception, recent high school graduates do not account for the majority of

remedial/developmental coursetakers. More than one-half of the students taking remedial/developmental courses are over the age of 22. The range of ages of remedial/developmental coursetakers presents a challenge for colleges. Adult students' learning styles and academic support needs are often different from younger students. Additionally, the need for remediation can be different for older students -- especially those whose computational and writing skills have just "gotten rusty" from the lack of regular use. In such situations adults often need only a refresher in basic skills before attempting college-level coursework. That is not likely to be the case for students who just graduated from high school.

When remedial/developmental coursetakers are analyzed by age and course taking behavior, younger students were more likely to be enrolled in one or more remedial/developmental course.

When remedial/developmental coursetakers are analyzed by age and course taking behavior (Table 3), for both fiscal year 1991 and fiscal year 1996, the percent of students in each age group that enrolled in one or more

remedial/developmental course declined as age increased. The same trend is evident for the percent of students within each age group that enrolled in more than one subject area. Students in the under 18, over 55, and unknown age groups were not considered since they collectively constituted a small proportion of the entire group.

For both years, recent high school graduates were more likely to take remedial/developmental reading courses either alone or in combination with remedial/developmental communication skills and/or mathematics than students out of high school seven or more years. For fiscal year 1991 the range was substantially smaller than for fiscal year 1996. Recent high school graduates also were more likely to take remedial/developmental courses in all three subject areas than older

Table 3

Percent of All Students Enrolled in Remedial/Developmental Courses By Subject During Fiscal Year 1991 and 1996

FY - 91 Age	Math Only	English Only	Reading Only	Math & English	Math & Reading	English & Reading	All Three Areas
< 18	33.5%	28.1%	13.1%	5.3%	3.5%	10.6%	5.8%
18	37.1%	17.3%	10.0%	10.1%	5.8%	11.8%	7.8%
19	37.9%	16.1%	8.6%	9.0%	4.8%	14.0%	9.6%
20	41.2%	17.1%	7.9%	9.3%	4.0%	13.6%	6.9%
21	42.6%	17.3%	8.3%	7.9%	3.9%	13.5%	6.5%
22 - 24	43.5%	18.8%	6.4%	8.3%	3.2%	13.6%	6.2%
25 - 30	44.9%	17.8%	6.8%	8.7%	3.3%	12.8%	5.6%
31 - 39	47.7%	17.0%	6.9%	7.3%	3.1%	12.7%	5.3%

40 - 55	42.7%	19.4%	7.9%	6.2%	3.4%	16.5%	4.0%
Over 55	10.5%	15.7%	10.7%	6.8%	6.5%	32.1%	17.8%
Unknown	47.9%	14.1%	9.9%	14.1%	2.8%	6.3%	4.9%

FY - 96 Age	Math Only	English Only	Reading Only	Math & English	Math & Reading	English & Reading	All Three Areas
< 18	46.7%	18.4%	10.2%	6.5%	4.6%	6.6%	7.1%
18	49.0%	8.5%	6.0%	11.7%	7.8%	5.3%	11.7%
19	52.7%	8.2%	5.0%	10.1%	5.9%	5.9%	12.2%
20	60.3%	9.3%	4.7%	8.1%	3.7%	6.1%	7.9%
21	61.7%	9.6%	4.0%	7.5%	3.9%	6.8%	6.4%
22 - 24	62.2%	10.2%	4.5%	8.1%	3.2%	6.4%	5.3%
25 - 30	59.8%	13.0%	4.5%	7.1%	3.1%	7.4%	5.1%
31 - 39	60.8%	14.0%	4.9%	6.1%	3.3%	6.6%	4.3%
40 - 55	60.6%	14.7%	5.2%	4.9%	2.5%	8.2%	3.9%
Over 55	37.5%	22.4%	6.1%	4.8%	1.1%	14.9%	13.2%
Unknown	48.8%	15.7%	2.5%	7.4%	8.3%	9.1%	8.3%

students. Collectively, 17.4 percent of 18- and 19-year-old remedial/developmental coursetakers in fiscal year 1991 and 23.9 percent in fiscal year 1996 enrolled in remedial/developmental coursework in all three areas.

This analysis suggests that recent high school graduates were more likely than any other age group of remedial/developmental coursetakers to be at serious academic risk.

This analysis suggests that recent high school graduates are more likely than any other age group of remedial/developmental coursetakers to be at serious academic risk. In addition, the proportion of recent high school graduates that take remedial/developmental coursework that places them in the seriously at-risk category increased from about

one in six students in fiscal year 1991 to nearly one in four students in fiscal year 1996.

Gender of Students Enrolled in Remedial/Developmental Courses

For both fiscal years 1991 and 1996, women were in the majority in the total population and among remedial/developmental coursetakers. Female representation among remedial/developmental coursetakers was slightly higher than in the total population. Table 4 shows enrollment patterns for remedial/developmental coursetakers by gender for fiscal years 1991

Remedial/developmental enrollment patterns for men and women were similar during both years.

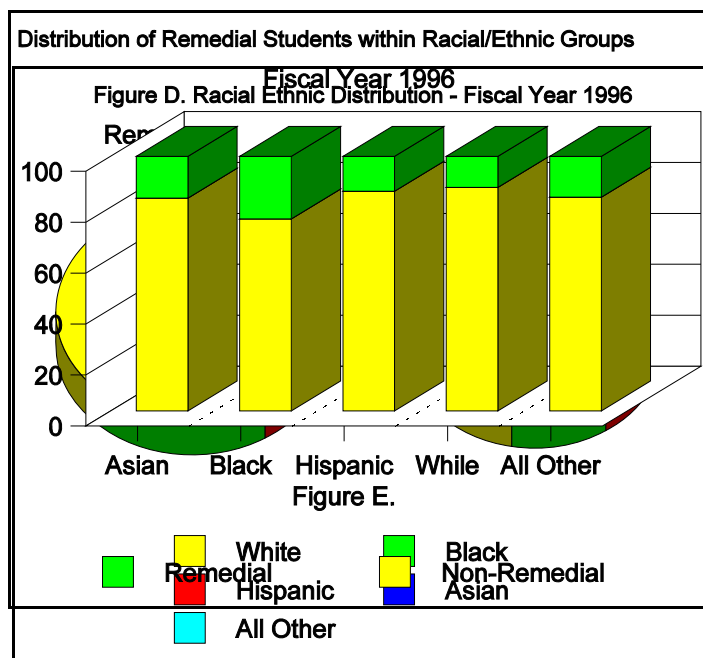
and 1996.

Table 4
Percent of All Students Enrolled in
Remedial/Developmental Courses By Gender and Subject
During Fiscal Years 1991 and 1996

	Math Only	Communication Skills Only	Reading Only	Math & Comm Skills	Math & Reading	Comm Skills & Reading	All Three Areas
FY-91 Male	38.6%	19.1%	8.2%	8.8%	3.6%	15.0%	6.8%
Female	42.9%	16.6%	7.8%	8.0%	4.3%	13.4%	7.0%
FY-96 Male	54.6%	11.9%	5.0%	9.5%	4.4%	6.5%	8.1%
Female	58.8%	10.4%	5.0%	7.4%	4.4%	6.6%	7.4%

Remedial/developmental enrollment patterns for men and women were similar during both years. However, a higher proportion of women enrolled in remedial/developmental mathematics courses, alone or in combination with communication skills and/or reading, and a higher proportion of men enrolled in remedial/developmental communication skills, alone or in combination with mathematics and/or reading. The proportion of men and women enrolled in remedial/developmental reading courses was similar -- about one in three in fiscal year 1991 and almost one in four in fiscal year 1996. Additionally, the proportion enrolling in remedial/developmental coursework in all three subject areas was similar. The number of men enrolling in remedial courses in all three areas grew faster between fiscal year 1991 and fiscal year 1996. Overall, indicators of serious academic risk were quite similar for men and women.

Ethnicity of Students Enrolled in Remedial/Developmental Courses Figure D presents the racial/ethnic distribution of the total student population and remedial/developmental coursetakers



for fiscal year 1996. Due to its small size, the “All Other” category, which includes American Indians, non-resident alien, and unknown, is not considered in the following analyses.

White students accounted for nearly two-thirds of the students enrolled in remedial/developmental coursework in both years. Knopp (1995) examined national Fall 1992 IPEDS data and found that approximately three-quarters of the students enrolled in remedial/developmental coursework across the country were white. However, minority students in all ethnic groups are overrepresented among

remedial/developmental coursetakers, except for Hispanic students in fiscal year 1996. Overrepresentation is most pronounced for African-American students who represented 13.3 percent of the total population and 23.6 percent of all remedial/developmental coursetakers in fiscal year 1991, and 12.2 percent of all students and 21.2 percent of remedial/developmental coursetakers in fiscal year 1996. In contrast, white students are underrepresented among remedial/developmental coursetakers for both years.

Consistent with national study findings, a higher percent of minority students enrolled in remedial/developmental coursework in both years.

Figure E displays the percent of each ethnic group that enrolled in one or more remedial/developmental courses for fiscal year 1996.

Knopp’s (1995) examination of Fall 1992 IPEDS data indicated that proportional representation of minority students in remedial/developmental coursework was higher than among white students. When ethnic groups are examined separately, a higher percent of minority students enrolled in remedial/developmental coursework in both years than white students. For fiscal year 1991, approximately one in every five minority students enrolled in remedial/developmental coursework, compared to about one in eleven for white students. In fiscal year 1996, the proportion of Asian-American, Hispanic, and white students who enrolled in remedial/developmental courses was more similar than in fiscal year 1991, ranging from 12.2 percent for white students to 16.4 percent for Asian-American students. However, nearly one in five African-American students enrolled in remedial/developmental courses, an increase over fiscal year 1991.

Table 5 presents course enrollment patterns for each ethnic group for fiscal year 1991 and fiscal year 1996. For both years, Asian-American students were the least likely to take a remedial/developmental mathematics course, alone or in combination with other subjects. White students were the most likely in both years to enroll in remedial/developmental mathematics. Additionally, white students were clearly the most likely to enroll in only remedial/developmental mathematics. In both fiscal year 1991 and fiscal year 1996, minority students were more likely to take a remedial/developmental communication skills course alone or in combination with mathematics and/or reading than were white students. Asian-American students were the most likely to take a remedial/developmental communication skills course. Nearly 8 in 10 Asian-American remedial/developmental coursetakers enrolled in communication skills in fiscal year 1991; nearly 6 in 10 in fiscal year 1996. Between fiscal year 1991 and fiscal year 1996, the percent of remedial/developmental communication skills coursetakers decreased approximately 20 percent for minority students and a little more than 10 percent for white students.

Minority students were more likely to enroll in remedial/developmental reading courses than white students in both years of the study. For both years, Asian-American students were the most likely to take a remedial/developmental reading course. Over half of Asian-American students who took remedial/developmental coursework in fiscal year 1991 enrolled in at least one reading course, and just over 40 percent in fiscal year 1996.

Table 5

Remedial/Developmental Courses Enrollment Patterns
Within Racial/Ethnic Groups
During Fiscal Years 1991 and 1996

	Math Only	Communication Skills Only	Reading Only	Math & Comm Skills	Math & Reading	Comm Skills & Reading	All Three Areas
FY-91 Asian	11.8%	27.8%	7.3%	4.8%	1.4%	39.5%	7.5%
African American	26.5%	21.9%	7.5%	12.1%	4.1%	15.7%	12.2%
Hispanic	24.0%	25.9%	9.0%	9.0%	2.4%	22.3%	7.3%
White	51.5%	14.1%	8.1%	7.1%	4.4%	10.0%	4.8%
FY-96 Asian	32.7%	19.9%	7.4%	6.5%	2.7%	20.9%	9.9%

African American	47.1%	13.1%	4.6%	11.2%	5.3%	6.9%	11.7%
Hispanic	46.0%	15.6%	5.1%	9.6%	3.6%	9.0%	11.1%
White	64.5%	8.7%	4.9%	7.3%	4.4%	4.6%	5.6%

As with communication skills, the proportion of each ethnic group that enrolled in remedial/developmental reading decreased from fiscal year 1991 to fiscal year 1996, ranging from a 11 percent decrease for African-American students to a 14.8 percent decrease for Asian-American students.

Finally, minority students were more likely to enroll in remedial/developmental courses in all three subject areas than white students for both fiscal year 1991 and fiscal year 1996, indicating that they are more likely to be at serious academic risk.

Cost of Remedial/Developmental Instruction

In fiscal year 1996, 6.5 percent of the total direct faculty salary expenditures were dedicated to remedial/developmental instruction in the Illinois community college system.

In fiscal year 1996, 6.5 percent of the total direct faculty salary expenditures or slightly more than \$23.4 million was dedicated to remedial/developmental instruction in the Illinois community college system. Community colleges account for 87.2 percent of the dollars spent on direct faculty salary costs for remedial/developmental coursework in fiscal year 1996 at public higher education institutions. According to the IBHE and ICCB jointly prepared report entitled, *The Scope and Effectiveness of Remedial/Developmental Education in Illinois*

Public Universities and Community Colleges, public universities spent \$3.4 million on direct faculty salary costs for remedial/developmental coursework or about 1.1 percent of total expenditures for direct faculty salaries.

The cost of remedial/developmental instruction increased from fiscal year 1991 to fiscal year 1996. The cost of remedial/developmental instruction as measured by direct faculty salary expenditure increased both in dollar amount and as a percent of the total from \$14,636,841, or 5.1% of total direct faculty salary expenditures, in fiscal year 1991, to \$23,437,916, or 6.5 percent of the total, in fiscal year 1996. Faculty salaries are, of course, not the only cost involved in the delivery of remedial/developmental education. When other support services, equipment, and fixed costs are considered, the direct faculty salaries are about one-third of the total costs.

Structure of Remedial/Developmental Education in Community Colleges

The survey also examined the remedial/developmental program policies and components designed for effective program and service delivery within the Illinois community college system. Additional outcomes data will be provided for a group of community college students in a subsequent Illinois Community College Board statewide report. The next report, scheduled for release by the ICCB this fall, will follow a fall 1990 cohort of entering community college students who took remedial/developmental coursework and examine the educational outcomes attained by those students. This section of the current report examines the survey process, how student referrals to remedial/developmental courses are made, common practices in placement testing, organizational structure, classroom instructional techniques, delivery modes, and student tracking.

Several references are made to similar information about two-year public institutions contained in a nationwide study produced by the National Center for Education Statistics entitled, *Remedial Education at Higher Education Institutions in Fall 1995*. Differences exist between the Illinois and national data in the timeframe covered (Spring 1997 vs. Fall 1995) and survey questions were not identical. Yet, the national figures which were computed from tabular data provide useful contextual information for the current study.

Survey Process and Response Community college surveys were mailed to Vice Presidents for Instruction who designated appropriate staff to complete them. Survey respondents included 18 program directors/chairs/coordinators/managers, 16 deans, and five vice presidents. Districtwide responses were generally requested except for the City Colleges of Chicago where officials from each college were asked to complete separate surveys. Completed surveys were received from 45 of the 46 requested colleges for a 97.8 percent response rate. Officials from Oakton Community College chose not to complete the survey.

Referrals to Remedial/Developmental Coursework Frequently mentioned ways for referring students to remedial/developmental coursework included: placement test results, referrals by college professional staff, and self referrals. Scoring low on placement tests is the primary factor in referring students to remedial/developmental coursework. Approximately two-thirds of the colleges indicated that counselors (N = 31) and academic advisors (N = 28) referred students to remedial/developmental coursework based on their interactions with them. Nearly one-half of the colleges indicated that faculty (N = 20) make student referrals to remedial/developmental coursework. While six colleges specifically reported that students can elect to enter remedial/developmental coursework, many other colleges also allow students to exercise this option. Colleges also noted low scores on other types of tests can also lead to remedial/developmental referrals including: college aptitude tests taken in high school (N = 2) (e.g., ACT or SAT) or Test of Adult Basic Education results (N=2).

Assessment of basic skills is mandatory for selected students at all Illinois community colleges.

Placement Testing Placement testing is widespread in the Illinois community college system. Assessment of basic skills is mandatory for selected students at all Illinois community colleges. National findings for public two-year colleges from fall 1995 indicate that across basic skill areas an average of 90.3 percent of the

colleges require placement tests of either all entering students or those entering students who meet specified criteria (NCES, 1996, p. 22). In Illinois, the most frequently mentioned student groups required to undergo placement testing are those entering college-level math or English courses (82.2 percent, N = 37) and those enrolling on a full-time basis (80 percent, N = 36). Many colleges also require that part-time students (60.0 percent, N = 27) and those declaring a program major (51.1 percent, N= 23) complete placement exams. Credit hour thresholds are used by slightly less than one-half of the colleges to require placement testing. Students may be exempt from testing if they can demonstrate academic skill proficiency in another verifiable, approved way. For example, some colleges allow students with sufficiently high scores on college aptitude tests such as the SAT or ACT academic subject matter exams to be exempt from placement testing. Likewise, those who come to the community college after earning college degrees elsewhere are also generally excluded from testing. Students who successfully complete advanced math in high school may sometimes be exempt from testing in that academic area.

Individual colleges use different tests and establish cut-off test scores for placing students in remedial/developmental coursework. To a large extent, Illinois community colleges rely on nationally developed placement tests to assess basic skills. Two of the largest producers of these

products are the American College Test Program (ACT) and the College Board. As indicated in the accompanying table, products developed by ACT were most frequently used across all academic skill areas. This is consistent with the practice by test developers to routinely sell a package of placement tests that cover all areas of basic skills assessment. Some colleges use multiple assessment strategies related to a single academic area.

Table 6

Number of Community Colleges Using Placement Tests By Producer

Area	ACT Products	College Board Products	All Other
Math	26	13	7
English/Writing	24	13	12
Reading	22	14	8

Locally developed assessment tools are used by several colleges. In the English placement testing process, 12 colleges relied on locally structured and evaluated writing samples as a component of the assessment. Five colleges developed their own math placement tests. At the time of the survey, Elgin Community College was the only institution to forego math placement testing entirely and rely on high school transcript analysis to determine math course placement. Elgin Community College has subsequently initiated a pilot test of ACT Compass as a tool for math placement and as a supplement in other academic area basic skills assessment. Individual college responses indicate that the widest variety of assessment tools were used to evaluate reading skills. ACT and College Board still dominated placement testing in reading. Appendix B contains a brief description of frequently used products offered by the placement testing firms.

Nearly three-quarters of the colleges indicated that remedial/developmental instruction is integrated into the academic departments.

Organizational Structure The delivery of community college remedial/developmental instruction is most often integrated into the college's departmental structure. Nearly three-quarters of the colleges indicated that

remedial/developmental instruction is integrated into the academic departments. Hence, in the Illinois community college system the academic department which furnishes college-level instruction (e.g., Math, English, Communications, etc.) is also responsible for the corresponding remedial/developmental instruction. Illinois results are somewhat higher than national findings for public two-year colleges from fall 1995 which indicate that across basic skill areas an average of 58.3 percent of remedial/developmental instruction took place through academic departments

(NCES, 1996, p. 23). In Illinois, almost a quarter of the colleges have a separate administrative structure for overseeing the delivery of remedial/developmental coursework. A few colleges indicated a hybrid approach where all levels of math instruction are part of the academic department while reading and writing instruction is provided by a separate developmental education unit (Harper Community College, Highland Community College, Illinois Central College, and Rock Valley College). At Rock Valley College, the directors of the specific academic areas and the Director of Developmental Studies co-direct these programs. The City Colleges of Chicago utilizes another hybrid approach where students testing at the lowest levels are assisted in a separate unit while those whose skills are at least at a moderate level receive instruction through the departments.

Strengths and Weaknesses Associated With Organizational Structures Several colleges commented on the strengths and weaknesses of each approach. Advocates of the integrated approach thought that articulation and transition from remedial/developmental to college-level work should be smoother since academic area faculty teach both remedial/developmental and college-level coursework. A limitation of the integrated approach is the potential for remedial/developmental program needs to become a lower priority than other departmental offerings as budgetary, staffing, and student services decisions are made. Potential advantages of a separate administrative structure were identified as more resources dedicated to the initiative, an increased level of specialization in developmental teaching methods by faculty, and an increased level of advocacy on behalf of developmental students. One limitation of the separate structure is the potential increased risk for weak articulation between remedial/developmental and college-level work. Success can be achieved with either administrative structure as long as efforts to increase coordination and articulation are emphasized and the developmental studies program is a priority for the college.

Remedial/Developmental Coursework Scheduling Community colleges largely offer remedial/developmental courses in traditional academic semester blocks of time (16 weeks). Two-thirds of the colleges (N=30) relied on full semester length courses for at least 90 percent of their remedial/developmental offerings. The traditional approach to scheduling can work well for students who take a mixture of remedial/developmental and college-level coursework simultaneously.

Only ten colleges used open-entry and open-exit flexible scheduling for remedial/developmental coursework. McHenry County College, Morton College, and Lake Land College were the only colleges to rely on open-entry/open-exit scheduling for a substantial portion (over 70 percent) of their remedial/developmental offerings. Open-entry/open-exit scheduling is most widely associated with the field of adult education. It provides maximum flexibility for the student who can progress at his or her own pace. A student can move on to the next level once the individual demonstrates that a particular skill has been mastered. The open-entry/open-exit format generally relies extensively on testing and often involves computer based instruction or other methods of individualized instruction. It can be challenging for institutions to make the next course in the sequence (developmental or college-level) available to students whenever they successfully complete an open-entry/open-exit course.

One effort to accommodate learner and institutional needs for remedial/developmental as well as

college-level coursework is to offer courses in shorter term blocks of time or modules. Eleven colleges employed half-semester module scheduling (eight weeks or less) for remedial/developmental coursework. Survey responses show that Richland Community College and Harold Washington College relied on short-term modules most extensively with each scheduling approximately one-half of their remedial/developmental coursework in modules of eight weeks or less. Three additional colleges offered remedial/developmental programming in modules of 11 or 12 weeks in duration.

Remedial/Developmental Staffing Patterns Faculty and staff that teach in remedial/developmental programs are typically part-time college employees. Nearly three-quarters of the colleges (N = 30 of 42) responding to this question indicated that their remedial/developmental instructors were predominantly part-time. Ten colleges indicated 9 out of 10 faculty providing instruction in remedial/developmental education were part-time employees. Full-time faculty degree requirements for instructors in remedial programs are similar to other full-time faculty qualifications. At 82 percent of the colleges (N = 36) the minimum requirement for full-time remedial/developmental faculty was a master's degree. Two-thirds (N = 28) of the part-time remedial/developmental faculty hold a bachelors degree as their highest earned degree.

Tomlinson (1989) provided recommendations regarding policies related to faculty and staff involved in remedial/developmental education programs: discourage involuntary placement of faculty in remedial/developmental education, maximize contact between remedial/developmental and college-level faculty and encourage remedial/developmental faculty to teach college-level courses when possible, and maintain availability of counselors and tutors for students in remedial/developmental education throughout their program.

Classroom Instructional Techniques Community college remedial/developmental faculty use a variety of techniques to help students build their academic skills. Depending on student test results

Remedial/developmental instruction most frequently uses a combination of lecture and learning lab activities. . . Computer assisted instruction was another popular approach used to deliver remedial/developmental coursework.

and student learning styles, college remedial/developmental program staff attempt to place the student in an instructional delivery mode that best meets his/her needs and fits into the student's schedule. When asked which instructional techniques are used in developmental coursework, a combined approach that includes lecture and learning lab activities was most frequently cited (87 percent, N = 39). Computer assisted instruction was the second most often cited approach (78 percent, N = 35). The number of institutions indicating that they use the other listed options dropped off to approximately one-half of the colleges. Individualized

instruction and the use of student work groups and teams tied for third (53 percent, N = 24). Instances where the lecture method was relied upon exclusively were close behind (51.1 percent, N = 23).

Chicago's Harold Washington College, the College of DuPage, and McHenry County College offer an integrated approach to developmental coursework that includes math, reading, and writing/English. McHenry County College was the only college from this group to offer remedial/developmental coursework on an open-entry/open-exit basis.

Delivery of Remedial/Developmental Education Opportunities for students to remediate academic skill deficiencies are most widely available on college campuses. When surveyed, all colleges except Spoon River College had a learning lab for students in remedial/developmental courses to use for skill enhancement and further study outside of the formal classroom setting. Spoon River College officials were establishing a Learning Lab during Summer 1997. Sixty percent of the colleges indicated that they offer remedial/developmental education coursework at off-campus sites. Interactive distance learning is a relatively new instructional delivery mode and its use for delivering remedial/developmental instruction is very limited. Just over one out of ten colleges provide remedial/developmental instruction through interactive distance learning. National data across institutional types indicates that only three percent of institutions offered remedial/developmental courses through distance learning (NCES, 1996, p. 27).

Relationship Between Remedial and Adult Education Programs Survey results indicate that remedial and adult education coursework are generally offered separately in community colleges. Ninety-one percent of the colleges (N= 41) reported that remedial and adult education courses are not offered simultaneously in the same classroom with the same instructor. Officials at Heartland Community College, Illinois Central College, Morton College, and Spoon River College were the only ones to indicate that at least some remedial and adult education courses were offered simultaneously in the same classroom with a shared instructor. Except for Illinois Central College, the three other institutions providing simultaneous instruction also use open-entry/open-exit scheduling for remedial courses.

Characteristics of Effective Remedial/Developmental Programs Based from the Literature

The literature suggests several characteristics of effective remedial/developmental programs including: early intervention, available comprehensive support services, required entry-level testing, mandatory basic skills course placement, continuous program evaluation, strong ties between basic skills courses with subsequent college-level courses, applied problem solving activities, and a full-time program director with dedicated staff who are given opportunities for additional training.

Numerous studies have been conducted to determine the effectiveness of remedial/developmental programs. A number of studies, including Kulik, Kulik and Schwalb (1983), correlate effective performance with program characteristics. They found that the most effective programs involve early intervention with underprepared students. Boylan (1983) found that the more comprehensive a remedial/developmental education program is, the more likely it is that students will be successful in subsequent college-level work.

A study by Roueche, Baker and Roueche (1984) indicated a high degree of correlation between

student success and the following characteristics of remedial/developmental education programs: required entry-level testing, mandatory placement in basic skills courses, a limited number of courses allowed for remediation, continuous program evaluation, and interface between basic skills courses with subsequent college-level courses.

Ross and Roe (1986) identified two additional characteristics of effective remedial/developmental education programs: a full-time director and a committed staff provided with ongoing training. A study by Tomlinson (1989) identified effective remedial/developmental education programs as offering comprehensive support services and being institutionalized within the academic mainstream.

Studies at Indian River Community College (Florida) and College of Lake County (Illinois) suggest that expanding remedial/developmental course delivery to include characteristics of bridge programs is beneficial. In these programs the remediation of basic skills is integrated into the curriculum so students learn by applying the principles of the basic skills to real life situations and students provide peer support for their colleagues. Roueche and Roueche (1993) support the idea that applied problem-solving activities should be required in remedial/developmental courses.

Just over three-quarters of the colleges indicated that they track student progress from remedial/developmental courses into college-level programs

Student Tracking In the Illinois survey, colleges were asked if they tracked the progress of remedial/developmental students. Just over three-quarters of the colleges (N = 35) indicated that they track student progress from remedial/developmental courses into college-level

programs. Many community colleges have conducted studies which involve student tracking to assess the impact of curricular and evaluation policies on students who need remediation. Studies at the College of Lake County, Moraine Valley Community College, the City Colleges of Chicago, Parkland College, John A. Logan College and Rock Valley College are highlighted in the following paragraphs

The College of Lake County conducted a study of remedial/developmental students over two years, from Fall 1992 through Fall 1994, and refined policies based on results of the study. College officials compared outcomes for three groups of students: college-ready students (N = 1,226), underprepared students who took the recommended remedial/developmental courses (N = 239), and underprepared students who did not take recommended remediation (N = 179). The study investigated both the need for and timing of remediation and found significant differences among the three groups. Study results led to the following recommendations: students should be required to take necessary remediation; students should not delay taking remedial/developmental courses--taking recommended remediation upon initial college enrollment is recommended; and students who have skill deficiencies in two or three basic academic skill areas (reading, writing, and math) should be required to focus on developmental education before beginning college-level coursework (Weissman, Silk, & Bulakowski, 1997).

Parkland College tracked outcomes for a cohort of Fall 1991 first-time freshmen who enrolled in remedial/developmental reading (critical comprehension skills), English or math. Outcomes in the remedial/developmental course they took in Fall 1991 are reported by course. Those students who were successful in the remedial/developmental course they took in Fall 1991 were tracked for three years to determine how many passed the initial directly related college-level course. Fall 1991 pass rates in the 11 remedial/developmental courses ranged from 38.2 percent to 78.1 percent. Across subject matter areas, remedial/developmental students in lower-level courses were more successful in completing their initial remedial/developmental course than students enrolled in upper-level remedial/developmental courses. However, successful upper-level remedial/developmental students were more likely to successfully complete the directly related college-level course within three years. The Parkland Study also indicated that the percentage of degree-seeking students who enrolled in at least one remedial/developmental course increased from 22.1 percent in Fall 1990 to 28.0 percent in Fall 1994 (Chen, 1995).

Officials at Moraine Valley Community College conducted a similar study to examine college-level course taking patterns, completion rates, and retention rates for students who successfully completed one of eight remedial/developmental courses between summer 1990 and spring 1993. Course taking patterns and completion rates were computed over three years. The study furnishes detailed information about successful remedial/developmental course completion and subsequent college-level course completion. The eight remedial/developmental courses included three levels of reading, three levels of math, and two levels of writing. Separate cohorts were established by academic area and level of remediation needed. Successful completion rates (students earning a letter grade of "C" or above) in the eight remedial/developmental courses analyzed ranged from 52 to 76 percent. Remedial/developmental reading and writing students whose skills were at the higher levels had higher remedial/developmental successful completion rates. The opposite occurred in remedial/developmental mathematics where students in lower-level math attained higher remedial/developmental course completion success rates. One contributing factor may be that acquiring higher level math skills generally builds upon mastery of related lower-level foundation skills.

The second part of the Moraine Valley Community College study tracked those who were successful in their remediation to determine how they performed in college entry-level core coursework (e.g., business, composition, history, sociology, humanities, philosophy, psychology and math). A key difference between this study and the work at Parkland is that outcomes in a variety of core courses are looked at in the Moraine Valley analysis. Results for students who successfully completed recommended remediation were then compared to grades attained by all students. Generally, students who successfully completed recommended remediation whose skills were in the mid- to upper-remedial/developmental range performed well in subsequent college-level coursework. Study results revealed that students whose skills were closest to being college-ready -- those placed in the highest level remedial/developmental coursework -- who completed the recommended remediation regularly performed much better than the average for the entire student body in subsequent college-level courses. Students in the middle-level courses in reading did slightly better than average in subsequent coursework. As Parkland College officials found, students starting at the lowest

remedial/developmental levels were less successful than average in subsequent college-level coursework (Reis, 1996).

The City Colleges of Chicago recently conducted a study of remedial/developmental education in the district. Descriptive information about the entering Fall 1996 students and outcomes data for two other student cohorts are included in the report. Results indicate that remedial/developmental coursework plays an increasingly large role in the educational experience of students at the City Colleges of Chicago. Twenty-nine percent of all credit students enrolled in fall 1996 were taking one or more remedial/developmental courses. Districtwide, 69 percent of the fiscal year 1996 associate degree graduates from the seven colleges had taken remedial/developmental coursework at some point during their studies.

The City Colleges of Chicago has a two tiered structure to its remedial/developmental offerings where students with relatively mild deficiencies are placed in credit remedial/developmental courses and those whose skills need more substantial improvement are placed in pre-credit remedial/developmental courses. A portion of the Chicago analysis was similar to the first part of the Moraine Valley Community College study and results were parallel. Chicago's analysis of Fall 1995 course taking indicated that students enrolled in credit remedial/developmental courses had higher course completion success rates in reading (66 percent) and writing (62 percent) than those in the lower-level pre-credit remedial/developmental courses (45 percent in both academic areas). Success was defined as course completion with a letter grade of "C" or above. However, students in pre-credit remedial/developmental math (53 percent) attained slightly higher course completion success rates than those placed in the higher-level credit remedial/developmental math courses (50 percent).

Another component of the Chicago study examined the ability of a Fall 1994 cohort of remedial/developmental students who successfully completed the highest level of credit remedial/developmental coursework to successfully complete related college-level coursework within one year. Sixty-four percent of the writing and reading students who completed the highest level remedial/developmental credit English course went on to successfully complete the initial college-level English course within a year. Forty-one percent of the students who completed the highest level remedial/developmental credit math course went on to successfully complete any college-level math course within a year (Gutierrez & Gonzalez, 1997).

Officials at John A. Logan College conducted studies on remedial/developmental mathematics and reading over the past few years. The studies looked at factors related to success in remedial/developmental mathematics. Logan students can enroll in three levels of remedial/developmental mathematics and each was identified as a group in the analysis. A total of 276 students were enrolled in remedial/developmental math in Fall 1993. Success was defined as completing the remedial/developmental mathematics course with a grade of "C." Over one-third of the remedial/developmental math students withdrew before the semester ended. Overall, one-half of the students who completed remedial/developmental math earned a grade of "C" or above. Students who completed the middle remedial/developmental math course had slightly higher success rates (55.8) than those enrolled in the lowest (49.2 percent) or highest (42.0 percent) remedial/developmental math courses. Factors considered in the study included the primary

placement test (Math Placement Exam-MPE), ASSET scores (where available), attendance, prerequisite course completed, and student class level. Course attendance and placement test (MPE) score were identified as the most important factors in predicting a student's success in remedial/developmental mathematics. Study results supported continuation of the placement test cut-off scores used at the college. John A. Logan officials also reported that approximately two-thirds of the students successfully completed remedial reading in Fall 1993 with a grade of "C" or above. Overall, students enrolled in remedial/developmental reading achieved higher rates of success than those enrolled in mathematics. Part of the reason for this higher rate of success could be due to the lack of a placement process for the developmental reading department when the study was conducted (e.g., more students are actually placed in developmental math than in developmental English courses). Since this study was conducted mandatory placement has become policy for the college (Faro, Randolph & Teegarden, 1994).

Officials at Rock Valley College regularly conduct studies of their remedial/developmental program. The most recent small scale study focused on the remedial/developmental reading. Rock Valley College has a restrictive enrollment policy for students who perform below the tenth grade level on reading examinations. These students are only allowed to enroll in classes listed on the reading limited course (RLC) list until they successfully pass remedial/developmental reading (099) with a grade of "C" or above. The classes on the RLC list are either activity or performance classes and the reading level of textbooks are at levels the students can understand. One finding of the study was that students who only enrolled in remedial/developmental reading performed better in RLC courses by waiting to take them in a subsequent semester than those students with similar overall reading deficiencies who concurrently enrolled in both remedial reading and RLC courses. Most students who are placed in remedial/developmental reading initially concentrate exclusively on strengthening their reading skills. Nearly ninety percent (109 out of 121) of the students who took RLC courses only after successfully completing remedial reading (096 or 099) passed their RLC class with a "C" or above. On the other hand, only 17.3 percent (8 out of 46) of those who simultaneously enrolled in remedial/developmental reading and a RLC course successfully completed the RLC course. Reading limited course outcomes for the group of students in this study were better for those who delayed enrollment in RLC courses and instead concentrated on remedial/developmental reading during their initial enrollment at the college.

Students whose Nelson Denny standardized reading test results were between grade levels 10 and 11 are in a "gray area" where enrollment in remedial/developmental reading is recommended but not mandatory. The vast majority of students (N = 109) with reading skills at this level enrolled directly into college-level coursework where they earned an overall "C" average (2.14 gpa on a 4.00 point scale). The number of these students who enrolled in recommended remedial/developmental reading was too small for further meaningful analysis.

Rock Valley officials also examined subsequent performance in college-level coursework for students who passed required (below 10th grade level) remedial/developmental reading courses compared to students entering college with acceptable reading scores. Fiscal year 1997 results were reported for students attending two or more semesters. College-level coursework outcomes for a

group of 91 students with an average Nelson Denny reading score of 7.3 grade equivalent who successfully completed Reading 099 were compared to a group of 63 randomly selected students with a 14.2 grade equivalent score on the same test who entered college-level coursework immediately. Subsequent performance in college-level coursework were slightly higher for the group that completed required remedial reading (gpa of 2.57 versus 2.31). Overall, the Rock Valley College study results indicate that students whose initial reading test scores are substantially lower who go on to complete remedial/developmental reading with a grade of "C" or above are at least as successful in subsequent college-level work as other students who arrive at the college with higher level reading skills (Kuehl, 1997).

Elgin Community College is another college that is undertaking an extensive examination of their pre-college offerings. Elgin officials are in the process of conducting a study similar to those undertaken at Parkland College, Moraine Valley Community College, and the City Colleges of Chicago to track remedial/developmental student retention and advancement. Survey results are expected to be a focal point of discussion by the Elgin Community College Recruitment and Retention Committee during the 1997-98 academic year. The Committee has expressed an interest in increasing remedial/developmental student retention and examining options for strengthening articulation linkages between remedial/developmental and college-level coursework. Outcomes data from the study are expected to play an important role in their discussions.

Summary & Conclusions

Nationwide, remedial/developmental education is a topic of debate in the education community and among public policymakers. As a result of action taken by the General Assembly in 1979 (P.A. 81-803), community colleges have been designated as the primary providers of remedial/developmental education in the state. Illinois Board of Higher education policies on undergraduate education (1986) affirm that although community colleges have the primary responsibility for remedial/developmental course delivery, all colleges and universities have an obligation to provide admitted students any remedial coursework and academic support services to maximize the opportunity for all students to succeed. Accordingly, community colleges offer comprehensive remedial/developmental coursework that is designed to help students improve their basic academic skills when test results reveal that they are performing below the expected college-level in reading, math, or writing/English.

Across the nation, as access to higher education has increased, the number of students requiring remediation and the public resources dedicated to the delivery of remedial/developmental education have grown. However, in an era when publicly funded entities are being held increasingly accountable for outcomes, the need for high school graduates to strengthen their fundamental academic skills before they are ready for college-level coursework is receiving closer scrutiny. Questions become particularly pressing when recent high school graduates need remediation. Adding, however, to the complexity of the issue is the broad cross section of the population served by community colleges which includes students who have been out of high school

for many years as well as recent high school graduates.

Recent statewide education initiatives are attempting to raise standards for new high school graduates. Legislation enacted in 1993 requires minimum academic area course-specific requirements for admission to all Illinois public universities and to students in pre-baccalaureate transfer programs in community colleges. It is important to note that the high school course requirement legislation led to the reclassification of intermediate algebra and geometry courses from college-level to the remedial/developmental classification. A complementary initiative passed by the Illinois State Board of Education (K-12) in July, 1997 defines Illinois Learning Standards which specify the academic skills high school students are expected to develop. These policies are designed to reduce the need for postsecondary remedial/developmental education in the state among recent high school graduates. While these initiatives are welcome and positive, there is a current and an expected ongoing need to provide access to higher education opportunities for those students who are underprepared for college-level work. Colleges will still need to address the needs of both recent high school graduates as well as those who have been away from school for extended periods of time whose fundamental academic skills need strengthening.

This report highlights information about remedial/developmental education in the Illinois public community college system. The scope, cost, structure, and effectiveness of remedial/developmental education in the Illinois Community College System have been examined. Sources of information include a survey conducted by the Illinois Community College Board (ICCB) and data contained in ICCB administrative databases. References have been made to several related studies conducted across the country in the report to either provide contextual information or highlight best practices.

- ▶ Statewide enrollments in remedial/developmental coursework among community college students remain relatively small but have grown over the past five years due to changes in how mathematics courses have been classified statewide. The reclassification of intermediate algebra and geometry from college level to remedial/developmental which occurred in Fall 1993 contributed strongly to the overall growth in remedial/developmental enrollments in Illinois community colleges.
- ▶ Approximately 14.1 percent of community college students (82,938) in Illinois enrolled in remedial/developmental coursework in fiscal year 1996. An American Council on Education study reports that nationally 17 percent of public two year students took remedial/developmental courses during fiscal year 1993 (Knopp, 1995).
- ▶ Illinois community colleges account for 88 percent of the students enrolled in remedial/developmental coursework at in-state public higher education institutions in fiscal year 1996.
- ▶ Mathematics was clearly the area where community college students most frequently enrolled for remediation in both fiscal years and remedial/developmental math showed the largest growth during the timeframe studied.

- ▶ Positive results were reported in communication skills and reading at community colleges. Across the board decreases occurred in these language related remedial/developmental subjects between fiscal year 1991 and fiscal year 1996.
- ▶ In fiscal year 1996, remedial/developmental courses accounted for 7.1 percent of the annual credit hours generated (461,917 credit hours).
- ▶ Generally community college students enrolled in remedial/developmental coursework required remediation in only one academic area.
- ▶ When remedial/developmental coursetakers were analyzed by age and course taking behavior younger students were more likely to be enrolled in one or more remedial/developmental course.
- ▶ Consistent with national study findings, a higher percent of minority students enrolled in remedial/developmental coursework in both years.
- ▶ Approximately 6.5 percent of the total direct faculty salary expenditures during fiscal year 1996 or \$23.4 million were dedicated to remedial/developmental instruction.
- ▶ Illinois community colleges account for 87.2 percent of the dollars spent on direct faculty salary costs for remedial/developmental coursework at public higher education institutions. This is proportionate to the number of remedial/developmental students served by community colleges.
- ▶ Frequently mentioned ways in which students were referred to remedial/developmental coursework included: placement test results, referrals by college professional staff, and self referrals.
- ▶ Assessment of basic skills is mandatory for selected students at all Illinois community colleges. Nationally an average of 90.3 percent of the colleges require placement testing of either all entering students or those entering students who meet specified criteria (NCES, 1996, p. 22).
- ▶ In Illinois, placement testing is most frequently required for students entering college-level math or English courses (82.2 percent) and those enrolling on a full-time basis (80 percent).
- ▶ To a large extent, Illinois community colleges rely on nationally developed placement tests to assess basic skills with the products developed by ACT most frequently used across all academic skill areas. Twelve colleges relied on locally developed English placement testing and five colleges developed their own math placement tests.
- ▶ Nearly three-quarters of the colleges indicated that remedial/developmental instruction is

integrated into the academic departments. Similar national findings for public two-year colleges indicated an average of 58.3 percent of remedial/developmental instruction took place through departments (NCES, 1996, p. 23). In Illinois, almost a quarter of the colleges have a separate administrative structure overseeing remedial/developmental coursework. A handful of colleges indicated that they use a hybrid approach.

- ▶ Perceived advantages and disadvantages associated with each administrative structure are included in the report. Success can be achieved with either structure as long as efforts to increase coordination and articulation are emphasized and the remedial/developmental studies program is a priority for the college.
- ▶ Two-thirds of the colleges (N=30) relied on full semester length courses for at least 90 percent of their remedial/developmental offerings. Eleven colleges relied on half-semester module scheduling (eight weeks or less) for these courses. Ten colleges used open-entry and open-exit flexible scheduling for remedial/developmental coursework.
- ▶ Three-quarters of the colleges (N = 30 of 42) responding to the question on staffing patterns indicated that their remedial/developmental instructors were predominantly part-time. Ten colleges indicated 9 out of 10 faculty providing instruction in remedial/developmental education were part-time employees
- ▶ Instructional techniques used most frequently in remedial/developmental coursework included a combined lecture/learning lab approach (87 percent) and computer assisted instruction (78 percent). Individualized instruction and the use of student work groups/teams (each 53 percent) and exclusive reliance on the lecture method (51.1 percent) were also frequently mentioned.

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- ▶ Opportunities for students to remediate academic skill deficiencies are most widely available on college campuses. Sixty percent of the colleges indicated that they also offer remedial/developmental education coursework at off-campus sites.
 - ▶ Remedial and adult education courses are generally offered separately at community colleges. Ninety-one percent of the colleges (N= 41) reported that remedial and adult education courses are not offered simultaneously in the same classroom with the same instructor.
 - ▶ The literature suggests several characteristics of effective remedial/developmental programs including: early intervention (Kulik, Kulik & Schwalb, 1983), available comprehensive support services (Tomlinson, 1989), required entry-level testing, mandatory basic skills course placement, continuous program evaluation, strong ties between basic skills courses with subsequent college-level courses (Roueche, Baker & Roueche, 1984), applied problem solving activities (Roueche & Roueche, 1993), and a full-time program director with dedicated staff who are given opportunities for additional training (Ross & Roe, 1986).
 - ▶ Just over three-quarters of the colleges (N = 35) indicated that they track student progress from remedial/developmental courses into college-level programs.
 - ▶ Materials describing remedial/developmental student tracking studies at the College of Lake County, Moraine Valley Community College, City Colleges of Chicago, Parkland College, John A. Logan College and Rock Valley College are highlighted in the report. Findings from these studies indicate that students starting at the lowest levels of remediation have the greatest barriers to overcome and are least likely to advance to and succeed in the initial college-level course most directly related to their remedial coursework.
 - ▶ A national study has indicated that deficiencies in reading signals comprehensive literacy problems and students taking three or four courses and more than four remedial/developmental courses have much lower-degree completion rates than those who did not take a remedial course (Adelman, 1996). These findings suggest that more restrictive enrollment policies are advisable for students scoring at the lowest levels in more than one area or students with reading deficiencies.
 - ▶ College of Lake County study results led to the following recommendations: students should be required to take necessary remediation; students should not delay taking remedial/developmental courses--taking recommended remediation upon initial college enrollment is recommended; and students who have skill deficiencies in two or three basic academic skill areas (reading, writing, and math) should be required to focus on developmental education before beginning college-level coursework (Weissman, Silk, & Bulakowski, 1997).
 - ▶ Parkland College results indicate that, across subject matter areas remedial/developmental students in lower level courses were more successful in completing their initial

remedial/developmental course than students enrolled in upper-level remedial/developmental courses. However, successful upper-level remedial/developmental students were more likely to successfully complete the directly related college-level course within three years (Chen, 1995).

- ▶ Relatedly, results from the Moraine Valley Community College study generally indicate that students who successfully completed recommended remediation whose skills were in the mid- to upper-remedial/developmental range performed well in subsequent college-level coursework. Furthermore, study results revealed that students whose skills were closest to being college-ready -- those placed in the highest level remedial/developmental coursework -- who completed the recommended remediation regularly performed much better than the average for the entire student body in subsequent college-level courses (Reis, 1996).
- ▶ Results from a study by the City Colleges of Chicago indicate that remedial/developmental coursework plays an increasingly large role in the educational experience of their students. Twenty-nine percent of all credit students enrolled in fall 1996 were taking one or more remedial/developmental courses. Districtwide, 69 percent of the fiscal year 1996 associate degree graduates from the seven colleges had taken remedial/developmental coursework at some point during their studies (Gutierrez & Gonzalez, 1997).
- ▶ At John A. Logan College course attendance and placement test (MPE) scores were identified as the most important factors in predicting a student's success in remedial/developmental mathematics. Study results supported continuation of the placement test cut-off scores used at the college. Since this study was conducted, mandatory placement has become policy for the college. (Faro, Randolph & Teegarden, 1994).
- ▶ Overall, the Rock Valley College study results indicate that students with low initial reading test scores who go on to complete remedial/developmental reading with a grade of "C" or above are at least as successful in subsequent college-level work as other students who arrive at the college with higher level reading skills (Kuehl, 1997).

Implementation Strategies

This section of the report refers extensively to IBHE and ICCB jointly developed implementation strategies that appear in the IBHE September item on *The Scope and Effectiveness of Remedial/Developmental Education in Illinois Public Universities and Community Colleges*. Based upon the results of national research and the survey of remedial/developmental education in Illinois public universities and community colleges, implementation strategies are aimed at increasing the effectiveness of existing policies on remedial/developmental education. These strategies are intended to generate further dialogue within the higher education community.

Assessing student performance at appropriate intervals is an important part of the community college system's accountability initiative and Illinois Board of Higher Education's initiative to improve undergraduate education.

1. Assessment of entering students and monitoring the progress of those who need to remediate reading, writing, or math skills is expected. Community colleges assess entering students who meet locally specified criteria. Three-quarters of the community colleges track outcomes of remedial/developmental students.
2. If assessment results indicate that a student needs remedial/developmental instruction, college officials should strongly recommend that the student take these courses upon entry to the college. The research literature reveals that completion of a developmental education program is positively related to student persistence. Research also reveals that students who take recommended remedial/developmental courses upon first entering college are more successful than those who delay or avoid taking recommended remediation.
3. Institutions are asked to document and examine the characteristics of students who need remedial/developmental education, including their age, racial/ethnic characteristics, gender, number of remedial/developmental courses recommended and taken, and subject areas of remediation. National studies show patterns of markedly reduced persistence and success for students who need remediation in reading or who need to take three or more remedial/developmental courses (Adelman, 1996). An awareness of student characteristics can inform faculty and advisors in developing appropriate academic strategies. Institutional student information systems should be designed to answer questions about the eventual success of students who need remedial/developmental education. Colleges are encouraged to examine questions such as these: "Are students who take recommended remedial coursework in writing more likely to complete Freshman Composition and earn a grade of 'C' or better than those who don't take recommended remediation?" A few community college studies are referenced in this report that address this question but additional work in this area is needed.
4. Institutions are asked to document the need for remedial/developmental education among

transfer students and provide feedback to the sending institutions. Institutions are asked to note skill levels among students who transfer with differing amounts of credits. In the community college system there is a need to look at reverse transfers who began their postsecondary studies at another college or university.

Statewide policies on affordability urge colleges to facilitate the academic progress of students enrolled in remedial programs.

1. Students who need remedial/developmental education in two or three subject areas should focus upon a program of developmental studies before attempting college-level courses. The research literature reveals that students who are underprepared in math only are the most successful at improving required skills, but those who need three or more remedial/developmental courses or who need to improve basic skills in more than one subject are at considerably greater risk of not succeeding in attaining their educational goals. (Adelman, 1996; Weissman, Silk & Bulakowski, 1997). These students should focus on improving basic skills, especially reading and writing, before enrolling in college-level courses. As students gain proficiency in basic skills, integrated coursework that provides further instruction in college-level skills as well as introductory material in specific subjects could be offered.
2. Institutions are encouraged to investigate using different approaches, methods, teaching strategies, and scheduling for remedial/developmental education for students in different age groups. Information from national databases reveals that almost half of the students who take remedial/developmental courses are five or more years beyond the traditional age of high school graduation at 18. Similarly, information from ICCB administrative databases reveal that in fiscal year 1996 students 22 years of age and above accounted for 48.9 percent of the remedial/developmental students. For example, colleges and universities could consider short, "refresher workshops" for returning adults who simply need several weeks of intensive review before or during the start of the regular semester to review math fundamentals or expository writing principles.

Community colleges are encouraged to assist in improving the preparation of students by informing potential students, parents, and schools of expectations for adequate academic preparation.

1. Community colleges have been asked to provide useful feedback to high schools about the preparation of their graduates for college. The staffs of the Illinois Community College Board and the Illinois Board of Higher Education should renew efforts to provide useful feedback to high schools about the progress of their graduates and review the kind of information currently provided to high schools to ensure that this information is useful. Staffs should consider providing regional workshops that involve faculty and staff from high schools, community colleges, and four-year institutions to solicit feedback on what works and what is not effective in the current system.

2. As the Illinois State Board of Education (K-12) revises assessment of what students learn in high school, the higher education community should work with the Illinois State Board of Education to build college admission requirements into the new Illinois Learning Standards. The new Illinois Learning Standards adopted by the Illinois State Board of Education will provide high schools, students, and parents with specific learning goals and objectives in seven fundamental areas. The Illinois State Board of Education will begin the process of implementing these Standards this fall, which, at a minimum, will mean aligning the curriculum, teacher knowledge and skills in each school with the new Standards; identifying and responding to problems in meeting the learning targets; and communicating in new ways with students, parents, and Illinois communities. The State Board intends to publish copies of the Standards for every Illinois teacher and administrator and plans a special publication for parents. Other states, notably Oklahoma, have documented a reduction in the need for remediation due to similar initiatives.
3. As the Illinois State Board of Education (K-12) implements the new Learning Standards, the higher education community should assist in efforts to promote early warning systems that link high schools and colleges. Ohio's Early English Composition Assessment Program is an example of an early warning program that has been successful in promoting faculty development between high school and two- and four-year college faculty to identify student writing strengths and weaknesses in relation to the standards expected of college freshman English. The program helps high school students, freshmen through seniors, to meet college writing standards, thus influencing high school students early enough in their educational careers to make a difference.
4. Community colleges are encouraged to work with area high schools to resolve issues surrounding the need for remediation among recent high school graduates. Community colleges serve defined service regions of the state. Colleges should continue their efforts to work with area high schools in instances where patterns emerge of recent graduates arriving at the college underprepared in specific academic subjects.

Community colleges are also asked to consider the following issues which arose from the examination of information generated from the survey and an analysis of ICCB administrative databases:

1. Data contained in this report are for students who actually enrolled and took remedial/developmental courses at the colleges. As noted in the report, some colleges do not require students to take remedial courses even though test results indicate that enrollment would be beneficial. Additionally, some prospective students who complete entrance placement testing decide not to enroll at the college. Mechanisms for collecting information about the number of students whose placement test results show a need for remediation who decide not take the courses or not to enroll at all at the college should be explored.
2. Additional study needs to be conducted on students whose entrance exams indicate the need

for remedial/developmental work and opt to not take the recommended courses.

3. Colleges are asked to examine the full- and part-time staffing patterns in remedial developmental education. How do they compare to other areas of the college? To what extent have colleges attained an appropriate mix of full and part-time staff? Is there a core of full-time faculty available to work on curricular issues (scope, sequence, structure, etc.) and coordinate the delivery of instructional services? Are sufficient opportunities for professional development and special training available for part-time faculty who staff remedial/developmental programs?

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Appendix A

Remedial/Developmental Data Tables

Appendix B

Description of the Remedial/Developmental Placement Testing
Products Frequently Used by
Illinois Community Colleges

A brief description of the placement products most often used in Illinois is provided based on materials supplied by the testing companies. More detailed information is available from the test developers. Both companies offer paper-and-pencil and computer adaptive placement tests. The development of computer adaptive testing has been viewed as a substantial improvement in placement testing. Computer adaptive testing is based on the idea that each question a student answers correctly should be followed by a more difficult related item and conversely each question answered incorrectly is followed by an easier related item. Knowledge acquired through the computer adaptive testing process is being used by test developers to make improvements in the paper-and-pencil versions of tests.

Two frequently mentioned products by ACT include ASSET and COMPASS. Both packages were designed for use with community college students and contain options for additional assessment. ASSET includes a series of basic skill assessments in writing, reading, numerical math skills and study skills. Advanced math measurement is also a part of the ASSET battery of tests. COMPASS is a computerized adaptive testing system with placement and diagnostic measures in mathematics, reading, and writing. COMPASS is a product which parallels ASSET and contains additional features which take advantage of the flexibility built into the computer adaptive strategy upon which it is based.

A substantial component of The College Board's placement testing products are collectively known as CELA/MAPS (College Entry-Level Assessment) and have been developed in conjunction with the Educational Testing Service (ETS). The Accuplacer system is a popular package with two options. One part of the Accuplacer system is frequently referred to as CPT or the Computerized Placement Tests. CPT uses a computerized adaptive testing approach that includes seven areas of assessment: reading comprehension, sentence skills, levels of English proficiency, arithmetic, elementary algebra, college-level mathematics, and supplemental skills. The other part is known as the Companion product which provides paper and pencil versions of most CPT tests including: reading comprehension, sentence skills, arithmetic, and elementary algebra. Another set of College Board's MAPS assessment products are known as the Descriptive Test of Language and Mathematics Skills. The Descriptive Test of Language Skills measures reading comprehension, critical reasoning, conventions of written English, and sentence structure. The Descriptive Test of Mathematics Skills measures arithmetic skills, elementary algebra skills, intermediate algebra skills and calculus readiness.