

Developmental Reading Instruction, Academic Attainment and Performance Among Underprepared College Students

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The purpose of this study was to explore levels of academic attainment and performance among students whose course placement test scores identified them as underprepared. It was expected that students who developed college-level reading skills (i.e., remediated) before attempting college-level work would ultimately perform at higher levels and have higher persistence rates in college-level courses than 1) students who did not remediate yet enrolled in college-level courses, or 2) students who developed skills while concurrently enrolled in college-level courses. A cohort of students (N = 4,416) who entered a metropolitan, multi-campus community college during the 1995-1996 academic year was used to investigate these performance and attainment issues. Academic attainment and performance outcomes were measured at the end of the 1997-1998 academic year. Overall, results suggested that students need to develop college-level reading skills to succeed and persist. However, the results also indicated that students need not remediate before enrolling in college-level courses and can significantly increase persistence and performance while concurrently enrolled in college-level courses.

The purpose of this study was to explore the effectiveness of developmental reading instruction on subsequent academic attainment and performance among entering college students. Specifically, this study represents initial findings in support of a larger assessment process for developmental reading at a large, metropolitan multi-campus community college in the midwestern United States.

Tulsa Community College (TCC) is the largest two-year college in Oklahoma, and serves approximately 27,000 students annually with a \$71 million budget. TCC has four campuses, which are all located in Tulsa County. The majority of students (80%) commute from within Tulsa County and the remain-

ing (20%) commute from the six contiguous counties in northeastern Oklahoma.

TCC has an open-door admissions policy resulting in a variety of skills and proficiency levels among entering students. As a result, the college engages in ongoing evaluation of entry-level assessment and course placement strategies as one component of its institutional effectiveness model. In an effort to increase graduation and retention rates, the institution has begun to re-examine its long-standing enrollment policy as it involves the assessment and development of reading skills.

Institutional Policy on Developmental Reading and Course Placement

In 1994, the Oklahoma State Regents for Higher Education (OSRHE) implemented new minimum proficiency guidelines for college entry among all public higher education institutions in the state. In compliance with the requirements of the OSRHE, all TCC students must demonstrate proficiency in English, math, and science before enrolling in college level courses in these disciplines. Students must also demonstrate college-level reading competency before enrolling in more than nine credit hours of college level courses. Under these state guidelines, it was TCC's objective to develop an enrollment policy that maximizes the benefits of student autonomy while improving student persistence and attainment through the development of reading skills. Therefore, TCC outlined various criteria for establishing college-level reading proficiency among entering students.

The institutional criteria for demonstrating college-level reading proficiency included: 1) demonstration of satisfactory standardized test scores, OR 2) successful completion of at least nine semester credit hours at the college-level, OR (3) successful completion, grade of "C" or higher, in a developmental reading course. Assessment and advisement were mandatory for incoming students.

Scores on the American College Test (ACT), The College Board's Accuplacer Computerized Placement Tests (CPT), and college transcripts are commonly used to demonstrate proficiency. The ACT is the primary test used to measure student achievement and subsequent entry-level placement at the institution. The CPT is the secondary test for entry-level assessment. The CPT is used by the institution to supplement the ACT for purposes of assisting students in selecting levels of college courses for which they have the greatest chance for success. A reading score of 19 on the ACT, or equivalent concordant SAT score, is one criterion used to classify a student as having "college-level" skills upon entry into the institution. College-level skills may also be demonstrated by earning an acceptable score on a second-

ary placement test (CPT Reading score \geq 80).

The CPT is used as a secondary testing strategy to compensate for the following situations: 1) designated cut-score levels on the ACT are not attained; 2) ACT scores are not available; 3) ACT scores are in question based upon length of time since tested; 4) student is identified as an "adult learner;" or 5) the validity and/or reliability of the individual's ACT scores is questioned. Students usually take the CPT one time; however, students are allowed to take the test twice in a given semester.

Statement of the Problem

Consistent with the institution's mission of providing access, there is ongoing support among faculty and the administration to maintain an institutional policy that offers a wide range of options for underprepared college students in their efforts to enhance reading skills. The institution continues to offer various developmental resources, including developmental reading courses, free instructional labs, workshops on study skills, note taking, test taking, and other skills. Students who enter with reading skills below college-level have the option to develop their reading skills through the reading development program. Specifically, underprepared students have the option to take developmental courses prior to attempting college-level courses or take developmental courses concurrent with college-level courses. In addition, the current policy allows underprepared students over the age of 21 an option to sign a waiver and attempt up to nine hours of college-level course work without taking developmental courses.

Although mandatory assessment and advisement were components of the institutional policy on developmental education, there was no mechanism in place prior to this study to ensure that assessment or advisement were standard practice. In other words, any student regardless of age or reading proficiency level had the unauthorized option of enrolling, or not enrolling, in developmental and/or college-level courses for credit. Likewise, there were no assurances that underprepared students for whom assessment data were available actually received academic advisement. These students had the option of self-ad-

visement and self-placement despite institutional policies that were designed to prevent such activity.

The prevailing assumption at TCC was that success in college for underprepared students is not necessarily attributable to success in developmental courses. Thus, developmental courses should be optional. Those who challenged the prevailing view suggested that success in college-level courses for underprepared students follows the successful completion of appropriate developmental courses. Adherents to this alternative position, therefore, surmise that developmental courses should be mandatory and should precede college-level coursework.

In light of current research concerning student success at this institution, and in response to faculty conviction that the institution can do more to increase graduation and retention rates, the institution has begun to re-examine enrollment practices pertaining to the assessment and development of reading skills.

Challenges to Enrollment Practice

Faculty concern about student success based upon anecdotal classroom experience has called the institution's historical approach to course placement into question. The faculty recognizes the personal motivation that derives from student self-determination can weigh heavily in student success. Nevertheless, faculty members have questioned whether students who lack college-level reading skills can persist in college and graduate if they do not first develop their reading skills. Clearly, this argument supports the rationale for the current study.

Empirical evidence suggests that the academic performance of students who successfully complete developmental coursework is almost identical to that of students who enter community college academically prepared (Napoli & Hiltner, 1993; McCabe, 2000). Some research has shown that students who complete developmental coursework achieve greater outcomes than students who are proficient upon entry into the college, particularly in retention (Cross, 1976). Cross reported that less than 10 percent of students who need but do not enroll in remedial education actually persist. Moreover, colleges that re-

quire entry-level assessment and course placement report higher levels of student retention and success (Roueche & Roueche, 1999). These findings further support faculty concerns that development of reading skills should be mandatory for entering college students who do not show college-level proficiency.

The faculty asserted that the open course enrollment policy for adults produced a spread of competencies that overburdened the processes of teaching and learning. Their perceptions were that large numbers of students either drop out or fail. In addition, some faculty expressed concerns that in some cases the conditions for satisfactory course performance are compromised to accommodate underprepared students, thus reducing the level of rigor in a particular course. This seems to suggest underprepared students require more support and personal attention than other students. All of this translates into a need for more interaction and support, and thus more cost.

The Initiative

In light of these challenges, the institution has begun to re-evaluate current assessment and advisement practices. As a result of this increased focus, the Entry-Level Assessment Committee at the institution developed the Reading Assessment and Development Initiative (hereafter referred to as "the Initiative"). The Initiative was designed to guide a systematic inquiry into student experiences at the institution. The results from the exploratory study were expected to provide a framework for making recommendations to both the administration and faculty with regards to the development or refinement of enrollment practices that take proper account of entering students' reading skills relative to their success. The committee agreed that an effective enrollment policy would be one that yields higher persistence rates and increased academic performance by permitting the greatest possible level of student autonomy while ensuring appropriate academic preparation.

The Study

This study was conducted to compare academic attainment and performance among students with reading deficiencies. Although the study is exploratory in nature, previous studies have demonstrated that underprepared students who developed college-level reading skills before attempting college-level work would ultimately perform at higher levels and have higher persistence rates than those who either did not develop skills at all, or who developed skills while concurrently enrolled in college-level courses (Cross, 1976; Napoli & Hiltner, 1993; McCabe, 2000). Amey and Long (1998) reported that knowledge gained in developmental reading, as well as other developmental courses, was fundamental to the successful completion of other college courses among students in their study. These studies suggested that for many students with weak academic backgrounds and low placement scores, the investment of time and money in remedial courses played an important role in college success.

As part of the National Study of Developmental Education, Boylan and Bliss (1997) explored components of developmental education programs such as mandatory assessment, mandatory placement, tutoring, advising, and program evaluation to determine their relationship to outcome measures such as first-term and cumulative grade point average (GPA), retention, and performance in developmental courses. They found that all of these components had some relationship to the success measures studied. The highest numbers of success measures were associated with program components such as centralized organization, tutoring by trained tutors and systematic program evaluation. These findings suggested, among other things, that student motivation and autonomy are necessary but not sufficient conditions for success in college among students who are not academically prepared for college upon entry. [Readers interested in a more extensive review of the literature in developmental education with a particular focus on remedial instruction and related topics are referred to Spann & Durchman (1991), Spann & Drewes (1998), and Boylan & Saxon (1999).]

Although the independent effects of reading development on performance and attainment have been reasonably established, there has been virtu-

ally no attention to an examination across varying levels of proficiency/deficiency. Therefore, the present study contributes to the developmental education literature by investigating the hypothesis that differences in performance and attainment exist as a function of deficiency level.

Method

Sample and Procedure

A cohort sample (N = 4,416) was drawn from the population of all first-time entering freshmen who enrolled at Tulsa Community College during any semester of the 1995-1996 academic year. This was the first academic year during which the new state mandated enrollment guidelines prevailed for the entire fall, spring and summer enrollment periods. Approximately 56.9% of the participants were female, 76.5% were Caucasian, 9.6% were African American, 2.9% were Asian, 7% were Native American, 2.7% were Hispanic, and 1.3% were from some other race groups or did not identify their race. The average age of the cohort in the study was 27 years. The cohort data were retrieved for entering students from institutional data files. The demographic characteristics for this cohort were consistent with the entering cohorts at this college for several consecutive years.

Because this study was designed to provide recommendations to key decision makers and stakeholders about enrollment practices and course placement strategies pertaining to developmental reading, the data on participants were not partitioned by race, gender, age or other demographic characteristics prior to the analysis. The rationale for this decision was that regardless of the outcome, recommendations for enrollment practices would not be contingent upon demographic variables. Although it is recognized that factors other than academic deficiencies influence student success, those factors were not the subject of this research. Thus, the data analysis did not examine demographic variables.

Cohort Definitions

As mentioned earlier, a reading score of 19 on the ACT, or equivalent concordant SAT score, was

one criterion used to classify a student as having “college-level” skills upon entry into the institution. College-level skills may also have been demonstrated by earning an acceptable score on a secondary placement test (CPT Reading score ≥ 80). Students who scored below either of these criterion measures were identified as “underprepared” or having “below college-level” reading skills within this institutional context and for purposes of this study. Because underprepared students had a number of options available to them in terms of developing their reading skills (e.g., take developmental courses prior to attempting college-level courses; take developmental courses concurrent with college-level courses; waive the developmental course requirement), the underprepared students in the cohort were partitioned into sub-groups based on the particular developmental path that was chosen.

The study was designed to compare the academic performance and attainment across four groups of students at the end of the 1997-1998 academic year. Three of the four groups consisted of students whose reading skills were below college-level upon entry into the institution. Underprepared students could develop skills before attempting college-level courses (Group 1, $N = 102$); concurrently (Group 2, $N = 146$); or not at all (Group 3, $N = 613$). The fourth group consisted of students who were proficient in reading upon entry into the institution and was included as a control ($N = 3,555$).

All students in Group 1 had successfully completed developmental reading coursework prior to attempting college-level courses. Likewise, all students in Group 2 had successfully completed developmental reading coursework concurrent with college-level courses. Students who attempted but did not successfully complete developmental reading

coursework, either prior to or concurrent with college-level courses, were not considered to have removed the deficiencies and were therefore placed in Group 3 (did not remediate).

Measures of Performance and Attainment

The dependent variables were the cumulative number of hours earned (attainment), and the cumulative earned grade point average (GPA) over three academic years. Developmental courses do not contribute to cumulative hours earned or GPA. If the remedial program is effective, the underprepared students who successfully complete the program should have performance and attainment outcomes that are not significantly different from the group that entered with proficiency (Group 4).

Results

Academic Attainment

Group means, standard deviations and 95% confidence intervals for cumulative hours earned (attainment) are presented in Table 1 below.

Results of the one-way analysis of variance indicated significant group mean differences with regards to attainment, $F(3, 4,412) = 65.79, p \leq .01$. Because the omnibus test was statistically significant, and because there were dramatic differences in group sample size, post-hoc multiple comparisons were performed using the Games-Howell (GH) procedure as recommended by Toothacker (1993) to maintain a close to .05. Results from the GH procedure indicated that Group 2, students who developed reading skills while taking college-level courses ($M = 19.99, SD = 19.49$), earned significantly more hours over the three year period than students who devel-

Table 1: Descriptive statistics for cumulative earned hours as of summer 1998 for cohort of all first-time entering freshmen in 1995-1996

Group Classification	N	Mean	SD	95% CI	
				Lower	Upper
1 Below college-level & remediated in dev course only	102	6.32	10.54	2.70	9.94
2 Below college-level & remediated concurrently	146	19.99	19.49	16.96	23.01
3 Below college-level & did not remediate in dev course	613	8.23	14.26	6.76	9.71
4 At or Above college-level upon entry	3,555	18.56	19.44	17.95	19.17
Total	4,416	16.89	19.05		

oped reading skills prior to taking college-level courses ($M = 6.32$, $SD = 10.54$). Likewise, students who developed skills while taking college-level courses earned significantly more hours than students who did not develop skills through the developmental program ($M = 8.23$, $SD = 14.26$). Finally, students who developed skills while taking college-level courses earned an equal number of hours to college ready students ($M = 18.56$, $SD = 19.44$). These significant comparisons are reflective of the 95% confidence intervals presented in Table 1.

Grade Point Average

Group means, standard deviations and 95% confidence intervals for earned grade point average over the three-year period (performance measures) are presented in Table 2.

Results of the one-way analysis of variance indicated significant group differences with regards to performance, $F(3, 4,412) = 107.16$, $p \leq .01$. Therefore, post-hoc multiple comparisons were again performed using the GH procedure. Post-hoc results indicated that students who developed reading skills while taking college-level courses earned significantly higher GPA over the three-year period ($M = 2.26$, $SD = .90$) than students who developed reading skills prior to taking college-level courses ($M = 1.32$, $SD = 1.30$). Likewise, students who developed skills while taking college-level courses earned significantly higher grades than students who did not develop skills through the developmental program ($M = 1.56$, $SD = 1.48$). Finally, students who developed skills while taking college-level courses earned

grade point averages that were equal to college ready students ($M = 2.45$, $SD = 1.23$). These findings are reflective of the 95% confidence intervals presented in Table 2.

Although underprepared students who participated in the developmental program were expected to have performance and attainment outcomes equal to the group that entered with proficiency, the results suggest that only students who participate in the developmental program while concurrently taking college courses obtain such outcomes. Students who took only developmental courses prior to college-level courses as a way to overcome academic deficiencies had performance and attainment outcomes that were equivalent to students who did not participate in the developmental program at all. Of course, the students who took developmental courses prior to college-level courses are at somewhat of a disadvantage when comparing hours earned over a three-year period because they have a delayed start in accumulating credit hours. However, there was still a large enough difference between the group that developed skills concurrently and the no development group to conclude that successful completion of the developmental training had a significant impact on hours earned and performance. The question that emerged from the study narrowed the focus of interest on the differential impact of developmental training between the group who developed college-level reading skills prior to attempting college-level courses and the group who develop skills concurrent with college-level courses.

Data were further analyzed to explore the possibility that the differences between groups might

Table 2: Descriptive statistics for performance (GPA) by group as of summer 1998 for cohort of all first-time entering freshmen in 1995-1996

Group Classification	N	Mean	SD	95% CI	
				Lower	Upper
1 Below college-level & remediated in dev course only	102	1.32	1.30	1.08	1.57
2 Below college-level & remediated concurrently	146	2.26	.90	2.06	2.47
3 Below college-level & did not remediate in dev course	613	1.56	1.48	1.46	1.66
4 At or Above college-level upon entry	3,555	2.45	1.23	2.41	2.49
Total	4,416	2.30	1.31		

have been a function of within group differences. In other words, the level of deficiency within each group might have accounted for between group differences rather than the developmental courses. Students within each group were further classified as “seriously deficient” or “underprepared” based on the same assessment criteria used for the initial study. Seriously deficient was defined as students who scored within a range that suggested the student take two developmental reading courses before attempting college-level courses. Underprepared was defined as students who scored within a range that suggested the student only be required to take one developmental course. These operational definitions of “underprepared” and “seriously deficient” are consistent with the same distinctions made by McCabe (2000). Given the previous results, it was expected that students who developed skills prior to college-level courses were seriously deficient, and the students who developed skills concurrent with college-level were only slightly underprepared.

Results from partitioning each of the developmental education groups this way indicated that the two groups of underprepared students who took developmental courses, either prior to college-level courses or concurrent with college-level courses, consisted of almost equal proportions of seriously deficient (59% and 51%, respectively) and underprepared students (41% and 48%, respectively). As displayed in Table 3, results of the one-way analysis of variance indicated significant group differences with regards to attainment when controlling for level of deficiency, $F(6, 4,409) = 34.09, p < .01$. Post hoc analysis using the GH procedure indicated that seriously deficient students who developed skills con-

currently earned significantly more hours than underprepared students who developed skills prior to attempting college-level courses. However, there were no significant differences between seriously deficient and underprepared students within the group of students who developed skills prior to college-level courses or within the group who developed skills concurrent with college-level courses. Descriptive results and 95% confidence intervals for the group comparisons on attainment by deficiency level are presented in Table 3.

Likewise, when groups were partitioned based on deficiency level and compared with regards to performance there were significant differences between groups, $F(6, 4,409) = 55.57, p < .01$. As with attainment, the seriously deficient students had slightly higher performance outcomes after the three-year period than underprepared students when skills were developed concurrent with college-level coursework. Although these observed within group differences were not statistically significant, the evidence that seriously deficient students outperformed students with fewer deficiencies when the approach to skill development was similar warrants further investigation. As expected, students who had fewer deficiencies outperformed the seriously deficient students when neither group participated in the developmental program (they took only college-level courses). Most surprising were the results indicating that at the end of the three-year period, seriously deficient students who had successfully completed the developmental reading program while taking college-level courses demonstrated performance outcomes equivalent to students with no deficiencies. Descriptive results and 95% confidence inter-

Table 3: Descriptive statistics for cumulative earned hours as of summer 1998 by deficiency levels for cohort of all first-time entering freshmen in 1995-1996

Deficiency Level by Group Classification	N	Mean	SD	95% CI	
				Lower	Upper
1 Underprepared & remediated in dev course only	42	4.98	8.17	2.43	7.52
2 Seriously deficient & remediated in dev course only	60	7.27	11.89	4.19	10.34
3 Underprepared & remediated concurrently	71	16.86	17.11	12.81	20.91
4 Seriously deficient & remediated concurrently	75	22.95	21.19	18.07	27.82
5 Underprepared & did not remediate in dev course	281	9.60	15.00	7.84	11.36
6 Seriously deficient & did not remediate in dev course	332	7.08	13.51	5.62	8.54
7 At or above college-level upon entry	3,555	18.56	19.44	17.92	19.20

vals for the group comparisons on performance by deficiency level are presented in Table 4.

Discussion

This study was conducted to explore differences in academic attainment and performance among a cohort of first-time entering freshmen with varying levels of reading proficiency. The objective was to determine the extent to which performance and attainment differences could be attributed to differences in student approach to enhancing reading skills.

Overall, results from this study suggest that students need to develop college-level reading skills to succeed and persist. These results provide compelling evidence that the long-standing commitment to offer students the option not to remediate is not only ineffective, but places those students who choose this option at a disadvantage as they attempt college-level courses without the requisite reading skills. Therefore, results do not support the prevailing view within the institution that developmental courses should be optional. However, the results presented in this study do show that development of reading skill can significantly increase persistence and performance when development occurs while taking college-level courses. This suggests that successful completion of developmental courses is not necessary prior to success in college-level courses. Furthermore, this study advances the notion that both underprepared and seriously deficient students can succeed when they concurrently enroll in both a developmental program and college-level courses.

Further study is necessary to address this ob-

servation and to determine what factors may account for this unexpected outcome. For example, it may be that students in this study who had fewer or less extreme deficiencies transferred out of the community college once the deficiencies were removed. As a result, the persistence rate for that group of students would appear lower than for the group of seriously deficient students who remained at the institution and earned college credits for three or more years. Likewise, seriously deficient students who developed skills prior to attempting any college-level courses may not have intended to earn college credit as part of their educational objective. In other words, seriously deficient students may have some educational objective other than academic achievement (i.e., degree-seeking) that might explain why more of those students did not persist to a greater extent. It is possible that seriously deficient students take advantage of the developmental reading program at a community college for the sole purpose of developing basic skills necessary to qualify for an employment position. This study did not take students' educational objectives into account. Furthermore, this study did not explore the types of college-level courses that students attempted concurrent with the developmental courses. It is possible that the courses taken by seriously deficient students were "less demanding" than courses attempted by students with only minor deficiencies. Therefore, care should be taken in generalizing the findings. As with any applied study that is conducted at a single institution with one cohort sample of students, differences in institutional and student profiles should be taken into consideration when interpreting results.

Table 4: Descriptive statistics for performance (GPA) as of summer 1998 by group deficiency levels for cohort of all first-time entering freshmen in 1995-1996

Deficiency Level by Group Classification	N	Mean	SD	95% CI	
				Lower	Upper
1 Underprepared & remediated in dev course only	42	1.37	1.31	0.96	1.78
2 Seriously deficient & remediated in dev course only	60	1.29	1.30	0.95	1.62
3 Underprepared & remediated concurrently	71	2.17	0.95	1.95	2.40
4 Seriously deficient & remediated concurrently	75	2.35	0.84	2.15	2.54
5 Underprepared & did not remediate in dev course	281	1.74	1.52	1.56	1.92
6 Seriously deficient & did not remediate in dev course	332	1.41	1.42	1.26	1.56
7 At or above college-level upon entry	3,555	2.45	1.23	2.41	2.49

Despite these limitations of the study, however, the results did contribute to an ongoing discussion within the institution about proficiency requirements and course placement strategies in college. Subsequent actions were taken to implement changes in institutional enrollment practices.

Institutional Application

A two-year process of review and recommendations to the administrators at the institution recently culminated with the reinstatement of student proficiency requirements supported by computerized enrollment blocks. That is, students are prevented from registering in courses for which they are not prepared based on placement test scores. The process began in Fall 2000 with a call for volunteers, which garnered nearly 40 faculty and administrators to serve on the Entry Level Assessment Committee to examine the need (or lack of it) for reinstatement of reading proficiency requirements that were no longer automatically enforced in the course registration process after the advent of a new computer system. Over the course of the following year, the committee developed a proposal designed to reinstate proficiency requirements and to study the impact of those requirements on student academic performance.

The following year, the committee developed specifications for a study by the Office of Institutional Research and Assessment which led to the results presented here. The study revealed that students deficient in college-level reading skills who took at least one developmental reading course while pursuing their college education earned significantly more credit hours over a three-year period at the institution and achieved higher grades than a similar group of students who did not participate in the developmental reading program.

These findings, coupled with broad-based faculty participation in the development of recommendations in The Reading Assessment and Development Initiative, led to a decision by the administration to reinstate Reading Proficiency requirements for the fall semester of 2002-03 via computerized enrollment blocks.

Application of Findings into Practice

Implementation of automatic enrollment blocks for reading proficiency began on May 1, 2002, for students enrolling in general education core courses at the institution in the fall of 2002. Enrollment blocks apply to each course specifically listed in the institution's general education requirements but do not apply to required or recommended electives. The Executive Vice-President and Chief Academic Officer cooperated with the Marketing Communications Office to inform area high school counselors and faculty and staff at the institution about the new requirements.

The reinstatement of student reading proficiency requirements is a landmark event for the institution. The Entry-Level Assessment Committee anticipates that this action will ultimately lead to significant increases in student success. They further believe that this decision to implement institutional effectiveness measures linked to assessment results will reinforce the value of well-designed assessment strategies at this institution.

The initiative provides an opportunity to better understand the relative roles of student autonomy and academic preparation in student graduation and retention. It establishes a basis to further explore the effectiveness of options for developmental education in reading, and to investigate the impact of reading skill in disciplines that require additional demonstrations of proficiency, such as writing and mathematics. Perhaps the most important implication of the Initiative is the role it assigns to student experience as a criterion for shaping institutional policy and practice. Results from this study have affected the process and use of assessment results in framing practices that affect student success. Indeed, the institution anticipates that the Initiative will increase the levels of student success, both in terms of learning outcomes and in higher persistence and graduation rates.

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